

AS/400e



AS/400e server 640, 650, 730, 740, S30, S40, and SB1 Problem Analysis, Repair and Parts

Version 4

AS/400e



AS/400e server 640, 650, 730, 740, S30, S40, and SB1 Problem Analysis, Repair and Parts

Version 4

Note

Before using this information and the product it supports, be sure to read the information in "Safety and Environmental Notices" on page ix and "Appendix G. Notices" on page 1025.

Sixth Edition (July 2000)

This edition replaces SY44-5956-04. This edition applies only to reduced instruction set computer (RISC) systems.

© **Copyright International Business Machines Corporation 1997, 2000. All rights reserved.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Safety and Environmental Notices . . . ix

Danger Notices	ix
Caution Notices	x
Attention Notices	xi
Laser Safety Information	xi
Product Recycling and Disposal	xi
Battery Return Program	xi
Environmental Design	xi

Part 1. Problem Analysis 1

Chapter 1. Starting Problem Analysis . . . 3

Starting Problem Analysis	3
System Service Library Structure	3
Starting Point for All Problems	4
Analyzing Intermittent Problems	13
Safety	13
Special Tools and Equipment	13
How to Use This Intermittent Problem Section	14
Correcting Intermittent Problems	14
General Intermittent Problem Checklist	15
How to Analyze the Intermittent Problem	19
Intermittent Symptom Table	19
Failing Area INT-PIP Table	20
Analyzing IPL Problems	21
Start Analyzing IPL Problems Here	21
Cannot Perform IPL from the Control Panel (No SRC)	21
Cannot Perform IPL at a Specified Time (No SRC)	22
Cannot Perform IPL from a Remote Location (No SRC)	26
Cannot Automatically Perform an IPL after a Power Failure	36
Analyzing Power Problems	36
Start Analyzing Power Problems Here	36
Cannot Power On System Unit (No SRC)	37
Cannot Power On Secondary Frame (No SRC)	41
System or Frame Cannot Become Powered Off	55

Chapter 2. Unit Reference Codes 59

How to Use This Section	59
List of SRC Tables	60
SRC Exception Table	62
(0000) Control Panel Reference Codes	63
(1xxx) System Power Control Network (SPCN) Reference Codes	65
(2440) Magnetic Tape Subsystem Reference Codes	117
(2621) SCSI I/O Processor Reference Codes	119
(2624) Magnetic Storage I/O Processor Reference Codes	125
(2644) Tape I/O Processor Reference Codes	130
(266A) Workstation Adapter Reference Codes	136

(2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532 - 6534, 6751, 6754) Reference Codes	139
(2740, 2748) Reference Codes	147
(2746) Twinaxial Workstation Adapter Reference Codes	151
(283C, 283D) Device Backplane Reference Codes	152
(3422) Tape Unit Reference Codes	153
(3430) Tape Unit Reference Codes	156
(3480) Tape Unit Reference Codes	158
(3490) Tape Unit Reference Codes	161
(3494) Tape Library Reference Codes	168
(3570) Tape Unit Reference Codes	170
(3590) Tape Unit Reference Codes	174
(3995) Optical Library Dataserver Reference Codes	177
(6050) Twinaxial Workstation I/O Processor Reference Codes	178
(6055) Workstation Adapter Reference Codes	187
(6056) Workstation Adapter Reference Codes	190
(6112) Magnetic Storage I/O Processor Reference Codes	193
(6140) Twinaxial Workstation I/O Processor Reference Codes	197
(6141) ASCII Workstation I/O Processor Reference Codes	206
(6180) Twinaxial Workstation I/O Adapter Reference Codes	211
(632x, 6330) Optical Storage Unit Reference Codes	211
(6335, 636x, 637x, 6380) Tape Unit Reference Codes	214
(6385) Tape Unit Reference Codes	221
(6390) Tape Unit Reference Codes	224
(63A0) Tape Unit Reference Codes	230
(6500) Magnetic Storage I/O Processor Reference Codes	233
(6501) Magnetic Storage I/O Processor Reference Codes	237
(6502, 6512) Magnetic Storage I/O Processor Reference Codes	240
(6513, 6530) Tape I/O Processor and MSIOP Reference Codes	245
(660x, 671x, 673x) Disk Unit Reference Codes	250
(6A58) Workstation Adapter Console Reference Codes	253
(6A58,6A59) Workstation Adapter Console Reference Codes	254
(7208) Tape Drive Reference Codes	255
(7208) Model 012 Tape Drive Reference Codes	260
(9331) Diskette Unit Reference Codes	266
(9337) Disk Unit Reference Codes	267
(9347) Tape Unit Reference Codes	267
(9348) Tape Unit Reference Codes	268
(9427) Tape Unit Reference Codes	269
(A1xx, B1xx) Service Processor Reference Codes	274
(A6xx, B6xx) LIC Reference Codes	276

(A9xx, B9xx) Reference Codes	297
(B003) Asynchronous Communications Reference Codes	297
(B006) Common Licensed Internal Code Reference Codes	304
(B070) Reference Codes	308
(B075) Workstation Adapter Console Reference Codes	316
(B2xx) Logical Partition Reference Codes	321
(B455, B460) System Processor Reference Codes	328

**Chapter 3. Failing Items, Part
Numbers, and Symbolic FRU Isolation 341**

Failing Item (FI) Code Table	341
Type, Model, and Part Number List	362
Disk Unit Type, Model, and Part Number List	370
Symbolic FRU Isolation	374
ACMODUL	374
AIRMOVR	375
ANYBUS	376
AS4NTDD	376
BACKPLN	376
BATCHGR	379
BATRY	379
BKSPCN	380
BUSPWR	380
CACHBAT	384
CACHE	384
CBLALL	385
CDAWKLD	385
CDTRAY	385
CHECK	385
CLKCARD	386
CMPRES1	386
CRYPBAT	386
CTLPNL	386
DEVBPLN	387
DEVICE	387
DEVTERM	387
DISKDRV	388
DISKIMG	389
DISKTRY	389
DMREG	390
DPAC	395
DRVSWCH	395
DSKUNIT	395
EACODE	395
EXTREMD	395
EXTSCSI	396
HLNY3	398
IDPART	398
IOP	400
LBSADP1	400
LBSADP2	400
LBSADP3	400
LBUSADP	401
LPARCFG	401
LPARSUP	401
MEDIA	402
MEMORY	402
MSCONFG	402

NOFRUS	403
NTDEVDR	403
NTLANDD	403
NTOPSYS	404
NTUSER	404
NTVSCSI	404
OPTLCBL	404
OPTLDRV	404
PCIBUS	404
PGDPART	404
PLUS	407
PNLBAT	407
PROCARD	407
PROCCFG	409
PWRREG	411
PWROC	420
PWRSPLY	420
QSYSOPR	423
REFER	423
RMDEV	423
SIGx	424
SNSDATA	424
STORIOA	424
SVCDOCS	425
TAPCLN	425
TAPCNFG	425
TWRCARD	425
UAMR1	425
UC235	426
UC236	426
UG3AS	426
UJ0E7	426
UJ6P3	427
UJE34	427
UJE40	427
ULNZ2	427
ULNZ3	428
ULNZ4	428
UNP20	428
UPLF1	428
USER	429
UX201	429
UX202	429
UY1Z1	429
UY1Z2	429
UY1Z3	429
UY1Z4	430
UY1Z5	430
VPDPART	430

**Chapter 4. Problem Isolation
Procedures (PIPs) 433**

PIP Type List	433
ASCII Workstation I/O Processor Problem Isolation Procedures	434
Bus Problem Isolation Procedures	442
Communications Problem Isolation Procedures	492
Disk Unit Problem Isolation Procedures	495
Intermittent Problem Isolation Procedures	498
Licensed Internal Code (LIC) Problem Isolation Procedures	508

Logical Partition (LPAR) Problem Isolation Procedures	536	Tape I/O Processor (Type 2644) Addressing Scheme	732
Magnetic Storage I/O Processor (MSIOP) Problem Isolation Procedures	540	Type 2718 IOA, 2729 IOA, and 6534 IOP Addressing	733
Power Problem Isolation Procedures.	567	Type 6501 IOP Addressing	735
Remote Operations Console Problem Isolation Procedures	569	I/O Bus Addressing Schemes	737
Storage Device I/O Processor (SDIOP) Problem Isolation Procedures	576	Communications I/O Processor Unit Addressing Scheme	737
Service Processor Problem Isolation Procedures	616	Twinaxial Workstation I/O Processor Unit Addressing Scheme	738
System Power Control Network (SPCN) Problem Isolation Procedures	618	ASCII Workstation I/O Processor Unit Addressing Scheme	739
Tape I/O Processor Problem Isolation Procedures	638	SRC Address Formats	740
Tape Unit Problem Isolation Procedures	656	Hardware SRC Formats	744
TU-PIP5	671	Reclaim IOP Cache Storage.	745
Tape Device Ready Conditions	675	Storage I/O Card Modes and Jumpers	746
Twinaxial Workstation I/O Processor Problem Isolation Procedures	676	Determining and Setting the Mode of an I/O Card	746
Workstation Adapter Problem Isolation Procedures	684	Switching the Mode of an I/O Card.	747
Workstation Adapter Console Problem Isolation Procedures	688	Mode Jumper has been Overridden	748
		Mode Jumper is Missing	748
		Manually Removing the Tape Cartridge	748
		1/4 inch Tape Cartridge (Type 6335).	748
		6383, 6385, 6386 Tape Cartridge	750
		8-mm Tape Cartridge (6390)	752
		Important Continuously Powered Main Storage (CPM) Information	757
		Important Cryptographic I/O Processor Information	757
		Setting the System Date and Time	758
		Hexadecimal Product Activity Log Data	758
		Determining the Primary and Alternate Console	758
		Determining the Load-Source Disk and Alternate IPL Device	759
		Introduction.	759
		Finding the Load-Source Disk on Systems without Mirrored Protection	759
		What You Should Know about Load-Source Disks on Systems with Mirrored Protection	759
		Finding the Load-Source Disks on Systems with Mirrored Protection	759
		Alternate IPL Device	760
		Powering Off and Powering On the System or Expansion Tower	761
		Powering Off the System	761
		Powering Off a System With Logical Partitions	762
		Powering Off a Logical Partition System Using the Control Panel or Primary Partition	763
		Powering Off a Secondary Partition	764
		Powering On the System	765
		Powering On a Secondary Partition	765
		Selecting IPL Type, Mode, and Speed	765
		Expansion Tower Power Procedure	766
		System/370 Interface Information	771
		Introduction.	771
		Cable Wrap Test	771
		System/370 Channel Bus Cable Pin Layout (Type 2644)	773
		System/370 Channel Tag Cable Pin Layout (Type 2644)	775
		Tape I/O Processor Card Connectors	776

Chapter 5. Locations, Addresses, and Service Reference Information 693

Start Here for Locations Information	694
System Unit Locations and Addresses	695
Locations in Models 640, 730 and S30 System Unit	696
Locations in Models 650, 740, S40, and SB1 System Unit	700
Locations in Models 650, 740, S40, and SB1 Feature 9251 Base I/O Tower	702
Optical Link.	705
Expansion Tower Locations and Addresses	707
Storage Expansion Unit (FC 5051)	707
Storage Expansion Unit (FC 5052 and 5058)	707
FC 5065 and FC 5066 Expansion Towers	708
System Unit Expansion Tower (FC 5070, 5071, 5072, and FC 5073)	711
Storage Expansion Tower (FC 5080, 5081, 5082, or 5083)	713
Storage Expansion Unit Cables and Cable Diagrams for System Units	716
Cable Diagrams	716
Cable Diagrams for Expansion Towers	719
Cable Diagrams	719
I/O Adapters	725
High and Low Speed PCI IOAs	725
Integrated Netfinity for AS/400 Server (IOA) Switch Settings	726
2623/2629	726
6510/6520	727
6616	728
6617	729
2750/2751 and 2761 Adapter Card Port Connector Locations.	730
External Devices	730
SCSI I/O Processor (Type 2621) Addressing Scheme	730

Channel Wrap Block 1	777
Channel Wrap Block 2	777
Card and Channel Wrap Layout (Type 2644)	778
Verifying the Repair	778
Verify Dedicated Repair.	779
Verify Concurrent Repair.	780
Determining if the System Has Logical Partitions	781
Information About Logical Partitions	781
Procedures for systems with multiple partitions	782
Determining the Release Level of a Logical Partition	783
Locating a Secondary Partition's Console	783
Locating a Secondary Partition's Load Source	784
Locating a Secondary Partition's Load Source From the Secondary Partition's Console	784
Locating a Secondary Partition's Load Source From the Primary Partition's Console	785
Query of Logical Partition Time and Date	785
Conversion of Secondary Partition Time and Date to Primary Partition Time	786
Finding the SRC History List for a Secondary Partition	786
Closing Related Problems in Other Logical Partitions.	786
Accessing a Logical Partition's Panel Functions	787
Determining Which Logical Partition Owns a FRU or a System I/O Resource	787
Selecting IPL Type and Mode for a Secondary Partition	788
Missing or Non-reporting System Bus Resources	788

Part 2. Repair and Parts. 791

Chapter 6. Removal and Installation Procedures 793

Models 640, 650, 730, 740, S30, S40, and SB1 Rack Component Removal and Installation Procedures	794
AC Module	795
AMDs (Air Moving Devices)	795
Battery	796
Battery Charger	797
Battery Power Unit - External	797
Cards	798
Cards-Cache, Type 4700 and 6503	800
Control (Op) Panel Card.	800
Control (Op) Panel Battery	801
Covers	801
Disk Unit — Dedicated and Concurrent Concurrent Maintenance-Removal and Installation	802
Dedicated Maintenance-Removal and installation	804
Integrated Netfinity Server for AS/400 (Type 6616)	805
Integrated Netfinity Server for AS/400 (Type 6617)	805
ISO-MAKO Interposer Card	805
LAN/WAN IOP Card — Type 2810	806
Power Supply	806
Power Supply Subframe.	807

Regulator.	808
Removable Media	809
REM4 SCSI Jumper Card	809
REM8 SCSI Redrive Card	810
SPCN card	811
Models 640, 730 and S30 System Unit Backplane	811
Models 650, 740, S40, and SB1 System Unit Processor Backplane	814
Models 650, 740, S40, and SB1 Rear Cage Removal	816
Models 640, 730 and S30 SPD Board.	816
Models 640, 730 and S30 Storage Expansion Unit	819
FC 5065 or 5066 Expansion Tower Removal and Installation Procedures	819
AMDs (Air Moving Devices)	819
Battery	820
Battery Charger	821
Cards-PCI in FC 5065 or 5066	821
Cards Addendum	822
Control Panel-NB1	828
Covers	828
Device Boards – DB1 and DB2.	830
Device Board – DB3	831
Disk Unit — Dedicated and Concurrent For FC 5065 or 5066.	833
Power Distribution Backplane	836
Power Supply	837
Removable Media — Dedicated and Concurrent Tower Card Assembly-CB1	840
FC 9251 – Models 650, 740, S40, and SB1 System Unit I/O Tower, FC 507x – Bus Expansion Tower, and FC 508x – Storage Expansion Tower Removal and Installation Procedures.	841
AC Module and AMD	841
AMD	842
Battery Power Unit	843
Battery Power Unit (2-Part).	844
Battery Power Unit - External	846
Cards	848
Cards-Cache, Type 4700 and 6503	850
Card Enclosure.	851
Control Panel	852
Covers	853
Disk Unit (Concurrent)	855
Disk Unit (Dedicated)	858
Disk Unit – Removal from Tray	860
File Server IOP - Type 6506.	863
Integrated Netfinity Server for AS/400 - Type 6616	865
Integrated Netfinity Server for AS/400 (Type 6617)	867
Micro Channel Adapter for a Wireless LAN IOA or IOP.	869
Power Supply	869
Removable Media (Concurrent)	870
Removable Media (Dedicated).	872
Removable Media Enclosure	873
SCSI Redrive Card-9251 Base I/O Tower	874
Storage Expansion Unit Backplane	875
SPCN Optical Adapter	876

Upper Disk Unit Enclosure Backplane	877
Chapter 7. Recovery Procedures	879
Disk Service Support	879
Start Disk Service Here	879
Determining Storage Protection Status	880
Exchanging a Disk Unit with Device Parity Protection	881
Exchanging a Disk Unit with Mirrored Protection	883
Resuming Mirrored Protection.	889
Disk Unit Data Save and Initialize	889
Disk Unit Initialize and Disk to Disk Copy	898
DST Procedures	906
Recover Remote Loadsource	906
Copy the Contents of LIC Log.	907
Chapter 8. Parts Listing	909
How To Use This Parts Listing	909
Assemblies Models 640, 730 and S30	910
Assembly 1: Models 640, 730 and S30 Covers.	912
Assembly 2: Model 640, 730 and S30 Final Assembly - Front	916
Assembly 3: Model 640, 730 and S30 Final Assembly - Rear	922
Assembly 4: Models 640, 730 and S30 CEC Cage/Backplane Assembly	926
Assembly 5: Models 640, 730 and S30 SPD/DASD Cage Assembly.	928
Assembly 6: Models 640, 730, and S30 Storage Expansion Unit (FC 5055)	930
Assemblies Models 650, 740, S40, and SB1.	931
Assembly 7: Models 650, 740, S40, and SB1 Covers	932
Assembly 8: Models 650, 740, S40, and SB1 Final Assembly - Front	934
Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear	938
Assembly 10: Models 650, 740, S40, and SB1 Front Cage/Backplane Assembly	942
Assemblies Common to All Models	943
Assembly 11: All Models Power Subframe Assembly.	944
Assembly 12: All Models Control Panel Assembly	946
Assemblies - FC 9251 Base I/O and Expansion Towers	948
Assembly 13: Cover Assemblies for FC 5065 and FC 5066 Expansion Towers	950
Assembly 14: Final Assemblies for FC 5065 expansion tower	954
Assembly 15: Cover Assemblies - 9251 Base I/O, 507x & 508x Expansion Units	966
Assembly 16: Final Assembly - 9251 Base I/O, 507x & 508x Expansion Towers	968
Assembly 17: Storage Expansion Unit Assembly	972
Assembly 18: 9251 and 507x, 508x Expansion Tower(s) Control Panel	974
Assembly 19: Disk Unit Assemblies	976
Assembly 20: File Server Book Assembly Type 6506	978
Assembly 21: File Server Book Assembly Type 6616	980

Assembly 22: File Server Book Assembly Type 6617	982
Assembly 23: Internal Cable Assemblies	984
Assembly 24: External Cable Assemblies	986
Assembly 25: Miscellaneous	990
Power Cord Part Numbers and Receptacle Descriptions.	992

Part 3. Appendixes 1005

Appendix A. Problem Summary Form 1007

Appendix B. System Safety Inspection 1011

Introduction	1011
Covers	1011
All Models	1011
AC Power Cord(s)	1012
All Models	1012
AC Safety Grounds	1012
Models 640, 650, 730, 740, S30, S40, and SB1, Feature Towers 507x and 508x, and I/O Towers for 650, 740, S40, and SB1	1012
Safety Labels	1012
Feature Tower 507x and 508x, and I/O Towers for 650, 740, S40 and SB1	1012
Models 640, 650, 730, 740, S30, S40, and SB1	1012
Power Off and On (System Unit)	1013
All Models	1013
Internal Mechanical Inspection	1013
Feature Towers 507x and 508x, and I/O Towers for 650, 740, S40, and SB1	1013
Models 640, 650, 730, 740, S30, and S40 and SB1	1013

Appendix C. Preventive Maintenance (PM) Checklist 1015

How to Record Your Time (Service Code-SC)	1017
---	------

Appendix D. Working with Electrostatic Discharge-Sensitive Parts 1019

Appendix E. Service Log 1021

Appendix F. OptiConnect Table 1023

Appendix G. Notices 1025

Trademarks	1026
----------------------	------

Glossary 1027

Bibliography 1031

Part Number Index 1033

Safety and Environmental Notices

Danger Notices

A danger notice calls attention to a situation that is potentially lethal or extremely hazardous to people.

Use the following danger notices throughout this book:

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)

DANGER

To prevent a possible electrical shock when installing the system, ensure that the power cords for all devices are unplugged before installing signal cables. (RSFTD202)

DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

DANGER

Use caution when installing or modifying telephone lines. Disconnect the lines at the network interface before working with telephone wires that are not insulated. Never install telephone jacks that are not waterproof in wet locations. Do not install or modify telephone lines or use a telephone (other than a cordless type) during an electrical storm. Do not use a telephone to report a gas leak in the area of the leak. (RSFTD213)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

Caution Notices

A caution notice calls attention to a situation that is potentially hazardous to people because of some existing condition.

CAUTION:

Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)

CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

CAUTION:

The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

CAUTION:

The optical link card contains a laser. To avoid the release of toxic substances into the environment, do not burn. Discard the optical link as instructed by local regulations. (RSFTC236)

CAUTION:

The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM-approved part. Discard the battery as instructed by local regulations. (RSFTC227)

Attention Notices

An attention notice indicates the possibility of damage to a program, device, system, or data.

Laser Safety Information

CAUTION:

**This product may contain a CD-ROM which is a class 1 laser product.
(RSFTC240)**

Product Recycling and Disposal

Components of the system, such as structural parts and circuit cards, can be recycled where recycling facilities exist. IBM does not currently collect and recycle used IBM products from customers in the United States other than those products that are involved in trade-in programs. Companies are available to disassemble, reutilize, recycle, or dispose of electronic products. Contact an IBM account representative for more information.

The system unit contains batteries and circuit boards with lead solder. Before you dispose of this unit, these batteries and circuit boards must be removed and discarded according to local regulations or recycled where facilities exist. This book contains specific information on each battery type where applicable.

Battery Return Program

In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used IBM batteries and battery packs. For information on proper disposal of the batteries in this unit, please contact IBM at 1-800-426-4333. Please have the IBM part number that is listed on the battery available when you make your call. For information on battery disposal outside the United States, contact your local waste disposal facility.

Environmental Design

The environmental efforts that have gone into the design of the system signify IBM's commitment to improve the quality of its products and processes. Some of these accomplishments include the elimination of the use of Class I ozone-depleting chemicals in the manufacturing process, reductions in manufacturing wastes, and increased product energy efficiency. For more information, contact an IBM account representative.

Part 1. Problem Analysis

Chapter 1. Starting Problem Analysis

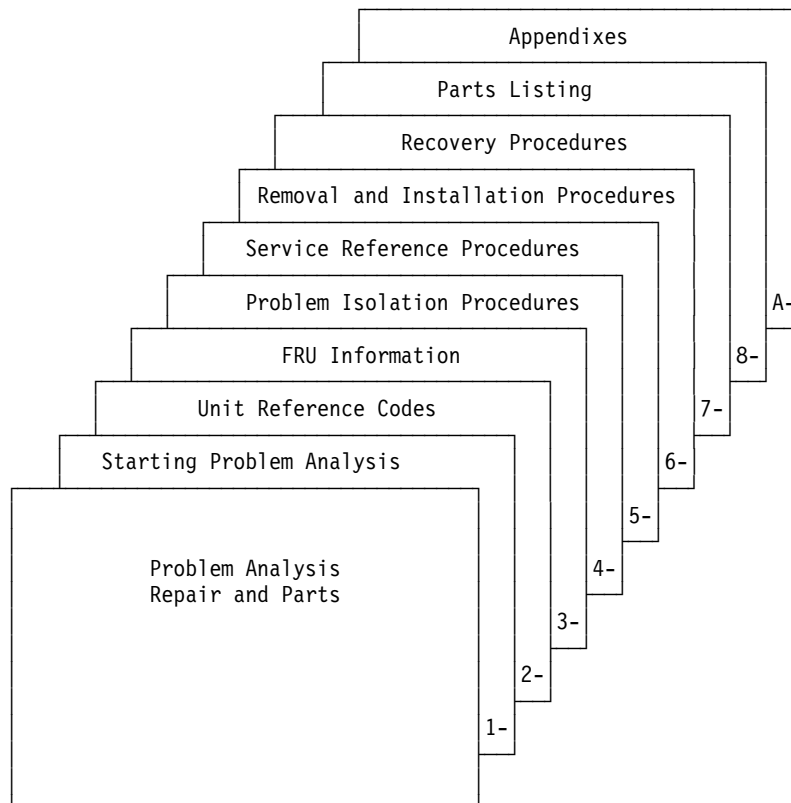
Starting Problem Analysis

System Service Library Structure

Problem Analysis, Repair, and Parts

The purpose of this book is to provide complete instructions for the task of locating and repairing system problems. It uses directed procedures in a specific logical order to accomplish this task. This book is **not** meant to teach theory of operations. Therefore, there is no index to information that could cause further problems with the system if it was not used correctly. References within the directed procedures point to other sources of information, such as the *AS/400 Service Functions*, for more information about common tasks.

The following figure shows the structure of the Problem Analysis, Repair, and Parts book.



- Section 1 is the starting point for all service actions.
- Section 2 contains information about system reference codes (SRCs) and the unit reference code (URC) information that is contained within the SRCs.
- Section 3 contains:
 - Failing item information

Start

- FRU part numbers
- Symbolic FRU information
- Section 4 contains problem isolation procedures for specific types of problems.
- Section 5 contains common information that includes system addressing and FRU locations.
- Section 6 contains FRU removal and installation procedures.
- Section 7 contains disk unit recovery procedures and information.
- Section 8 contains the parts catalog information.
- The appendixes contain information such as Problem Summary Forms, System Safety Inspection information, and Preventive Maintenance Checklist.

Starting Point for All Problems

Before you start problem analysis, review the “System Service Library Structure” on page 3 and how the system and its devices connect together (see “System Architecture and Configuration” in the *AS/400 Service Functions* information). Also review the system reference code (SRC) definition and formats and how they appear (see “System Reference Code (SRC) Record” in the *AS/400 Service Functions* information). Also understand how the control panel works (see “Control Panel Functions” in the *AS/400 Service Functions* information). Also, review any supplemental RPQ pages in this guide.

Note:

- For instructions on displaying SRCs, see “System Reference Code (SRC) Record” in the *AS/400 Service Functions* information.
 - Use the *Help Key* text that is available through these procedures for additional information.
 - If the Verification of System Password Failed display appears during IPL, see “System Password” in the *AS/400 Service Functions* information for instructions.
1. Has the system operator completed the problem determination procedures for the reported problem?
 - Problem Summary Form information available.
 - Related Main Store Dumps copied.
 - Related APAR data copied.

Yes **No**

↓ Work with the system operator to complete the problem handling procedures:

- *Basic System Operation, Administration, and Problem Handling*

Then, continue with the next step of this procedure.

2. Record the IPL type and mode before starting this service call.

Note: When you complete this service call, return the system to this IPL type and mode or to the IPL type and mode specified by the customer.

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

3. **You must** determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.
4. Can you get to SST or DST (function 21) for the partition with the problem?

Note: Do not IPL the system to get to DST. If the system has logical partitions and you are working in a secondary partition, **do not** use the system control panel to access function 21. Instead you must use the *Work with partition status* screen (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* information).

No Yes

↓

Many system problems occur after changing the system configuration or installing or changing a program. If the configuration has been changed or if a program has been installed or changed, verify that all is correct before continuing with this procedure.

Check the system configuration:

Use the display hardware configuration service function to check for any missing or failed hardware.

To display missing or failed hardware perform the following:

- a. On the command line, enter
STRSST

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* information).

Note: Do not IPL the system to get to DST.

- b. Select *Start a service tool*.
 - c. On the Start a Service Tool display, select the *Hardware service manager*.
 - d. On the Hardware Service Manager display, select *Logical hardware resources*
 - e. On the Logical Hardware Resources display, select *System bus resources*.
 - f. Select the function keys for *failed* or *non-reporting* resources.
5. Use the *Symptom* column of Table 1 on page 6 and find the best description of the reason for this service action. Then follow the instructions in the *What You Should Do* column.

Attention: It is not always necessary to power off the system to exchange a field replaceable unit (FRU). You will be directed through a concurrent exchange, if possible, for disk, bulk power supplies, batteries, battery chargers, AMDs, or removable media storage units. For other FRU types, see “Expansion Tower Power Procedure” on page 766.

Start

This ends the procedure.

Table 1. Start Table

Symptom	What You Should Do
Intermittent Problems	
You suspect an intermittent problem.	Go to "Analyzing Intermittent Problems" on page 13.
DST/SST functions are available on the Primary system console and the symptom is:	
<ul style="list-style-type: none"> • There is a system reference code or message. • The customer reports reduced system function. • There is a system performance problem. • There are Failing, Missing, or Inoperable system resources. 	Go to "Using the Service Action Log" on page 8. Note: On most systems with multiple partitions, it is common to have one or more "Missing or Non-reporting" system bus resource/s under Hardware Service Manager. See "Missing or Non-reporting System Bus Resources" on page 788 for details.
The system attention light is on but there is no SRC displayed in function 11-3 on the control panel.	Go to "Analyzing Power Problems" on page 36.
The system is not operational and the symptom is:	
You have a power problem, the system or an attached unit will not power on or will not power off, or there is an SRC in function 5 (05-1xxx-xxxx).	Go to "Analyzing Power Problems" on page 36.
There is an SRC and the system attention light is on.	Go to "Chapter 2. Unit Reference Codes" on page 59.
There is an IPL problem (the system attention light is off).	Go to "Analyzing IPL Problems" on page 21.
There is a "Device Not Found" message during an install from an alternate installation device.	Go to "TU-PIP6" on page 669.
System operations have stopped or the system is in a loop (the system attention light is off).	Go to "System Hangs or Loops (No SRC)" on page 30.
On a system that has logical partitions, there is a problem with a secondary partition and the symptom is:	
There is a B2xx xxxx SRC on the <i>Work with Partition Status</i> screen of the Primary console.	Go to "Chapter 2. Unit Reference Codes" on page 59.

Table 1. Start Table (continued)

Symptom	What You Should Do
<p>One or more of the following was reported:</p> <ul style="list-style-type: none"> • The console of a secondary partition was lost or is not functioning. • There is an SRC on the panel of an I/O expansion tower owned by a secondary partition. • You suspect a power problem with resources owned by a secondary partition. • There is an IPL problem with a <i>secondary partition</i> and there is an SRC on the <i>Work with Partition Status</i> screen of the Primary or secondary partition. • The <i>secondary partition's</i> operations have stopped or the partition is in a loop and there is an SRC on the <i>Work with Partition Status</i> screen of the Primary or secondary console. 	<ul style="list-style-type: none"> • Search the Primary partition's Service Action Log. Go to "Using the Service Action Log" on page 8. • If you don't find an entry in the Service Action Log of the Primary partition then record the partition's SRC from the <i>Work with Partition Status</i> screen of the Primary partition's console. See "Accessing a Logical Partition's Panel Functions" on page 787. Use that SRC and go to "Chapter 2. Unit Reference Codes" on page 59. <p>Perform service from the secondary partition unless instructed to move to another partition.</p>
<p>The partition's console is functioning and in the <i>Work with partition status</i> screen in the Primary partition or secondary partition, the state of the partition is "Failed" or "Unit Attn" and there is a system reference code. See "Accessing a Logical Partition's Panel Functions" on page 787.</p>	<p>Use the partition's SRC. From the partition's console search for that SRC in the partition's Service Action Log. Go to "Using the Service Action Log" on page 8.</p>
<p>One or more of the following was reported:</p> <ul style="list-style-type: none"> • There is an IPL problem with the secondary partition and there is no SRC displayed in the <i>Work with Partition Status</i> screen. • The partition's operations have stopped or the partition is in a loop and there is no SRC displayed in the <i>Work with Partition Status</i> screen. 	<ul style="list-style-type: none"> • Go to "Logical Partition Hangs or Loops (No SRC)" on page 33.
<p>One or more of the following was reported:</p> <ul style="list-style-type: none"> • There is a system reference code or message on the partition's console. • The customer reports reduced function in the partition. • There is a partition performance problem. • There are Failing, Missing, or Inoperable resources. 	<p>From the partition's console search the partition's Service Action Log. Go to "Using the Service Action Log" on page 8.</p> <p>Note: On most systems with multiple partitions, it is common to have one or more "Missing or Non-reporting" system bus resource/s under Hardware Service Manager. See "Missing or Non-reporting System Bus Resources" on page 788 for details.</p>
<p>There is a "Device Not Found" message during an install from an alternate installation device</p>	<p>Go to "TU-PIP6" on page 669.</p>
<p>There is a Time of Day Problem and this symptom is:</p>	
<p>System clock loses or gains more than 1 sec/day when the system is connected to utility power.</p>	<p>Replace the MFIOP (see "System Unit Locations and Addresses" on page 695, then go to the "Chapter 6. Removal and Installation Procedures" on page 793).</p>

Start

Table 1. Start Table (continued)

Symptom	What You Should Do
System clock loses or gains more than 1 sec/day when the system is disconnected from utility power.	Replace the Time of Day Battery on the Control Panel (see "Chapter 6. Removal and Installation Procedures" on page 793).
There is an obvious physical symptom	
A light or display on the system unit control panel or on a FC 507x System Unit Expansion, a FC 508x Storage Expansion Unit, a FC 9251 Base I/O Tower, or a FC 506x PCI Expansion Tower control panel is not working correctly.	Perform "SPCN-PIP20" on page 637.
A light or display on the control panel of the FC 504x System Unit Expansion is not working correctly.	Perform SPCN-PIP4 in System Power Control Network (SPCN) Problem Isolation Procedures in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.
The System Remote Control Panel is not working properly.	Perform "SPCN-PIP21" on page 638.
The Remote Control Panel is no longer available.	<ul style="list-style-type: none"> • Verify the configuration. • Check all cable connections. • Perform "ROC-PIP7" on page 574.
The Operations Console session display is blank.	Perform "ROC-PIP3" on page 570.
One or more of the following was reported: <ul style="list-style-type: none"> • Noise • Smoke • Odor 	Go to "Appendix B. System Safety Inspection" on page 1011.
A part is broken or damaged.	<p>Go to "Chapter 8. Parts Listing" on page 909 to get the part number.</p> <p>Then go to "Chapter 6. Removal and Installation Procedures" on page 793 to exchange the part.</p>
You cannot find the symptom in this table	
You cannot find the symptom in this table. Note: Information about a 940x frame and devices in the frame can be found in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.	Go to "Using the Service Action Log".

Using the Service Action Log

1. Search for an entry in the Service Action Log that matches the time, SRC, or resource of the reported problem.
 - a. On the command line, enter

```
STRSST
```

(the Start System Service Tools) command.

If you cannot get to SST, use function 21 to get to DST (see "Accessing Dedicated Service Tools" in the *AS/400 Service Functions*). **Do not IPL the system to get to DST.**

- b. Select *Start a Service Tool*.
- c. On the Start a Service Tool display, select the *Hardware Service Manager* (see the *AS/400 Service Functions*).
- d. Select the *Work with service action log* option on the Hardware Service Manager display.
- e. On the *Select Timeframe* display, change the From: Date and Time to a date and time prior to when the customer reported having the problem.
- f. Search for an entry that matches one or more conditions of the problem:
 - 1) SRC
 - 2) Resource
 - 3) Time
 - 4) FRU list (choose the *Display the failing item information* option to display the FRU list).

Notes:

- a. All new entries in the Service Action Log represent problems that require a service action. It may be necessary to handle any problem in the log even if it does not match the original problem symptom.
- b. The information displayed in the date and time fields are the date and time for the first occurrence of the specific system reference code (SRC) for the resource displayed during the time range selected.

Did you find an entry in the Service Action Log?

No **Yes**

↓ Go to step 4 of this procedure.

2. Is the OS/400 operating system available?

Yes **No**

↓ Go to "Handling Problems for Non-critical Resources" on page 12.

This ends the procedure.

3. Go to "Using the Problem Log" on page 10.

This ends the procedure.

4. Was the entry isolated (does the letter Y appear in the Isolated column)?

Yes **No**

↓ Go to "Chapter 2. Unit Reference Codes" on page 59. Using the SRC that is indicated in the log, find the correct SRC table and unit reference code. Perform all actions in the "Description/Action" column before exchanging failing items.

Note: When exchanging failing items, the part numbers and locations found in the Service Action Log entry should be used.

This ends the procedure.

5. Display the failing item information for the Service Action Log entry. Items at the top of the failing item list are more likely to fix the problem than items at the bottom of the list.

Exchange the failing items one at a time until the problem is repaired. After exchanging each one of the items, verify that the item that is exchanged repaired the problem.

Start

Notes:

- a. For Failing Items (FIs) and symbolic FRUs, go to “Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation” on page 341.
- b. When exchanging FRUs, go to “Chapter 6. Removal and Installation Procedures” on page 793. If you are exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 879. If location information is available, use it to locate the failing item in “Chapter 5. Locations, Addresses, and Service Reference Information” on page 693.
- c. If the failing item is Licensed Internal Code, contact your next level of support for the correct PTF to apply.
- d. After exchanging an item, go to Verifying the Repair in “Chapter 5. Locations, Addresses, and Service Reference Information” on page 693.

Once the problem has been resolved, close the log entry by selecting *Close a NEW entry* on the Service Actions Log Report display.

This ends the procedure.

Using the Problem Log

Find and analyze a Problem Log entry that relates to the problem reported.

Note: For online problem analysis (WRKPRB), ensure that you are logged on as QSRV. During problem isolation, this will allow access to test procedures that are not available under any other log-on.

1. Enter WRKPRB (the Work with Problems command) on the command line.

Note: Use F4 to change the WRKPRB parameters to select and sort on specific problem log entries that match the problem. Also, F11 displays the dates and times the problems were logged by the system.

Was an entry that relates to the problem found?

Note: If the WRKPRB function was not available answer NO.

Yes No

↓ Go to “Handling Problems for Non-critical Resources” on page 12.

This ends the procedure.

2. Select the problem entry by moving the cursor to the problem entry option field and entering option 8 to work with the problem.

Is Analyze Problem (option 1) available on the *Work with Problem* display?

Yes No

↓ Go to step 5 of this procedure.

3. Run Analyze Problem (option 1) from the *Work with Problem* display.

Notes:

- a. For SRCs starting with 6112 or 9337, use the SRC and go to “Chapter 2. Unit Reference Codes” on page 59.
- b. If the message on the display directs you to use SST (System Service Tools), go to “COMM-PIP1” on page 493.

Was the problem corrected by the analysis procedure?

No Yes

↓ **This ends the procedure.**

4. Go to step 6 of this procedure.
5. Analyze Problem (option 1) is not available on the *Work with Problem* display. Perform the following:
 - a. Return to the initial problem log display (F12).
 - b. Select the problem entry by moving the cursor to the problem entry option field and entering option 5 to display details.
 - c. Select F5 to display possible causes.

Note: If F5 is not available, use the customer reported symptom string for customer perceived information about this problem. Then, go to “Using the Product Activity Log”.

- d. Use the list of possible causes as the FRU list and go to step 8 of this procedure.
6. Did problem analysis send you to another entry point in the service information?

No **Yes**

↓ Go to the entry point indicated by problem analysis.

This ends the procedure.

7. Was the problem isolated to a list of failing items?

Yes **No**

↓ Go to “Handling Problems for Non-critical Resources” on page 12.

This ends the procedure.

8. Exchange the failing items one at a time until the problem is repaired. After exchanging each one of the items, verify that the item exchanged repaired the problem.

Notes:

- a. For Failing Items (FIs) and symbolic FRUs, go to “Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation” on page 341.
 - b. When exchanging FRUs, go to “Chapter 6. Removal and Installation Procedures” on page 793. If you are exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 879.
 - c. After exchanging an item, go to “Verifying the Repair” on page 778.
9. Has the problem been resolved?

No **Yes**

↓ **This ends the procedure.**

10. Contact your next level of support.

This ends the procedure.

Using the Product Activity Log

1. Find an entry in the Product Activity Log for the symptom you are using to locate the problem.

- a. On the command line, enter

STRSST

(the Start System Service Tools) command.

Using Problem Log

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.

- b. On the System Service Tools display, select the *Start a Service Tool* option (see the *AS/400 Service Functions*).
- c. Select the *Product Activity Log* option on the Start a Service Tool display.
- d. Select the *Analyze log* option on the Product Activity Log display.
- e. On the Select Subsystem Data display, select the option to view All Logs.

Note: You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

- f. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.
- g. Search the entries on the Log Analysis Report display.

Note: For example, a 6380 Tape Unit error would be identified as follows:

System Reference Code:

6380CC5F

Class: Perm

Resource Name:

TAP01

2. Find an SRC from the Product Activity Log that best matches the time and type of problem the customer reported.

Did you find an SRC that matches the time and type of problem the customer reported?

Yes No

↓ Contact your next level of support.

This ends the procedure.

3. Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

This ends the procedure.

Handling Problems for Non-critical Resources

1. Is there an SRC in an 8 character format available on the Problem Summary form?

Note: If the operator has not filled out the Problem Summary form, go to the problem reporting procedure in the Operator’s Guide for the operating system in use.

No Yes

↓ Go to “Chapter 2. Unit Reference Codes” on page 59.

This ends the procedure.

2. Does the problem involve a workstation resource?

No Yes

↓ Check the following:

- The workstation is operational.
- The cabling/addressing for the workstation is correct.
- Perform any actions indicated in the system operator message.

If you need further assistance, contact your next level of support.

This ends the procedure.

3. Does the problem involve a removable media resource?

No Yes

↓ Go to “Using the Product Activity Log” on page 11 to resolve the problem.

This ends the procedure.

4. Does the problem involve a communications resource?

No Yes

↓

- Are there any system operator messages that indicate a communications-related problem has occurred?

No Yes

↓ Perform any actions indicated in the system operator message.

- If you need further assistance, contact your next level of support.

This ends the procedure.

5. Contact your next level of support.

This ends the procedure.

Analyzing Intermittent Problems

The information in this section helps you correct intermittent problems on the AS/400 system.

Safety

The following danger notice always applies in this intermittent section:

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

Special Tools and Equipment

You must make all ac voltage measurements with a meter that measures true root mean square (RMS) voltage. The Fluke** multimeter present in most IBM tool kits measures true RMS voltage. You can also use Fluke 8060A, 8600A, or equal meters.

You can get equipment for the following conditions from your branch office or installation planning representative:

- If you suspect that the air at the system site is too hot or too cold, you need a thermometer to check the temperature.

Intermittent Problems

- If you suspect the moisture content of the air at the system site is too low or too high, use a wet/dry bulb to check the humidity. See “General Intermittent Problem Checklist” on page 15 for more information.
- If you need to check ac receptacles for correct wiring, you need an ECOS** tester, Model 1023-100, or equivalent tester. The tester lets you quickly check the receptacles. If you cannot find a tester, use an analog multimeter instead. Do not use a digital multimeter.
- To send data with a Licensed Internal Code Trouble Report (LICTR), you need a blank tape for a storage dump. Since you cannot predict when you might need a blank tape, you should always keep a blank tape available.

How to Use This Intermittent Problem Section

You are here because of intermittent problems.

Follow the steps in this procedure to correct an intermittent problem.

1. Read all of the information in “Correcting Intermittent Problems” before you attempt to correct an intermittent problem. Then continue with the next step of this procedure.
2. Perform ALL steps in the “General Intermittent Problem Checklist” on page 15. Then return to this step of this procedure and answer the following question.
Did you correct the intermittent problem?

No Yes

↓ **This ends the procedure.**

3. Is a twinaxial workstation cable causing the problem?

No Yes

↓ See *Twinaxial Cable Troubleshooting Guide* , SY31-0703.

This ends the procedure.

4. Go to “How to Analyze the Intermittent Problem” on page 19.
This ends the procedure.

Correcting Intermittent Problems

What Is an Intermittent Problem?

An intermittent problem is a problem that occurs for a short time, and then goes away. The problem may not occur again until some time in the future, if at all. Intermittent problems cannot be made to appear again easily.

Some examples of intermittent problems are:

- An system reference code (SRC) occurs on the control panel (the System Attention light is on) but disappears when you power off, then power on the system. An entry does not appear in the Product Activity Log.
- An entry appears in the problem log when you use the Work with Problems (WRKPRB) command. For example, the FC 5032 I/O Card Unit becomes powered off, but starts working again when you power it on.
- The workstation I/O processor is in a hang condition but starts working normally when you enter Vary Configuration command (VRYCFG *CTL RESET(*YES)).

Hints for Correcting Intermittent Problems

An intermittent problem can show many different symptoms, so it may be difficult for you to determine the real cause without completely analyzing the failure. To help with this analysis, you should determine as many symptoms as possible.

- The complete SRC and unit reference code (URC) information is necessary to determine the exact failing area and the probable cause.
- Product Activity Log information can provide time and device relationships.
- Information on environmental conditions when the failure occurred can be helpful (for example, an electrical storm occurring when the failure occurred).

Types of Intermittent Problems

There are four major types of intermittent problems:

- Code (PTFs)
 - Licensed Internal Code
 - OS/400 (operating system)
 - Licensed program products
 - Other application software
- Configuration
 - Non-supported hardware that is used on the system
 - Non-supported system configurations
 - Non-supported communication networks
 - Model and feature upgrades that are not performed correctly
 - Moving of down-level hardware from other systems to the AS/400 system
 - Incorrectly configured or incorrectly cabled devices
- Environment
 - Power line disturbance—for example, reduced voltage (sag), a pulse, a surge, or total loss of voltage on the incoming ac voltage line
 - Power line transient—for example, a lightning strike
 - Electrical noise (constant or intermittent)
 - Defective grounding or a ground potential difference
 - Mechanical vibration
- Intermittent hardware failure

Note: If you suspect that an intermittent problem is occurring, increase the log sizes to the largest sizes possible. Select the *Product activity log* option on the Start a Service Tool display (see “Product Activity Log” in the *AS/400 Service Functions* information).

General Intermittent Problem Checklist

The following steps have been successful in correcting intermittent problems on the AS/400 system. Performing these steps removes the known causes of most intermittent problems. Therefore, *it is important that you perform all of these steps*. Some customers have a high availability requirement for the AS/400 system (such as 24 hours a day, 7 days a week). It is very important that you perform all the steps in this checklist to ensure that the system can meet this availability requirement.

1. Discuss the problem with the customer. Look for the following symptoms:
 - An SRC or reference code that goes away when you power off the system, then power on the system.

Intermittent Problems

- Repeated failure patterns that you cannot explain. For example, the problem occurs at the same time of day or on the same day of the week. Look for some type of pattern.
- Failures that started after system installation
- Failures that occurred during customer usage.
- Failures that started after recent service or customer actions, system upgrade, addition of I/O devices, new software, or program temporary fix (PTF) installation.
- Failures occurring only during high system usage.
- Failures occur when people are close to the system or machines are attached to the system.

2. Recommend that the customer install the latest cumulative PTF package, since code PTFs have corrected many problems that seem to be hardware failures. The customer can order the latest cumulative PTF package electronically through Electronic Customer Support or by calling the IBM Software Support Center.

Review the Service Recommendations in the Preventive Service Planning (PSP) listing for any additional HIPER (high impact pervasive) PTFs. This information is available from the IBM Software Support Center and are ordered electronically through Electronic Customer Support using the Send PTF Order command (SNDPTFORD). The *AS/400 Basic System Operation, Administration, and Problem Handling* information contains a chapter on "Working with PTFs".

3. Review the latest hardware service information for symptoms that are related to the problem.

Ask your next level of support for the latest information available.

4. If you have not already done so, use the maintenance package to see the indicated actions for the symptom described by the customer. Attempt to perform the online problem analysis procedure first. If this is not possible, such as when the system is down, go to "Starting Point for All Problems" on page 4.

Use additional diagnostic tools, if necessary, and attempt to cause the problem to occur again.

Note: Ensure that the service information you are using is at the same level as the operating system. For example, do not use Version 3 Release 1 manuals when servicing a system with software at Version 3 Release 6 level.

5. Check the site for causes of electrical noise that match the start of the intermittent problems. Ask the customer such questions as:
 - Have any external changes or additions, such as building wiring, air conditioning, or elevators been made to the site?
 - Has any arc welding occurred in the area?
 - Has any heavy industrial equipment, such as cranes, been operating in the area?
 - Have there been any thunderstorms in the area?
 - Have the building lights become dim?
 - Has any equipment been relocated, especially computer equipment?

Find the source of the electrical noise and prevent the noise from getting into the system.

Intermittent Problems

6. Ensure that site temperature and humidity are compatible with system specifications (see the *Physical Planning Reference* information).

Acceptable operating conditions are:

- Temperature: 10° C to 37.8° C (50° F to 100° F)
- Humidity: 8% to 80% relative humidity

The best operating conditions are:

- Temperature: 23° C (73° F)
- Humidity: 40% to 60% relative humidity

7. Check the air quality in the computer room:

- Look for dust on top of objects. Dust particles in the air cause poor electrical connections and may cause DASD failures.
- Smell for unusual odors in the air. Some gases can corrode electrical connections.

8. Ask the customer if any large vibration (caused by thunder, an earthquake, an explosion, or road construction) occurred in the area at the time of the failure.

Note: A failure that is caused by vibration is more probable if the AS/400 system is on a raised floor.

9. Ensure that all ground connections are tight. These items reduce the effects of electrical noise.

Check the ground connections by doing the following:

- a. Look in the system installation information for instructions on how to connect the ground straps to the frame bar and the correct hardware to use. The hardware is part of the ship group kit.
- b. Ensure that a star washer is between the head of the screw and the ground strap.
- c. Hold the ground strap and attempt to turn it counter-clockwise around the screw.

Does the screw loosen?

No **Yes**

↓ Tighten the screw more, then repeat this step.

- d. Measure the resistance between a conductive place on the frame to building ground or to earth ground. The resistance **must** be 1.0 ohm or less.
10. All cables that leave each frame **must** be fastened to the bottom bar of each frame with a cable tie or clamp.
 - Ensure that you pull the cable ties tight enough to fasten the cable to the frame bar tightly.

A loose cable can be accidentally pulled with enough force to unseat the logic card in the frame to which the cable is attached. If the system is powered on, the logic card could be destroyed.
 11. Where required, ensure that ferrite cores and their covers are installed on both ends of all IPI-3 signal cables (DFCI cables) that leave the frame. The ferrite core can be installed up to 15 cm (6 inches) from the connector; the recommended distance is 8.5 cm (3.4 inches).

The ferrite core is part 62X1146. The cover for the ferrite core is part 6495272.

Intermittent Problems

Note: If the IPI-3 signal cables do not leave the frame, ensure that they do not hang below the bottom of the frame. If they do, tie them up inside the frame.

12. Ensure that all workstation and communications cables meet IBM specifications:
 - All connections are tight.
 - Any twinaxial cables that are not attached to devices must be removed.
 - The lengths and numbers of connections in the cables must be correct.
 - Ensure that lightning protection is installed on any twinaxial cables that enter or leave the building.
13. Review the service entries to determine what service actions were performed on the system (see the "Appendix A. Problem Summary Form" on page 1007).
14. Review the entries in the problem log (WRKPRB) and look for problems that were reported to the user.
15. Review the entries in the Product Activity Log and look for a pattern:
 - SRCs on multiple input-output processors (IOP) occurring at the same time
 - SRCs that have a common "time of day" or "day of week" pattern
 - Log is wrapping (hundreds of recent entries and no older entries)

Check the Product Activity Log sizes and increase them if they are smaller than recommended.
16. Review the entries in the history log (Display Log (DSPL0G)) and look for a change that matches the start of the intermittent problems.
17. Check your records and the service log to ensure that the latest engineering changes are installed on the system and on all system I/O devices.
18. Ensure that the hardware configuration is correct and that the model configuration rules have been followed
 - Use the display hardware configuration service function (under SST or DST) to check for any missing or failed hardware.
19. Was a manufacturing engineering service (MES), system upgrade, feature, or any other field bill of material or feature field bill of material installed just before the intermittent problems started occurring?
No Yes
 - ↓ Review the installation instructions to ensure that each step was performed correctly. Then continue with the next step of this procedure.
20. Is the problem associated with a storage device?
No Yes
 - ↓ Ensure that the customer is using the correct storage device cleaning procedures and good storage media. Then continue with the next step of this procedure.
21. Ensure that all the items in "Appendix C. Preventive Maintenance (PM) Checklist" on page 1015 are being performed regularly.

Performing the following helps prevent intermittent thermal checks:

 - Ensuring that the AMDs on all disk units, tape units, and power supplies are working
 - Exchanging all air filters as recommended
22. If necessary, review the intermittent problems with your next level of support and installation planning representative.

Ensure that all installation planning checks were made on the system. Because external conditions are constantly changing, the site may need to be checked again.

This ends the procedure.

How to Analyze the Intermittent Problem

1. Is a reference code associated with the intermittent problem?

No Yes

↓ Go to “Chapter 2. Unit Reference Codes” on page 59 and find the reference code. If the actions in the unit reference code tables do not correct the intermittent problem, return here and continue with the next step of this procedure.

2. Is a symptom associated with the intermittent problem?

No Yes

↓ Go to “Intermittent Symptom Table”. If the Intermittent Symptom Table does not correct the intermittent problem, return here and continue with the next step of this procedure.

3. Go to “Failing Area INT-PIP Table” on page 20. If the Failing Area INT-PIP Table does not correct the intermittent problem, return here and continue with the next step of this procedure.

4. Send the data you have collected to your next level of support so that an Authorized Program Analysis Report (APAR) or a Licensed Internal Code Trouble Report (LICTR) can be written.

This ends the procedure.

Intermittent Symptom Table

1. In the *Symptom* column, find the failure symptom.
2. In the *Description* column, read the description of the failure.
3. In the *INT-PIPs* column, perform the INT-PIPs shown for that symptom beginning at “Intermittent Problem Isolation Procedures” on page 498.

Although an INT-PIP may correct the intermittent problem, use your best judgment to determine if you should perform the remainder of the INT-PIPs shown for the symptom.

If the symptom for the intermittent problem you have is not listed, go to “Failing Area INT-PIP Table” on page 20.

Symptom	Description	INT-PIPs
System becomes powered off.	The system was operating correctly, then the system became powered off. SRC 0000 111x may occur when this happens, but the SRC information is lost if the customer performs an IPL after the failure and does not record the SRC. Notes: 1. If the system has no workstation I/O processor cards, omit INT-PIP5. 2. If the system has an uninterruptible power supply (UPS), perform “INT-PIP9 Utility Power and Battery Power Units” on page 503.	5, 9

Intermittent Problems

Symptom	Description	INT-PIPs
System stops.	The system is powered on but is not operating correctly. No SRC or error code is displayed. The System Attention light is off. The Processor Activity lights may be on or off. Noise on the power-on reset line can cause the processor to stop. Note: Ensure that the latest service processor PTF for your release is installed.	18
System or subsystem runs slow.	The system or the subsystem is not processing at its normal speed (for example, QBATCH).	20

If the symptom for the intermittent problem you have is not listed, go to “Failing Area INT-PIP Table”.

Failing Area INT-PIP Table

Use this table only if you do not have an SRC or cannot find your symptom in the “Intermittent Symptom Table” on page 19.

Note: Before performing any INT-PIPs in Table 2, first perform all of the steps in “General Intermittent Problem Checklist” on page 15 for all failing areas.

1. Under *Failing Area*, find the area of failure.
2. Look down the column for the area of failure until you find an X. Look across to the *INT-PIP* column and perform the INT-PIP indicated.
3. If the INT-PIP does not correct the intermittent problem, continue down the column for the area of failure until you have performed all of the INT-PIPs shown for the failing area.

Although an INT-PIP may correct the intermittent problem, use your best judgment to determine if you should perform the remainder of the INT-PIPs shown for the failing area.

Table 2. Failing Area INT-PIPs

Failing Area						INT-PIP
Power	WSIOP	DASD MSIOP	Comm	Processor Bus	Tape/Optical	Perform all steps in
X	X	X	X	X	X	“General Intermittent Problem Checklist” on page 15
X	X			X		“INT-PIP5 External Noise on Twinaxial Cables” on page 500
	X	X	X	X	X	“INT-PIP7 Electromagnetic Interference (EMI)” on page 500
X						“INT-PIP9 Utility Power and Battery Power Units” on page 503
X						“INT-PIP14 Station Protectors” on page 506
		X				“INT-PIP16 Licensed Internal Code” on page 506

Table 2. Failing Area INT-PIPs (continued)

X	X	X	X	X	X	"INT-PIP18 PTFs Not Installed" on page 506
	X	X	X	X	X	"INT-PIP20 Performance Problems" on page 506

Analyzing IPL Problems

Start Analyzing IPL Problems Here

Table 3. Start Table

Symptom	What You Should Do
You cannot perform an IPL from the system control panel (no system reference code (SRC)).	Go to "Cannot Perform IPL from the Control Panel (No SRC)"
You cannot perform an IPL at a specified time (no SRC).	Go to "Cannot Perform IPL at a Specified Time (No SRC)" on page 22
You cannot start an IPL from a remote location (no SRC).	Go to "Cannot Perform IPL from a Remote Location (No SRC)" on page 26
The IPL did not complete.	Go to "System Hangs or Loops (No SRC)" on page 30
The system cannot automatically perform an IPL after a local power failure occurred.	Go to "Cannot Automatically Perform an IPL after a Power Failure" on page 36
After a system power loss, the IPL function takes longer than usual.	Check the system Product Activity Log for battery power unit problems.

Cannot Perform IPL from the Control Panel (No SRC)

1. Perform the following:
 - a. Verify that the power cable is plugged into the power outlet.
 - b. Verify that power is available at the customer's power outlet.
2. Start an IPL by doing the following:
 - a. Select Manual mode and either IPL type A or B on the control panel (see "Selecting IPL Type, Mode, and Speed" on page 765).
 - b. Power on the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).

Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

3. Have all the units in the system become powered on that you expected to become powered on?

Yes No

↓ Go to "Starting Point for All Problems" on page 4 and find the symptom that matches the problem.

This ends the procedure.

4. Is an SRC displayed on the control panel?

Yes No

IPL Problems

- ↓ Exchange the following FRUs one at a time (see “Chapter 6. Removal and Installation Procedures” on page 793):
 - a. System control panel
 - b. SPCN card **Attention:** Perform steps 4c1 and 4c2 below before exchanging the SPCN card.
 - c. AC Module **Attention:** Before exchanging the AC Module perform the following:
 - 1) **Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 757.
 - 2) Perform “SPCN-PIP5” on page 623. Then return to this step and continue.

This ends the procedure.

- 5. Go to “Chapter 2. Unit Reference Codes” on page 59 and use the displayed SRC to correct the problem.

This ends the procedure.

Cannot Perform IPL at a Specified Time (No SRC)

To correct the IPL problem, perform this procedure until you determine the problem and can perform an IPL at a specified time.

- 1. Perform the following:
 - a. Verify that the power cable is plugged into the power outlet.
 - b. Verify that power is available at the customer’s power outlet.
- 2. Power on the system in normal mode, (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Does the IPL complete successfully?

Yes No

- ↓ Go to “Starting Point for All Problems” on page 4.

This ends the procedure.

- 3. Have all the units in the system become powered on that you expected to become powered on?

Yes No

- ↓ Go to “Starting Point for All Problems” on page 4 and find the symptom that matches the problem.

This ends the procedure.

- 4. Verify the system date and time by doing the following:
 - a. Enter DSPSYSVAL QIPLDATTIM (the Display System Value command) on the command line.

Observe the system value parameters.

Note: The system value parameters are the date and time the system operator requested a timed IPL.

```

Display System Value
System: S0000000
System value . . . . . : QIPLDATTIM

Description . . . . . : Date and time to automatically IPL

IPL date . . . . . : MM/DD/YY
IPL time . . . . . : HH:MM:SS

```

Figure 1. Display for QIPLDATTIM

- b. Enter DSPSYSVAL QDATE (the Display System Value command) on the command line.

Check the system values for the date.

```

Display System Value
System: S0000000
System value . . . . . : QDATE

Description . . . . . : System date

Date . . . . . : MM/DD/YY

```

Figure 2. Display for QDATE

- c. Enter DSPSYSVAL QTIME (the Display System Value command) on the command line.

Check the system values for the time.

```

Display System Value
System: S0000000
System value . . . . . : QTIME

Description . . . . . : Time of day

Time . . . . . : HH:MM:SS

```

Figure 3. Display for QTIME

Does the operating system have the correct present date and time?

No **Yes**

↓ Go to step 6 of this procedure.

5. Change the system values to the correct date and time by doing the following:
- a. To set the correct date, do the following:
 - 1) Enter CHGSYSVAL QDATE VALUE ('mmddy') (the Change System Value command) on the command line.
 - 2) Set the date by entering


```
mm=month
dd=day
yy=year
```
 - 3) Press the Enter key.
 - b. To set the correct time, do the following:

IPL Problems

- 1) Enter CHGSYSVAL QTIME VALUE('hhmmss') (the Change System Value command) on the command line.
 - 2) Set the time by entering
hh=24 hour time clock
mm=minutes
ss=seconds
 - 3) Press the Enter key.
6. Verify that the system can perform an IPL at a specified time by doing the following:
- a. Set the time to 5 minutes past the present time by entering CHGSYSVAL SYSVAL(QIPLDATTIM) VALUE('mdddy hhmmss') (the Change System Value command) on the command line.

mm = month to power on
dd = day to power on
yy = year to power on

hh = hour to power on
mm = minute to power on
ss = second to power on

- b. Power off the system by entering
PWRDWSYS *IMMED

(the Power Down System Immediate command) on the command line.

- c. Wait 5 minutes.

Does the IPL start at the time you specified?

No **Yes**

↓ **This ends the procedure.**

7. Power on the system in normal mode, (see "Powering Off and Powering On the System or Expansion Tower" on page 761).

Does the IPL complete successfully?

Yes **No**

↓ Go to "Starting Point for All Problems" on page 4.

This ends the procedure.

8. Find an entry in the Service Action Log that matches the time, SRC, and resource that compares to the reported problem.

- a. On the command line, enter
STRSST

(the Start System Service Tools) command.

If you cannot get to SST, select DST (see "Accessing Dedicated Service Tools" in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.

- b. Select *Start a Service Tool*.
- c. On the Service Tools display, select the *Hardware Service Manager* (see the *AS/400 Service Functions*).

- d. Select the *Work with service action log* option on the Hardware Service Manager display.
- e. On the *Select Timeframe* display, change the From: Date and Time to a date and time prior to when the customer reported having the problem.
- f. Find an entry that matches one or more conditions of the problem:
 - 1) SRC
 - 2) Resource
 - 3) Time
 - 4) FRU list (choose the *Display the failing item information* option to display the FRU list).

Notes:

- a. All entries in the Service Action Log represent problems that require a service action. It may be necessary to handle any problem in the log even if it does not match the original problem symptom.
- b. The information displayed in the date and time fields are the time and date for the first occurrence of the specific system reference code (SRC) for the resource displayed during the time range selected.

Did you find an entry in the Service Action Log?

No **Yes**

↓ Go to step 11 of this procedure.

9. **DANGER**

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Exchange the following parts one at a time (see “Chapter 6. Removal and Installation Procedures” on page 793).

After exchanging each part, go to step 6 of this procedure to verify that the system can perform an IPL at a specified time.

Attention: Before exchanging any part, power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

- MFIOF card (FI00120)
- System control panel
- System control panel cable

Then continue with the next step of this procedure.

Notes:

- a. Attempt to perform an IPL after exchanging each part.
 - b. If you exchange the control panel or the MFIOF card, you must set the correct date and time (perform step 5 of this procedure).
10. If the IPL does not complete successfully after you exchange all of the parts listed in step 9 of this procedure, ask your next level of support for assistance.
This ends the procedure.
11. Was the entry isolated (is the letter Y in the Isolated column)?

Yes **No**

↓ Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC that is indicated in the log.

IPL Problems

This ends the procedure.

12. Display the failing item information for the Service Action Log entry. Items at the top of the failing item list are more likely to fix the problem than items at the bottom of the list.

Exchange the failing items one at a time until you have repaired the problem. After exchanging each one of the items, verify that the item that is exchanged repaired the problem.

Notes:

- a. For Failing Items (FIs) and symbolic FRUs, go to “Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation” on page 341.
- b. When exchanging FRUs, go to “Chapter 6. Removal and Installation Procedures” on page 793. If you are exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 879.
- c. After exchanging an item, go to “Verifying the Repair” on page 778.

Once the problem has been resolved, close the log entry by selecting *Close a NEW entry* on the Service Actions Log Report display.

This ends the procedure.

Cannot Perform IPL from a Remote Location (No SRC)

To correct the IPL problem, perform this procedure until you determine the problem and can perform a remote IPL.

1. Is the system powered on and operating?

Yes No

↓ Go to step 4 of this procedure.

2. Enter DSPSYSVAL QRMTIPL (the Display System Value command) on the command line.

Does the operating system have the correct value of 1 for the remote power-on function?

```
Display System Value
System: S0000000
System value . . . . . : QRMTIPL
Description . . . . . : Remote power on and IPL
Value . . . . . : 0 = Not allowed
1 = Allowed
```

Figure 4. Example of Remote Power-on Configuration Display for QRMTIPL

Yes No

↓ Perform the following:

- a. Change the value to 1 by entering CHGSYSVAL QRMTIPL (the Change System Value command) on the command line.
- b. Power off the system by entering PWRDWN SYS *IMMED (the Power Down System Immediate command) on the command line.
- c. Select Normal mode on the control panel.
- d. Verify that an IPL from a remote location completes successfully by going to step 8 of this procedure.

3. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
4. Verify that all external communications functions are operational, such as:
 - The customer is using the correct telephone number.
 - The telephone line is operating (dial tone).
 - The telephone line is connected or plugged into the connector.
 - The modem is powered on.
 - The modem cable is connected or plugged into the connector.
 - The modem switches are set, or jumper wires are installed for the type of communications network being used.
5. Is Normal mode on the control panel selected?

No Yes

↓ Go to step 7 of this procedure.

6. Ensure that the keystick is inserted and select Normal mode on the control panel.
7. Verify that the cable that connects the modem is fastened correctly.
8. Perform the following:
 - a. Dial the telephone number for the system.
 - b. Wait at least 40 seconds for the system to answer.

Note: The Ring Indicator signal is used to start the remote IPL. If the caller hangs up the telephone before the system disconnects the line (indicated by the return of the dial tone), the IPL will not complete. The caller may hear other tones before the dial tone.

Was the telephone answered in 40 seconds?

Yes No

↓ Go to step 10 of this procedure.

9. Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

10. The IPL from a remote location was not successful. The following steps show you how to start a manual IPL and how to analyze the remote IPL problem. Select Manual or Normal mode on the control panel.

Note: If you want the Use Dedicated Service Tools (DST) display shown after the IPL, select Manual mode on the control panel.

11. Start an IPL by powering on the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).

Does the IPL complete successfully?

Yes No

↓ Go to "Starting Point for All Problems" on page 4.

This ends the procedure.

12. Did you verify that the operating system has the correct value of 1 for the remote power-on function in step 2 of this procedure?

No Yes

IPL Problems

- ↓ Go to step 14 of this procedure.
13. Enter DSPSYSVAL QRMTIPL (the Display System Value command) on the command line.
- Does the operating system have the correct value of 1 for the remote power-on function?

```
Display System Value
System: S0000000
System value . . . . . : QRMTIPL
Description . . . . . : Remote power on and IPL
Value . . . . . : 0 = Not allowed
1 = Allowed
```

Figure 5. Example of Remote Power-on Configuration Display for QRMTIPL

- Yes** **No**
- ↓ Perform the following:
- Change the value to 1 by entering CHGSYSVAL QRMTIPL (the Change System Value command) on the command line.
 - Power off the system by entering PWRDWN SYS *IMMED (the Power Down System Immediate command) on the command line.
 - Select Normal mode on the control panel.
 - Verify that an IPL from a remote location completes successfully by going to step 8 of this procedure.
14. Start the communications verification function and run a cable wrap test on the suspected cable by doing the following:
- Enter
VFYCMN

(the Verify Communications command) on the command line to show the communications verification display.
- Note:** For more information on the Verify Communications command, see “Verification Procedures” in the *AS/400 Service Functions* information.
- On the next display, enter the line description name for the communications line that has the remote power-on cable attached.
 - Select the *Cable test* option from the display that shows a list of tests that can be performed on a communications line.
 - Follow all instructions (such as run problem analysis or attach the wrap connector).
- Did you find the communications problem by using the above procedure?
- No** **Yes**
- ↓ Perform the following:
- Exchange the failing item indicated (see “Chapter 6. Removal and Installation Procedures” on page 793).
 - Verify that an IPL from a remote location completes successfully by going to step 8 of this procedure.
15. Find an entry in the Service Action Log that matches the time, SRC, and resource that compares to the reported problem.

- a. On the command line, enter
STRSST

(the Start System Service Tools) command.

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.

- b. Select *Start a Service Tool*.
- c. On the Service Tools display, select the *Hardware Service Manager* (see the *AS/400 Service Functions*).
- d. Select the *Work with service action log* option on the Hardware Service Manager display.
- e. On the *Select Timeframe* display, change the From: Date and Time to a date and time prior to when the customer reported having the problem.
- f. Find an entry that matches one or more conditions of the problem:
- 1) SRC
 - 2) Resource
 - 3) Time
 - 4) FRU list (choose the *Display the failing item information* option to display the FRU list).

Notes:

- a. All entries in the Service Action Log represent problems that require a service action. It may be necessary to handle any problem in the log even if it does not match the original problem symptom.
- b. The information displayed in the date and time fields are the time and date for the first occurrence of the specific system reference code (SRC) for the resource displayed during the time range selected.

Did you find an entry in the Service Action Log?

No **Yes**

↓ Go to step 18 of this procedure.

16. Find an entry in the Product Activity Log that matches the time, SRC, and resource that compares to the reported problem (see “Using the Product Activity Log” on page 11).

Did you find an entry in the Product Activity Log?

No **Yes**

↓ Go to step 19 of this procedure.

17. **DANGER**

To prevent the system from powering on automatically during service procedures, select Manual or Secure mode on the system unit control panel. (RSFTD214)

Exchange the following parts one at a time (see “Chapter 6. Removal and Installation Procedures” on page 793):

Attention: Before exchanging any part, power off the system.

IPL Problems

Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 757 before disconnecting or removing the cryptographic I/O processor.

- Communications cable
- Communications adapter card
- Modem
- Multiple Function Input-Output Processor (MFIOP)

Notes:

- a. Attempt to perform an IPL from a remote location after exchanging each part.
- b. If you exchange the MFIOP card, you must set the correct date and time. To set the correct date and time, perform Cannot Perform IPL at a Specified Time (No SRC), step 4 on page 22

If the remote IPL does not complete successfully after you exchange all the parts listed, ask your next level of support for assistance.

This ends the procedure.

18. Was the entry isolated (is the letter Y in the Isolated column)?

Yes No

- ↓ Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC that is indicated in the log.

This ends the procedure.

19. Display the failing item information for the log entry. Items at the top of the failing item list are more likely to fix the problem than items at the bottom of the list.

Exchange the failing items one at a time until you repair the problem. After exchanging each one of the items, verify that the item that is exchanged repaired the problem.

Notes:

- a. For Failing Items (FIs) and symbolic FRUs, go to “Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation” on page 341.
- b. When exchanging FRUs, go to “Chapter 6. Removal and Installation Procedures” on page 793. If you are exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 879.
- c. After exchanging an item, go to “Verifying the Repair” on page 778

Once the problem has been resolved, close the log entry.

This ends the procedure.

System Hangs or Loops (No SRC)

You are here because:

- System operation is hung (very low processor activity indicated on the control panel with workstation(s) input inhibited).
- System operation is in a loop (very high processor activity indicated on the control panel with workstation(s) input inhibited).

A system hang or loop is the result of either:

- A software failure.

- Software improperly handling a hardware failure.

This procedure assumes that the system completed an IPL and that at least one user had successfully signed on before the condition occurred.

The purpose of this procedure is to:

1. Help you report the problem with enough error data to permit an APAR investigation to resolve the software problem.
2. Provide you with direction to identify any possible hardware failure.

Perform the following:

1. Is the system operational from **any** workstation?

No	Yes
-----------	------------

↓	Work with the system operator to complete the appropriate problem handling procedures. See:
---	---

- *Basic System Operation, Administration, and Problem Handling*
- *System Problem Determination-SSP*

This ends the procedure.

2. Perform the following to collect and record the failure data (see the *AS/400 Service Functions*).

Note: If any of the data collection steps fail, go to step 3 of this procedure.

- a. Select Manual mode (see “Selecting IPL Type, Mode, and Speed” on page 765).
- b. Select Function 25 on the control panel and press the Enter key.
- c. Select Function 26 on the control panel and press the Enter key.
- d. Select Function 50 on the control panel and press the Enter key to stop the system. After a short time, SRC D141900F displays and indicates the system is stopped.
- e. Select Function 51 on the control panel and press the Enter key. The display shows 51**.
- f. Select 5100 on the control panel and press the Enter key. Record the value displayed on the control panel (first part of the address for the instruction to be executed next on processor 0).
- g. Select 5101 on the control panel and press the Enter key. Record the value displayed on the control panel (second part of the address for the instruction to be executed next on processor 0).
- h. Select 5102 on the control panel and press the Enter key. Record the value displayed on the control panel (first part of the address for the instruction being executed on processor 0).
- i. Select 5103 on the control panel and press the Enter key. Record the value displayed on the control panel (second part of the address for the instruction being executed on processor 0).

Notes:

- 1) If the system has multiple processors, the preceding steps can be repeated for each processor by continuing the sequence with the selection of 5104 for the next processor.
- 2) When you have completed the data collection, exit the 51xx extended functions by rolling back to the 51** display and pressing the Enter key.

IPL Problems

- j. Include the information recorded above in the APAR data
3. Perform the following to initiate a Main Store Dump (see the *AS/400 Service Functions*).
 - a. Select Function 22 on the control panel and press the Enter key.
 - b. Select Function 22 on the control panel and press the Enter key again.
 - c. Wait for the dump to disk to complete (this may take several minutes).

Is 0000 0000 displayed on the control panel for more than 30 seconds?

No Yes

↓ The Main Store Dump cannot complete successfully. The MFIOP is in a hang condition.

Go to step 6 of this procedure.
4. Does the Main Store Dump complete successfully (A1xx 300x displayed)?

Yes No

↓ Go to step 7 of this procedure.
5. Work with the customer and your next level of support to collect the Main Store Dump and APAR information. See:
 - *Basic System Operation, Administration, and Problem Handling*
 - *System Problem Determination-SSP*
 - a. Record the SRC information available in the Main Store Dump Summary.
 - b. Copy the main storage dump to media (see *AS/400 Service Functions*).

Copy the main storage dump to removable media or disk. Copying to disk is faster than copying to most types of tape devices. To successfully copy to disk, you must have enough space available in auxiliary storage to hold the main storage dump.
 - c. Go to step 7 of this procedure.
6. Perform an MFIOP dump (see *AS/400 Service Functions*, “Performing an IOP Storage Dump to Disk”). Select Function 70 on the control panel and press the Enter key.
7. Perform the following:
 - a. Power off the system.
 - b. Power on the system in Manual mode.

Does the system IPL complete to DST?

No Yes

↓ Go to “Using the Service Action Log” on page 8.

This ends the procedure.
8. Does the system stop with a reference code displayed on the control panel?

No Yes

↓ Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

This ends the procedure.
9. Did a “Missing Disk Units” display appear?

No Yes

↓ Go to “Using the Service Action Log” on page 8.

This ends the procedure.

10. Did the “Main Store Dump Manager” display appear?

No Yes

- ↓ Record the SRC information available in the Main Store Dump Summary (see *AS/400 Service Functions*).

Then, go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

This ends the procedure.

11. Contact your next level of support.

This ends the procedure.

Logical Partition Hangs or Loops (No SRC)

This procedure is for the case where the hanging or looping partition does not display an SRC in the Primary partition’s *Work with Partition Status* screen.

You are here because:

- Logical partition operation is hung (very low processor activity indicated on the control panel with workstation(s) input inhibited).
- Logical partition operation is in a loop (very high processor activity indicated on the control panel with workstation(s) input inhibited).

A logical partition hang or loop is the result of either:

- A software failure.
- Software improperly handling a hardware failure.

This procedure assumes that the logical partition completed an IPL and that at least one user had successfully signed on before the condition occurred.

The purpose of this procedure is to:

1. Help you report the problem with enough error data to permit an APAR investigation to resolve the software problem.
2. Provide you with direction to identify any possible hardware failure.

Perform the following:

1. Is the logical partition operational from **any** workstation?

No Yes

- ↓ Work with the system operator to complete the appropriate problem handling procedures. See:

- *Basic System Operation, Administration, and Problem Handling*
- *System Problem Determination-SSP*

This ends the procedure.

2. Perform steps 2a through 2i on page 34 on the system’s physical panel and **NOT** on the *Partition Status* screen in the Primary partition. Collect and record the failure data (see the *AS/400 Service Functions*).

Note: If any of the data collection steps fail, go to step 4 of this procedure.

- a. Select Manual mode (see “Selecting IPL Type, Mode, and Speed” on page 765).
- b. Select Function 25 on the control panel and press the Enter key.

IPL Problems

- c. Select Function 26 on the control panel and press the Enter key.
- d. Select Function 50 on the control panel and press the Enter key to stop the system. After a short time, SRC D141900F displays and indicates the system is stopped.
- e. Select Function 51 on the control panel and press the Enter key. The display shows 51**.
- f. Select 5100 on the control panel and press the Enter key. Record the value displayed on the control panel (first part of the address for the instruction to be executed next on processor 0).
- g. Select 5101 on the control panel and press the Enter key. Record the value displayed on the control panel (second part of the address for the instruction to be executed next on processor 0).
- h. Select 5102 on the control panel and press the Enter key. Record the value displayed on the control panel (first part of the address for the instruction being executed on processor 0).
- i. Select 5103 on the control panel and press the Enter key. Record the value displayed on the control panel (second part of the address for the instruction being executed on processor 0).

Notes:

- 1) If the system has multiple processors, the preceding steps can be repeated for each processor by continuing the sequence with the selection of 5104 for the next processor.
 - 2) When you have completed the data collection, exit the 51xx extended functions by rolling back to the 51** display and pressing the Enter key.
3. Go to the Primary partition's main menu.
 - a. Select *Work with Partitions*.
 - b. Select *Display Partition Information*.
 - c. Select *Display Partition Processing Configuration*.
 - d. Select option 10 and continue selecting option 10 until you determine which processor or processors failed. Record the failing processor numbers as part of the data collected for the APAR.
 - e. Record this information with the APAR data that you recorded in step 2 on page 33 of this procedure.
 4. Perform the following to initiate a Main Store Dump (see the *AS/400 Service Functions*).
 - a. Go to the Primary partition's SST/DST screen.
 - b. Select *Work with Partitions*.
 - c. Select *Work with Partition Status*.
 - d. Select *More Options*.
 - e. Select *Force Main Store Dump*.
 - f. Wait for the dump to disk to complete (this may take several minutes).

Is 0000 0000 displayed on the partition status screen for more than 30 seconds?

No	Yes
-----------	------------

↓ The Main Store Dump cannot complete successfully. The MFIOP is in a hang condition.

Go to step 7 of this procedure.

5. Does the Main Store Dump complete successfully (A1xx 300x displayed on the Monitor Partition Status screen)?

Yes No

↓ Go to step 8 of this procedure.

6. Work with the customer and your next level of support to collect the Main Store Dump and APAR information. See:
- *Basic System Operation, Administration, and Problem Handling*
 - *System Problem Determination-SSP*
- a. Record the SRC information available in the Main Store Dump Summary.
- b. Copy the main storage dump to media (see *AS/400 Service Functions*).
Copy the main storage dump to removable media or disk. Copying to disk is faster than copying to most types of tape devices. To successfully copy to disk, you must have enough space available in auxiliary storage to hold the main storage dump.
- c. Go to step 8 of this procedure.
7. Perform an MFIOP dump (see *AS/400 Service Functions*, “Performing an IOP Storage Dump to Disk”). Select Function 70 on the control panel and press the Enter key.
8. Perform the following:
- a. Power off the logical partition.
 - b. Power on the logical partition in Manual mode.

Does the logical partition IPL complete to DST?

No Yes

↓ Go to “Using the Service Action Log” on page 8.

This ends the procedure.

9. Does the logical partition stop with a reference code displayed on the *Partition Status* screen?

No Yes

↓ Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

This ends the procedure.

10. Did a “Missing Disk Units” display appear?

No Yes

↓ Go to “Using the Service Action Log” on page 8.

This ends the procedure.

11. Did the “Main Store Dump Manager” display appear?

No Yes

↓ Record the SRC information available in the Main Store Dump Summary (see *AS/400 Service Functions*).

Then, go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

This ends the procedure.

12. Contact your next level of support.

This ends the procedure.

IPL Problems

Cannot Automatically Perform an IPL after a Power Failure

1. You must select either Normal mode or Auto mode on the control panel when power is returned to the system.

Is Normal or Auto mode on the control panel selected?

Yes **No**

↓ Ensure the keystick is inserted and select Normal or Auto mode on the control panel.

This ends the procedure.

2. Use

DSPSYSVAL

(the Display System Value command) to verify that the system value under QPWRRSTIPL on the Display System Value display is equal to 1.

Is QPWRRSTIPL equal to 1?

Yes **No**

↓ Use
 CHGSYSVAL

(the Change System Value command) to set QPWRRSTIPL equal to 1.

This ends the procedure.

3. **Attention:** Before exchanging any part, power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Exchange the following parts one at a time (see “Chapter 6. Removal and Installation Procedures” on page 793):

- a. System control panel
- b. SPCN card (BKSPCN)
- c. MFIOP card

Note: If you exchange the control panel or the MFIOP card, you must set the system date (QDATE) and time (QTIME).

This ends the procedure.

Analyzing Power Problems

Start Analyzing Power Problems Here

Table 4. Start Table

Symptom	What You Should Do
Power Problems	
A power reference code (1xxx xxxx) is displayed on the control panel of the FC 504x System Unit Expansion or of a 9337 Disk Array Subsystem.	Look at the 4 rightmost characters on the FC 504x or 9337 control panel. These 4 characters are the unit reference code. Go to “(1xxx) System Power Control Network (SPCN) Reference Codes” on page 65 of this manual and find the reference code.

Table 4. Start Table (continued)

Symptom	What You Should Do
A system operator message indicates a power problem, and a power reference code (1xxx xxxx) is displayed on the control panel of the FC 504x System Unit Expansion or of a 9337 Disk Array Subsystem.	Look at the 4 rightmost characters on the FC 504x or 9337 control panel. These 4 characters are the unit reference code. Go to “(1xxx) System Power Control Network (SPCN) Reference Codes” on page 65 of this manual and find the reference code.
A power reference code (1xxx xxxx) is displayed on the control panel of a FC 507x System Unit Expansion, a FC 508x Storage Expansion Unit or FC 5065 or 5066 expansion tower.	Look at the 4 rightmost characters on the FC 507x, FC 508x or FC 5065 or 5066 control panel. These 4 characters are the unit reference code. Go to “(1xxx) System Power Control Network (SPCN) Reference Codes” on page 65 of this manual and find the reference code.
A system operator message indicates a power problem, and a power reference code (1xxx xxxx) is displayed on the control panel of a FC 507x System Unit Expansion, an FC 508x Storage Expansion Unit or FC 5065 or 5066 expansion tower.	Look at the 4 rightmost characters on the FC 507x, FC 508x or FC 5065 or 5066 control panel. These 4 characters are the unit reference code. Go to “(1xxx) System Power Control Network (SPCN) Reference Codes” on page 65 of this manual and find the reference code.
The system attention light is on, there may or may not be an system reference code (SRC) displayed on the control panel.	In addition to function 11, SRCs can also appear in function 5. Look at function 5 and record the SRC shown. Go to “(1xxx) System Power Control Network (SPCN) Reference Codes” on page 65 of this manual and find the reference code.
System unit does not become powered on (Frame Power Ready light is not on).	Go to “Cannot Power On System Unit (No SRC)”.
Secondary frame or frames do not become powered on (Frame Power Ready light is not on).	Go to “Cannot Power On Secondary Frame (No SRC)” on page 41.
Frames became powered on, but one or more frame-mounted units do not become powered on.	Go to “Rack Becomes Powered On, but a Rack-Mounted Unit Does Not Become Powered On” in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.
The system or a frame does not become powered off.	Go to “System or Frame Cannot Become Powered Off” on page 55.
A frame-mounted unit does not become powered off.	Go to “Rack-Mounted Unit Cannot Become Powered Off” in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.
The system does not remain powered on during a loss of incoming ac voltage.	Go to “POW-PIP3” on page 568.

Cannot Power On System Unit (No SRC)

To correct the power-on problem, perform this procedure until you correct the problem and you can power on the system.

The following steps are for the system unit, unless other instructions are given.

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

1. Attempt to power on the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Does the system power on?

Power Problems

No Yes

↓ Go to step 12 of this procedure.

2. Is the background light for the Data display on the control panel on?

Note: The background light is a dim (yellow) light in the Data area on the control panel.

No Yes

↓ Go to step 8 of this procedure.

3. **DANGER**

Dangerous voltage being measured. (RSFTD005)

Perform the following:

- a. Disconnect the mainline ac power cable from the customer's ac power outlet.
- b. Use a multimeter to measure the ac voltage at the customer's ac power outlet.

Note: Some system models have more than one mainline ac power cable. For these models, disconnect all the mainline ac power cables and measure the ac voltage at all ac power outlets before answering the following question.

Is the ac voltage from 200 V ac to 240 V ac ?

Note:

Yes No

↓ Perform the following:

- a. Inform the customer that the ac voltage at the power outlet is not correct.
- b. Reconnect the mainline ac power cables to the power outlet when the ac voltage at the power outlet is correct.

This ends the procedure.

4. Are the mainline ac power cables from the ac module to the customer's ac power outlet connected and seated correctly at both ends?

Yes No

↓ Perform the following:

- a. Connect the mainline ac power cables correctly at both ends.
- b. Go to step 1 of this procedure.

5. **DANGER**

Dangerous voltage being measured. (RSFTD005)

Perform the following:

- a. Disconnect the mainline ac power cables from the ac module.
- b. Use a multimeter to measure the ac voltage at the ac module end of the mainline ac power cables.

6. Is the ac voltage from 200 V ac to 240 V ac?

Note:

Yes No

- ↓ Perform the following:
 - a. Exchange the mainline ac power cable.
 - b. Go to step 1 of this procedure.

7. Perform the following:
 - a. **Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 757.
 - b. Perform “SPCN-PIP5” on page 623. Then return to this step and continue.
 - c. Disconnect the mainline ac power cable from the customer’s ac power outlet.

Note: On Model 65x disconnect both mainline ac power cables.

- d. Exchange one of the following FRUs:

Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor *for any reason* causes the loss of the master encryption key.

Read “Important Cryptographic I/O Processor Information” on page 757 before disconnecting or removing the cryptographic I/O processor.

 - 1) System unit control panel card (CTLPNL)
 - 2) SPCN card (BKSPCN)
 - 3) AC module (ACMODUL)
 - 4) System unit control panel cable
 - 5) System unit SPCN frame to frame cable
 - 6) System unit backplane (BACKPLN)
- e. Reconnect the mainline ac power cables to the power outlet.
- f. Attempt to power on the system.
- g. If the system powers on, the FRU you exchanged is the failing item.
If the system does not power on, repeat steps 7c through 7g of this procedure and exchange the next FRU in the list.
- h. If the system does not power on after exchanging all the FRUs in the list, ask your next level of support for assistance.

This ends the procedure.

8. Perform the following:
 - a. Power off the system.
 - b. Ensure the keystick is inserted and select Manual mode on the system unit control panel.
 - c. Attempt to power on the system.

Does the system power on?

Yes No

- ↓ Go to step 7 of this procedure.

9. Perform the following:
 - a. Power off the system.
 - b. Display the selected IPL mode on the system unit control panel.

Is the selected mode the same mode the customer was using when the power-on failure occurred?

No Yes

Power Problems

↓ Go to step 14 of this procedure.

10. Perform the following:

- a. Power off the system.
- b. Select the mode on the system unit control panel the customer was using when the power-on failure occurred.
- c. Attempt to power on the system.

Does the system power on?

Yes No

↓ Go to step 14 of this procedure.

11. Exchange system unit control panel card (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

12. Perform the following:

- a. Power off the system.
- b. Display the selected IPL mode on the system unit control panel.

Table 5. Function 01 for Systems with an Electronic Keystick

Function/Data	Description
01 _ _ _ _ _	Use increment or decrement button and scroll to function 01.
01 _ _ _ A _ _	Press ENTER to enter function 01 Selected IPL Type display. Valid types, which appear in the sixth character position of the Function/Data display, are A, B, C, D.

Is the selected mode the same mode the customer was using when the power-on failure occurred?

No Yes

↓ Go to step 14 of this procedure.

13. Perform the following:

- a. Power off the system.
- b. Select the mode on the system unit control panel the customer was using when the power-on failure occurred.
- c. Attempt to power on the system.

Does the system power on?

Yes No

↓ Exchange the system unit control panel card (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

14. Is a function 11 SRC displayed on the system unit control panel?

No Yes

↓ Go to “Starting Point for All Problems” on page 4.

This ends the procedure.

15. Is the Power Ready light on continuously?

Note: The Power Ready light blinks during a normal power-on sequence. It should not blink for more than 1 minute.

No Yes

↓ Go to step 17 of this procedure.

16. Perform the following:
 - a. **Attention:** Read "Important Continuously Powered Main Storage (CPM) Information" on page 757.
 - b. Perform "SPCN-PIP5" on page 623.
 - c. Return here and continue with the next step of this procedure.
 - d. Disconnect the mainline ac power cable from the customer's ac power outlet.
 - e. Exchange one of the following FRUs:
 - 1) SPCN card (BKSPCN)
 - 2) AC module (ACMODUL)
 - 3) System unit control panel card (CTLPNL)
 - f. Reconnect the mainline ac power cable to the power outlet.
 - g. Attempt to power on the system.
 - h. If the system powers on, the FRU you exchanged is the failing item.
If the system does not power on, repeat steps 16d through 16h of this procedure and exchange the next FRU in the list.
 - i. If the system does not power on after exchanging all the FRUs in the list, ask your next level of support for assistance.

This ends the procedure.

17. Is there more than one frame on the system?

Yes No

↓ Go to step 19 of this procedure.

18. Do all of the frames on the system become powered on?

Yes No

↓ Go to "Cannot Power On Secondary Frame (No SRC)".

This ends the procedure.

19. Continue the IPL.

Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

20. Go to "Starting Point for All Problems" on page 4.

This ends the procedure.

Cannot Power On Secondary Frame (No SRC)

You are here because of a secondary frame that cannot become powered on and may be displaying a 1xxx-C62E.

1. Does the frame that cannot become powered on contain a 3490 or a 3590 Tape Unit?

No Yes

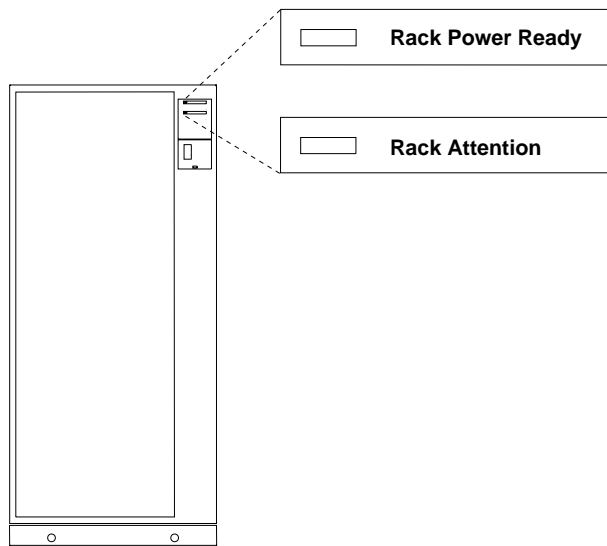
↓ Go to the service information for the specific tape unit to analyze the problem.

This ends the procedure.

Power Problems

2. Is the secondary frame a Stage 2 frame?

Note: Stage 2 frames have a Rack Attention light on the frame control panel.



RV2A176-2

Yes No

↓ Go to step 33 of this procedure.

3. Starting from J15 or J16 on the system unit, go to the first frame in the frame interconnect cable sequence on which one of the following conditions is present:
 - The Power Ready light is off.
 - The Power Ready light is blinking.
 - A frame-mounted unit displays a power reference code of 1xxx xx2E.

Is the Power Ready light blinking?

No Yes

↓ A normal power-on sequence may be in process. If any Power Ready light is blinking for more than 1 minute, exchange the power control compartment (PCC) on the frame with the blinking light. See "Removal and Installation Procedures" in the *Repair and Parts* information for the system.

This ends the procedure.

4. Is the Attention light on or blinking?

No Yes

↓ Go to step 18 of this procedure.

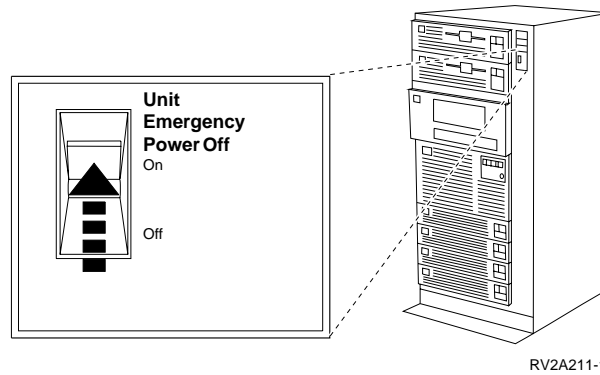
5. Does a frame-mounted unit display a power reference code of 1xxx xx2E?

No Yes

↓ Exchange the PCC in the failing frame (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).

This ends the procedure.

6. Is the Unit Emergency Power Off (UEPO) switch on the secondary frame set to the On position?



No Yes

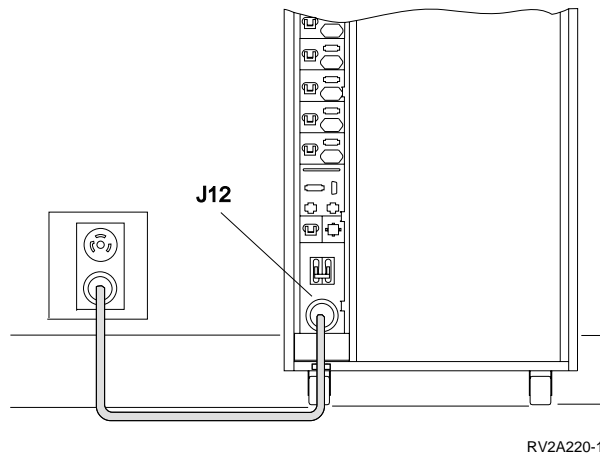
↓ Go to step 8 of this procedure.

7. Perform the following:
- Check with the customer to determine why the UEPO switch is set to the Off position.
 - Set the UEPO switch to the On position.
 - Go to step 30 of this procedure.
8. Is the mainline ac power cable from J12 on the PCC to the customer's ac power outlet connected and seated correctly at both ends?

Note: J12 may not be present on machines in some countries.

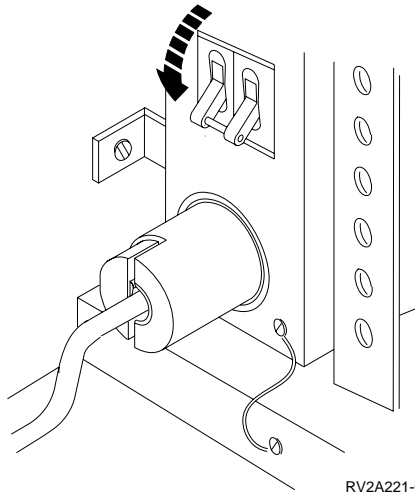
No Yes

↓ Go to step 13 of this procedure.



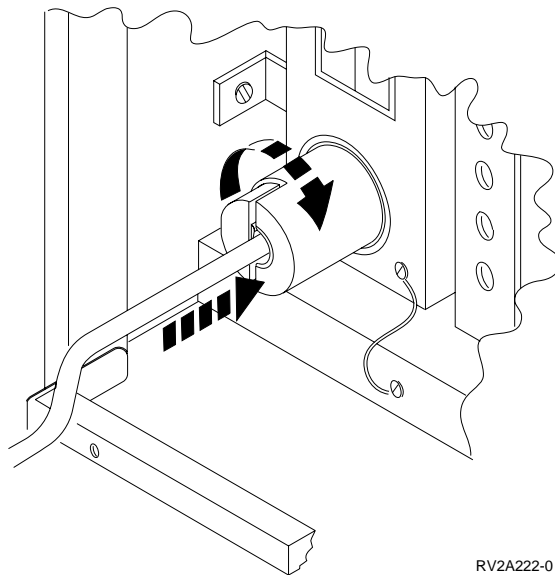
9. Perform the following:
- Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
 - Set circuit breaker CB1 on the PCC to the O (off) position.

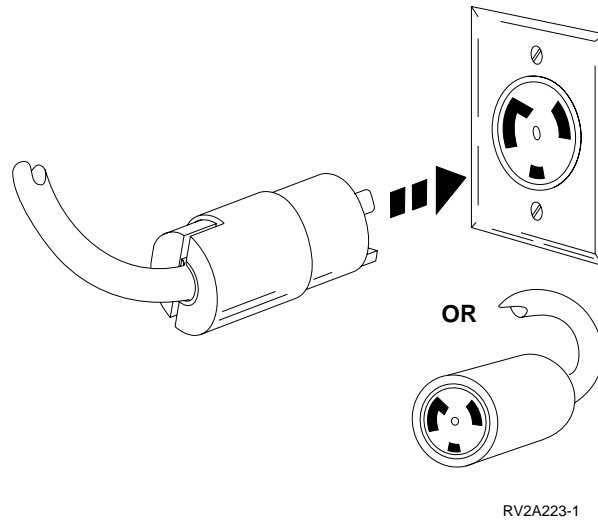
Power Problems



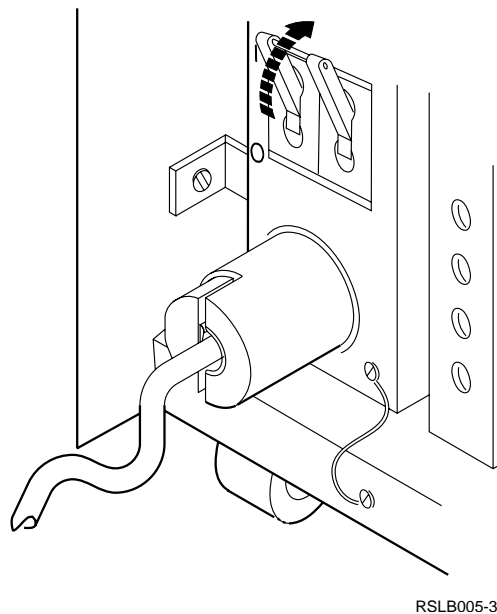
10. Connect the mainline ac power cable correctly at both ends.

Note: The connectors shown may not be present on machines in some countries.





11. Set circuit breaker CB1 to the I (on) position.



12. Power on the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Does the failing frame become powered on?

No Yes

↓ Go to step 23 of this procedure.

13. **DANGER**

Dangerous voltage being measured. (RSFTD005)

- a. Power off the system.
- b. Use a multimeter to measure the ac voltage at the customer’s ac power outlet.

Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

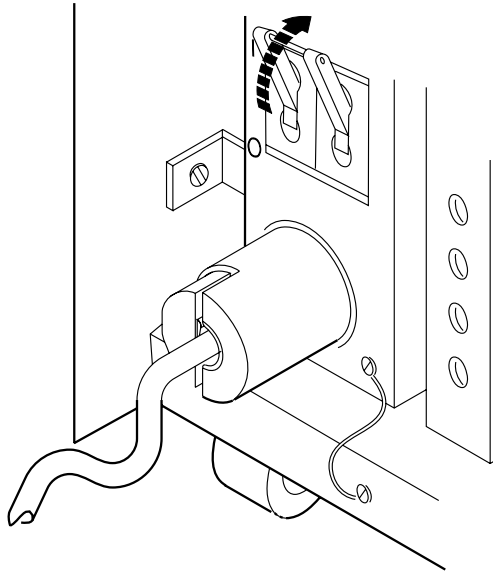
Power Problems

Yes No

- ↓ Inform the customer that the ac voltage at the power outlet is not correct.

This ends the procedure.

14. Is circuit breaker CB1 on the PCC of the failing frame set to the I (on) position?



RSLB005-3

No Yes

- ↓ Exchange the following FRUs, one at a time (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system):

- a. PCC
- b. Frame control panel
- c. Frame control panel cable

This ends the procedure.

15. Set circuit breaker CB1 on the PCC to the I (on) position.

16. Power on the system.

Does CB1 remain in the I (on) position?

Yes No

- ↓ Exchange the power control compartment (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system).

This ends the procedure.

17. Does the failing frame become powered on?

No Yes

- ↓ **This ends the procedure.**

18. Is the Attention light blinking?

Note: This may be a normal condition during a power-on sequence.

Yes No

↓ Go to step 21 of this procedure.

19. Does the Attention light continue to blink for more than 1 minute?

Yes No

↓ **This ends the procedure.**

20. Go to step 23 of this procedure.

21. The Attention light is on. This may be a normal condition.
Does the Attention light remain on for more than 1 minute?

Yes No

↓ **This ends the procedure.**

22. Exchange the following FRUs, one at a time (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system):

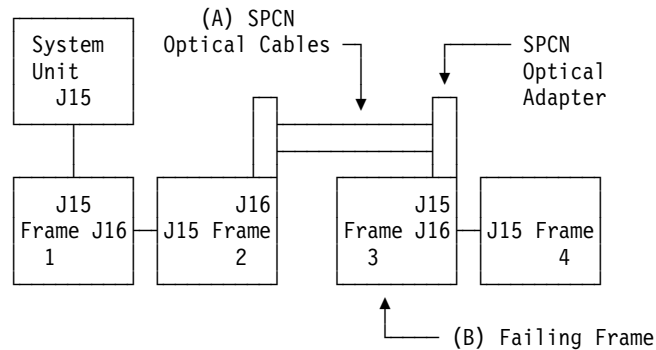
- a. PCC
- b. AC module
- c. Frame control panel
- d. SPCN frame-to-frame cable

This ends the procedure.

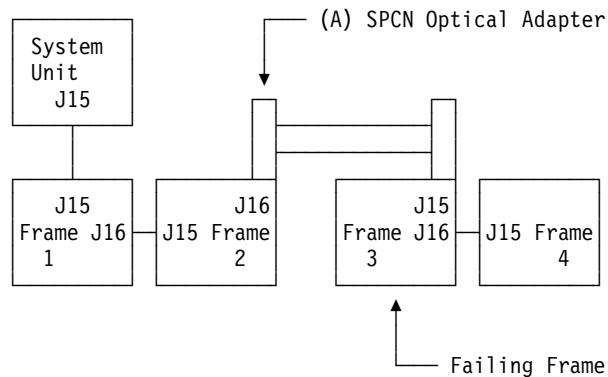
23. Do SPCN optical cables A connect the failing frame B to the preceding frame in the string?

Yes No

↓ Go to step 27 of this procedure.



24. Remove the SPCN optical adapter A from the preceding frame in the string that cannot become powered on (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).



25. Perform the following:

- a. Connect the negative lead of a multimeter to the system frame ground.

Power Problems

- b. Connect the positive lead of a multimeter to pin 2 of J16 on the PCC, AC module, or SPCN card in the frame from which you removed the SPCN optical adapter in step 24 of this procedure.

Notes:

- 1) If you are working on a system unit, the cable may be connected to either J15 or J16.
 - 2) Use an insulated probe or jumper when performing the voltage readings.
- c. Note the voltage reading on pin 2.
 - d. Move the positive lead of the multimeter to pin 3 of J16 on the PCC.
 - e. Note the voltage reading on pin 3.

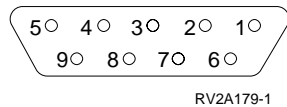


Figure 6. J16 on PCC, AC module, or SPCN card

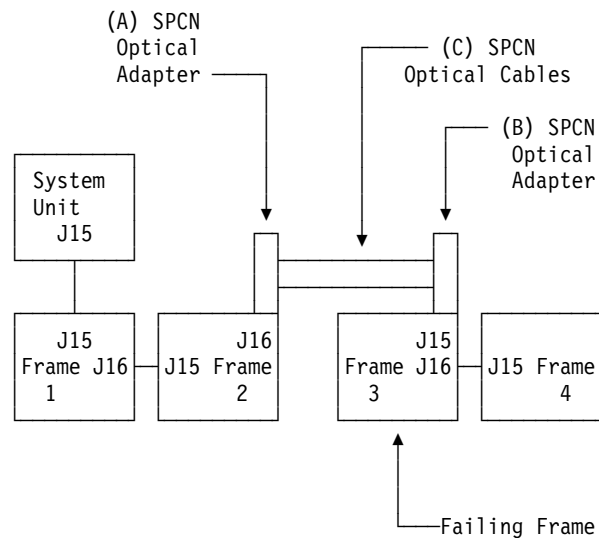
Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

Yes **No**

- ↓ Exchange the power control compartment, AC module, or SPCN card (BKSPCN for the system or TWRCARD in a FC 5065 or 5066 tower) in the frame from which you removed the SPCN optical adapter (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system).

This ends the procedure.

26. Exchange the following FRUs, one at a time (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system):
 - a. PCC in the failing frame (first frame with a failure indication)
 - b. PCC, AC module, or SPCN card (BKSPCN for the system or TWRCARD in a FC 5065 or 5066 unit) in the preceding frame in the string
 - c. SPCN optical adapter **A** in the preceding frame in the string
 - d. SPCN optical adapter **B** in the failing frame
 - e. SPCN optical cables **C** between the preceding frame in the string and the failing frame



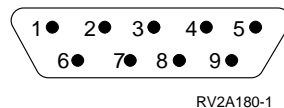
This ends the procedure.

27. Perform the following:

- a. Power off the system.
- b. Disconnect the SPCN frame-to-frame cable from J15 on the PCC of the first secondary frame that cannot become powered on.
- c. Connect the negative lead of a multimeter to the system frame ground.
- d. Connect the positive lead of the multimeter to pin 2 of the SPCN cable.

Note: Use an insulated probe or jumper when performing the voltage readings.

- e. Note the voltage reading on pin 2.
- f. Move the positive lead of the multimeter to pin 3 of the SPCN cable.
- g. Note the voltage reading on pin 3.



Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

No Yes

↓ Exchange the following FRU's one at a time (see "Chapter 6. Removal and Installation Procedures" on page 793 in the Repair and Parts information for the system):

- 1) PCC in the failing frame.
- 2) PCC, AC module or SPCN panel card in the preceding frame in the frame string.
- 3) SPCN frame-to-frame cable.

This ends the procedure.

28. Perform the following:

- a. Follow the SPCN frame-to-frame cable back to the preceding frame in the string.
- b. Disconnect the SPCN cable from J16 on the PCC, AC module, or SPCN card.
- c. Connect the negative lead of a multimeter to the frame ground.

Power Problems

- d. Connect the positive lead of a multimeter to pin 2 of J16.

Note: Use an insulated probe or jumper when performing the voltage readings.

- e. Note the voltage reading on pin 2.
- f. Move the positive lead of the multimeter to pin 3 of J16.
- g. Note the voltage reading on pin 3.

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

No **Yes**

- ↓ Exchange the SPCN frame to frame cable power control compartment, AC module, or SPCN card in the frame from which you removed the SPCN optical adapter (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).

This ends the procedure.

29. Exchange the power control compartment, AC module, or SPCN card (BKSPCN for the system or TWRCARD in a FC 5065 or 5066 tower) from which you disconnected the SPCN cable in step 28 of this procedure (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).

This ends the procedure.

30. Power on the system.

Do all of the frames on the system become powered on?

Yes **No**

- ↓ Go to "Starting Point for All Problems" on page 4 to analyze problems for frames that do not become powered on.

This ends the procedure.

31. Continue the IPL (see "Initial Program Load (IPL) Information" in the *AS/400 Service Functions* information).

Does the IPL complete successfully?

Yes **No**

- ↓ Go to "Starting Point for All Problems" on page 4.

This ends the procedure.

32. You have corrected the problem.

Select the mode on the control panel the customer wants.

This ends the procedure.

33. Power on the system.

34. Starting from J15 or J16 on the system unit, go to the first frame in the frame interconnect cable sequence that does not power on.

35. Is the background light for the Data display on the control panel on or are there any characters displayed on the control panel?

Note: The background light is a dim (yellow) light in the Data area on the control panel.

No **Yes**

- ↓ Go to step 44 of this procedure.

36. DANGER

Dangerous voltage being measured. (RSFTD005)

Use a multimeter to measure the ac voltage at the customer's ac power outlet.
Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

Yes No

↓ Inform the customer that the ac voltage at the power outlet is not correct.

This ends the procedure.

37. Is the mainline ac power cable from the ac module or battery power unit to the customer's ac power outlet connected and seated correctly at both ends?

Yes No

↓ Connect the mainline ac power cable correctly at both ends.

This ends the procedure.

38. DANGER

Dangerous voltage being measured. (RSFTD005)

Perform the following:

- a. Disconnect the mainline ac power cable from the ac module or battery power unit.
- b. Use a multimeter to measure the ac voltage at the ac module or battery power unit end of the mainline ac power cable.
- c. AC modules (part 87G6300 and 21H7697) must have 200 V to power on.

Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

Yes No

↓ Exchange the mainline ac power cable.

This ends the procedure.

39. Does the frame you are working on have an ac module installed?

Yes No

↓ Go to 42.

40. Is the ac module leadscrew seated correctly (clockwise) (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system)?

Yes No

↓ Perform the following:

- a. Seat the ac module leadscrew correctly (clockwise).
- b. Reconnect the mainline ac power cable to the ac module.

This ends the procedure.

41. Exchange the ac module (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).

This ends the procedure.

42. Use a multimeter to measure the ac voltage at the battery power unit charger outlets.

Is the ac voltage from 200 V ac to 240 V ac?

Power Problems

Yes No

↓ Exchange the battery power supply unit charger, — PN 97H7316.

This ends the procedure.

43. Exchange the following parts one at a time.

- SPCN card unit (TWRCARD).
- Display unit (CTLPNL).
- Power supply (PWRSPLY), with a new unit, replace 1 of the power supplies 1,2, or 3 until the failing unit is found.
- Cables.

This ends the procedure.

44. Is there an SRC displayed on the control panel for the frame that does not power on?

Yes No

↓ Replace the SPCN card (BKSPCN)

This ends the procedure.

45. Is the SRC 1xxx xx2E?

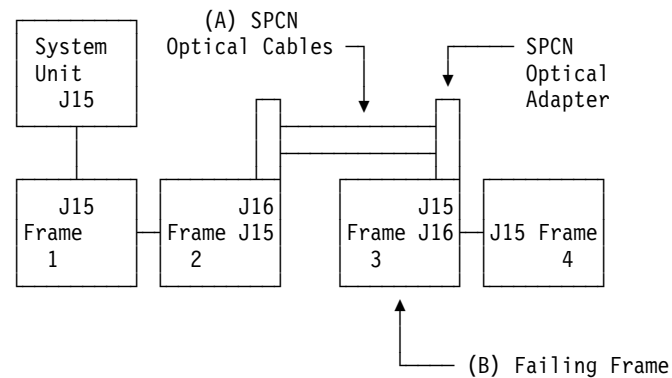
Yes No

↓ Go to “Starting Point for All Problems” on page 4.

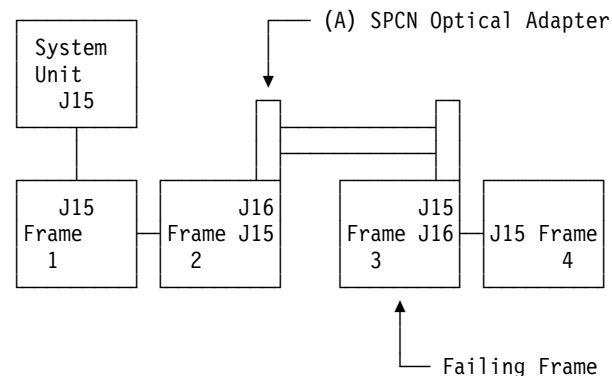
46. Do SPCN optical cables **A** connect the failing frame **B** to the preceding frame in the string?

Yes No

↓ Go to step 50 of this procedure.



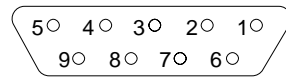
47. Remove the SPCN optical adapter **A** from the preceding frame in the string that cannot become powered on. See “Removal and Installation Procedures” in the *Repair and Parts* information for the system.



48. Perform the following:
- a. Connect the negative lead of a multimeter to the system frame ground.
 - b. Connect the positive lead of a multimeter to pin 2 of J16 on the ac module or SPCN card in the frame from which you removed the SPCN optical adapter in step 47 of this procedure.

Notes:

- 1) If you are working on a system unit, the cable may be connected to either J15 or J16.
 - 2) Use an insulated probe or jumper when performing the voltage readings.
- c. Note the voltage reading on pin 2.
 - d. Move the positive lead of the multimeter to pin 3 of J16 on the ac module or SPCN card.
 - e. Note the voltage reading on pin 3.



RV2A179-1

Figure 7. J16 on ac module

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

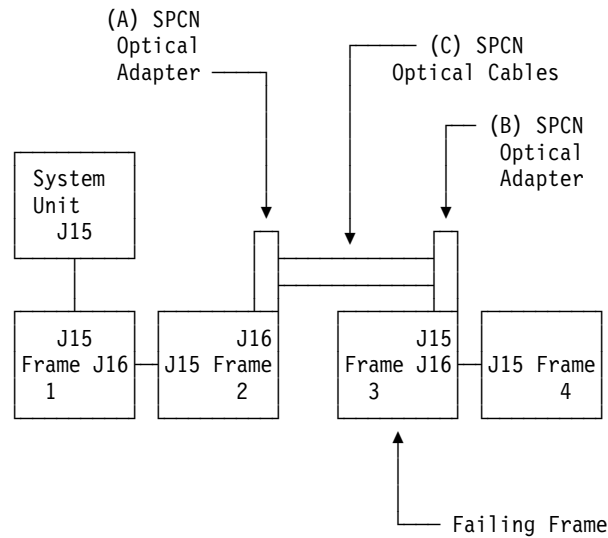
Yes No

- ↓ Exchange the ac module or SPCN card (BKSPCN for the system or TWRCARD in a FC 5065 or 5066 tower) in the frame from which you removed the SPCN optical adapter (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system).

This ends the procedure.

49. Exchange the following FRUs, one at a time (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system):
- a. AC module or SPCN card (TWRCARD) in the failing frame (first frame with a failure indication)
 - b. AC module or SPCN card (BKSPCN or TWRCARD) in the preceding frame in the string
 - c. SPCN optical adapter **A** in the preceding frame in the string
 - d. SPCN optical adapter **B** in the failing frame
 - e. SPCN optical cables **C** between the preceding frame in the string and the failing frame

Power Problems



This ends the procedure.

50. Does the SPCN frame-to-frame cable coming from the system unit connect to J15 on the secondary frame (where the power on light is off or the frame control panel displays a power reference code of 1xxx xxxx)?

Yes No

- ↓ Correct the connection by connecting the SPCN frame-to-frame cable coming from the system unit to J15 of the secondary frame.

This ends the procedure.

51. Perform the following:
- Power off the system.
 - Disconnect the SPCN frame-to-frame cable from J15 on the ac module or SPCN card of the first frame that cannot become powered on.
 - Connect the negative lead of a multimeter to the system frame ground.
 - Connect the positive lead of the multimeter to pin 2 of the SPCN cable.

Note: Use an insulated probe or jumper when performing the voltage readings.

- Note the voltage reading on pin 2.
- Move the positive lead of the multimeter to pin 3 of the SPCN cable.
- Note the voltage reading on pin 3.

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

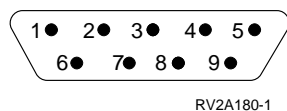


Figure 8. SPCN cable connector.

No Yes

- ↓ Exchange the following FRUs, one at a time (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system):
- AC module or SPCN card (TWRCARD) in the failing frame.

- AC module or SPCN card (BKSPCN or TWRCARD) in the preceding frame in the frame string.
- SPCN frame-to-frame cable.

This ends the procedure.

52. Perform the following:

- a. Follow the SPCN frame-to-frame cable back to the preceding frame in the string.
- b. Disconnect the SPCN cable from J16 on the ac module or SPCN card.
- c. Connect the negative lead of a multimeter to the system frame ground.
- d. Connect the positive lead of a multimeter to pin 2 of J16 on the AC module or SPCN card.

Note: Use an insulated probe or jumper when performing the voltage readings.

- e. Note the voltage reading on pin 2.
- f. Move the positive lead of the multimeter to pin 3 of J16 on the AC module or SPCN card.
- g. Note the voltage reading on pin 3.

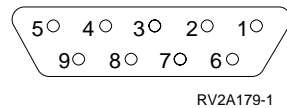


Figure 9. J16 on ac module or SPCN card

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

No **Yes**

↓ Exchange the following FRUs, one at a time (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system):

- a. SPCN frame-to-frame cable
- b. AC module or SPCN card (TWRCARD) in the failing frame
- c. AC module or SPCN card (BKSPCN or TWRCARD) in the preceding frame of the frame string

This ends the procedure.

53. Exchange the ac module or SPCN card (BKSPCN or TWRCARD) from which you disconnected the SPCN cable in step 52 of this procedure. See “Removal and Installation Procedures” in the *Repair and Parts* information for the system.

This ends the procedure.

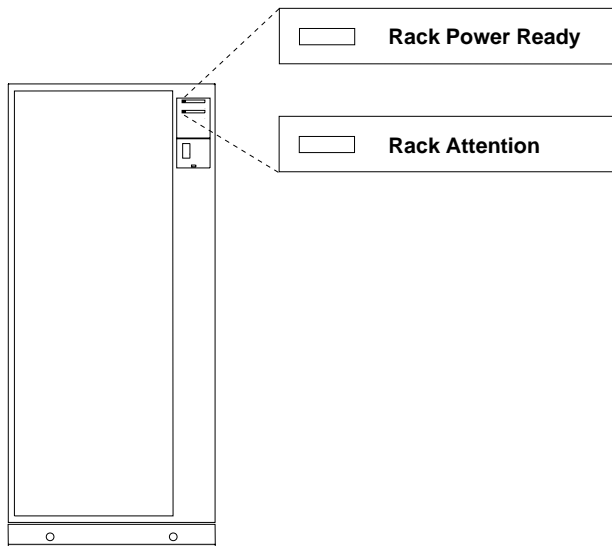
System or Frame Cannot Become Powered Off

This procedure analyzes a failure of the normal command and control panel procedures to power off the system unit or a secondary frame.

Attention: To prevent loss of data, ask the customer to verify that no interactive jobs are running before you perform this procedure.

1. Is the power-off problem on a secondary frame with Stage 2 hardware?

Power Problems



RV2A176-2

Yes No

↓ Go to step 3 of this procedure.

2. Go to "System or Rack Cannot Become Powered Off" in the *FC 504x Problem Analysis and Repair and Parts* information.

This ends the procedure.

3. Is the power off problem on the system unit?

No Yes

↓ Go to step 6 of this procedure.

4. Ensure that the SPCN cables that connect the frames are connected and seated correctly at both ends.

Does the frame power off, and is the Power On light off?

No Yes

↓ **This ends the procedure.**

5. Go to step 7 of this procedure.

6. Perform "Powering Off the System" on page 761. Then return here and answer the following question.

Does the system unit or frame power off, and is the Power On light off?

No Yes

↓ The system is not responding to normal power off procedures, which could indicate a Licensed Internal Code problem.

Ask your next level of support for assistance.

This ends the procedure.

7. Perform the following:

- a. Verify that the battery power unit is not powering the system unit or frame.
- b. Remove the battery power unit (see "Chapter 6. Removal and Installation Procedures" on page 793).
- c. **Be sure there are no jobs running on the system. After removing the battery power unit, CPM is not available.**

Disconnect the mainline ac power cable.

- d. Exchange the following FRUs in the system unit or frame, one at a time (see “Chapter 6. Removal and Installation Procedures” on page 793):

If the system unit is failing:

- 1) Control panel
- 2) SPCN card (BKSPCN)
- 3) AC module
- 4) Control panel cable
- 5) Internal I/O processor frame cable

If a secondary frame is failing:

- 1) The ac module, (TWRCARD in a FC 5065 or 5066 tower) or the battery unit (BATRY) in the frame that will not power off
- 2) The ac module or SPCN card (BKSPCN for the system or TWRCARD in a FC 5065 or 5066 tower) in the frame preceding the frame that will not power off
- 3) SPCN frame-to-frame cable

This ends the procedure.

Power Problems

Chapter 2. Unit Reference Codes

How to Use This Section

This procedure uses an SRC (System Reference Code) on the problem summary form to:

- Find a list of possible failing items.
- Point to additional isolation procedures (if available).

An SRC reported through a message to the system operator may be used when a Service Action log or Problem log entry is not available.

1. Were you directed here from another procedure, including Starting Point for All Problems?

Yes No

↓ Go to "Starting Point for All Problems" on page 4.

2. Use Figure 10 to:

- a. Determine which SRC table to use.

The SRC table name is the same as the SRC type. The tables in this section are arranged in hexadecimal sequence.

The reference code tables only support 8-character SRC formats. If the SRC provided is in a 4-character format, contact your next level of support for assistance.

- b. Determine the URC (Unit Reference Code) from the SRC reported.

The URCs are listed within the SRC tables. The URCs are arranged in hexadecimal sequence, with numeric characters listed before alphabetic characters. For example, URCs 0001 through 0009 are listed before URCs 000A through 000F.

System Control Panel Display or Problem Summary Form Information

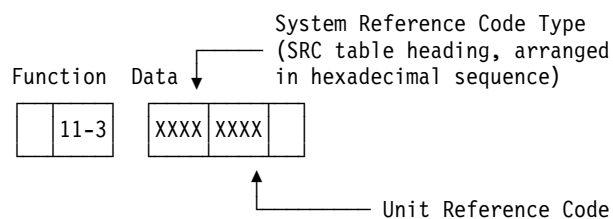


Figure 10. Determining the SRC and URC

3. You will be directed to find the appropriate SRC table for your SRC.
To correct the problem, perform the action indicated for the URC in the *Description/Action* column of the table. If this does not correct the problem, exchange the failing items or parts listed in *Failing Item* column in the order that they are listed.
If no action is indicated in the SRC table, exchange the failing items or parts listed in the table.

Reference Code Tables

Notes:

- a. When exchanging the failing items, use the “Chapter 6. Removal and Installation Procedures” on page 793.
- b. When instructed to perform problem isolation procedures, go to “Chapter 4. Problem Isolation Procedures (PIPs)” on page 433.
- c. Any additional information you need to complete the procedure may be found in “Chapter 5. Locations, Addresses, and Service Reference Information” on page 693.

The failing item listed first should be exchanged first. If exchanging the first failing item does not correct the problem, reinstall the original item and exchange the next failing item listed. Continue to exchange and reinstall the failing items, one at a time, until the problem is corrected. If exchanging the failing items does not correct the problem, ask your next level of support for assistance.

Now, go to “List of SRC Tables” and find the SRC table.

Follow the instructions in the SRC table. The list contains all SRC tables for critical resources available at the time this edition was published. If you cannot find the SRC table, return here and continue with step 4.

This ends the procedure.

4. You are at this step because you did not find the reference code table for your SRC in the “List of SRC Tables”. Refer to “SRC Exception Table” on page 62 to find the SRC.

Note:

- If the 4 leftmost characters of the SRC are listed in SRC Exception Table, follow the instructions listed.
- If the 4 leftmost characters of the SRC are **not** listed in “SRC Exception Table” on page 62, additional information may be available by doing the following:
 - Look for the SRC information on-line.
 - Find any supplemental information for the system and look for the SRC table in that information. In some cases the supplemental information may have been inserted into the pages of the SRC tables.

If you do not find any information for the SRC, ask your next level of support for assistance.

List of SRC Tables

SRC Exception Table	62	(2624) Magnetic Storage I/O Processor	
(0000) Control Panel Reference Codes.	63	Reference Codes	125
Control Panel Failing Items	65	Magnetic Storage I/O Processor Failing Items	129
(1xxx) System Power Control Network (SPCN)		(2644) Tape I/O Processor Reference Codes	130
Reference Codes	65	Tape I/O Processor Failing Items	135
System Power Control Network Failing Items	116	(266A) Workstation Adapter Reference Codes	136
(2440) Magnetic Tape Subsystem Reference		Workstation Adapter Failing Items	139
Codes	117	(2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810,	
Magnetic Tape Subsystem Failing Items	119	2824, 6532 - 6534, 6751, 6754) Reference Codes	139
(2621) SCSI I/O Processor Reference Codes	119	Failing Items	146
SCSI I/O Processor Failing Items	124	(2740, 2748) Reference Codes	147
		Failing Items	151

Reference Code Tables

(2746) Twinaxial Workstation Adapter Reference Codes	151	Magnetic Storage I/O Processor Failing Items 237	
Workstation Adapter Failing Items	152	(6501) Magnetic Storage I/O Processor Reference Codes	237
(283C, 283D) Device Backplane Reference Codes	152	Magnetic Storage I/O Processor Failing Items	240
Failing Items	153	(6502, 6512) Magnetic Storage I/O Processor Reference Codes	240
(3422) Tape Unit Reference Codes	153	Magnetic Storage I/O Processor Failing Items	245
Tape Unit Failing Items	155	(6513, 6530) Tape I/O Processor and MSIOF Reference Codes	245
(3430) Tape Unit Reference Codes	156	Tape I/O Processor and MSIOF Failing Items	249
Tape Unit Failing Items	158	(660x, 671x, 673x) Disk Unit Reference Codes	250
(3480) Tape Unit Reference Codes	158	Disk Unit Failing Items	252
Tape Unit Failing Items	161	(6A58) Workstation Adapter Console Reference Codes	253
(3490) Tape Unit Reference Codes	161	Workstation Adapter Console Failing Items	254
Tape Unit Failing Items	167	(6A58,6A59) Workstation Adapter Console Reference Codes	254
(3494) Tape Library Reference Codes	168	Workstation Adapter Console Failing Items	255
Tape Library Failing Items	169	(7208) Tape Drive Reference Codes	255
(3570) Tape Unit Reference Codes	170	(7208) Model 002 Tape Drive Reference Codes	256
Tape Unit Failing Items	173	Model 002 Tape Drive Failing Items	259
(3590) Tape Unit Reference Codes	174	(7208) Model 012 Tape Drive Reference Codes	260
Tape Unit Failing Items	177	Model 012 Tape Drive Failing Items	266
(3995) Optical Library Dataserver Reference Codes	177	(9331) Diskette Unit Reference Codes	266
(6050) Twinaxial Workstation I/O Processor Reference Codes	178	(9337) Disk Unit Reference Codes	267
Twinaxial Workstation I/O Processor Failing Items	186	(9347) Tape Unit Reference Codes	267
(6055) Workstation Adapter Reference Codes	187	(9348) Tape Unit Reference Codes	268
Workstation Adapter Failing Items	190	(9427) Tape Unit Reference Codes	269
(6056) Workstation Adapter Reference Codes	190	Tape Unit Failing Items	273
Workstation Adapter Failing Items	193	(A1xx, B1xx) Service Processor Reference Codes	274
(6112) Magnetic Storage I/O Processor Reference Codes	193	Service Processor Failing Items	276
Magnetic Storage I/O Processor Failing Items	197	(A6xx, B6xx) LIC Reference Codes	276
(6140) Twinaxial Workstation I/O Processor Reference Codes	197	Licensed Internal Code (LIC) Reference Codes	277
Twinaxial Workstation I/O Processor Failing Items	206	Licensed Internal Code (LIC) Failing Items	295
(6141) ASCII Workstation I/O Processor Reference Codes	206	(A9xx, B9xx) Reference Codes	297
ASCII Workstation I/O Processor Failing Items	210	(B003) Asynchronous Communications Reference Codes	297
(6180) Twinaxial Workstation I/O Adapter Reference Codes	211	Asynchronous Communications Failing Items	303
Twinaxial Workstation I/O Adapter Failing Items	211	(B006) Common Licensed Internal Code Reference Codes	304
(632x, 6330) Optical Storage Unit Reference Codes	211	Common Licensed Internal Code Failing Items	307
Optical Storage Unit Failing Items	214	(B070) Reference Codes	308
(6335, 636x, 637x, 6380) Tape Unit Reference Codes	214	Failing Items	316
Tape Unit Failing Items	220	(B075) Workstation Adapter Console Reference Codes	316
(6385) Tape Unit Reference Codes	221	Workstation Adapter Console Failing Items	320
Tape Unit Failing Items	223	(B2xx) Logical Partition Reference Codes	321
(6390) Tape Unit Reference Codes	224	(B2xx) Logical Partition Failing Items	327
Tape Unit Failing Items	229	(B455, B460) System Processor Reference Codes	328
(63A0) Tape Unit Reference Codes	230	Models 64x, 65x, 73x, 74x, S3x, S4x, and SBx	
Tape Unit Failing Items	233	System Processor Reference Codes	329
(6500) Magnetic Storage I/O Processor Reference Codes	233	Models 64x, 65x, 73x, 74x, S3x, S4x, and SBx	
		System Processor Failing Items	338

Reference Code Tables

SRC Exception Table

Table 6. SRC exception table

First 4 characters of SRC	What You Should Do
2718, 2726, 2728, 2729, 2741	Go to "(2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532 - 6534, 6751, 6754) Reference Codes" on page 139 and follow the instructions in the SRC table.
2748	Go to "(2740, 2748) Reference Codes" on page 147 and follow the instructions in the SRC table.
2809, 2810, 2824	Go to "(2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532 - 6534, 6751, 6754) Reference Codes" on page 139 and follow the instructions in the SRC table.
283D	Go to "(283C, 283D) Device Backplane Reference Codes" on page 152 and follow the instructions in the SRC table.
6335, 6366, 6368, 6369, 6379, 6380	Go to "(6335, 636x, 637x, 6380) Tape Unit Reference Codes" on page 214 and follow the instructions in the SRC table.
6381, 6382, 6383, 7207, 7208	Go to "(63A0) Tape Unit Reference Codes" on page 230 and follow the instructions in the SRC table.
6512	Go to "(6502, 6512) Magnetic Storage I/O Processor Reference Codes" on page 240 and follow the instructions in the SRC table.
6530	Go to "(6513, 6530) Tape I/O Processor and MSIOP Reference Codes" on page 245 and follow the instructions in the SRC table.
6532, 6533, 6534	Go to "(2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532 - 6534, 6751, 6754) Reference Codes" on page 139 and follow the instructions in the SRC table.
671x, 673x	Go to "(660x, 671x, 673x) Disk Unit Reference Codes" on page 250 and follow the instructions in the SRC table.
6751, 6754	Go to "(2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532 - 6534, 6751, 6754) Reference Codes" on page 139 and follow the instructions in the SRC table.
B1xx	<p>Service Processor terminating SRC</p> <p>Go to "(A1xx, B1xx) Service Processor Reference Codes" on page 274 and follow the instructions in the SRC table.</p> <p>If the problem is not resolved, perform "SP-PIP40" on page 617.</p>
B6xx	Go to "(A6xx, B6xx) LIC Reference Codes" on page 276 and follow the instructions in the SRC table.
B9xx	Go to "(A9xx, B9xx) Reference Codes" on page 297.
C9xx	For information about these SRCs, see "Status SRCs" in the <i>AS/400 Service Functions</i> .
C1xx	<p>Service Processor IPL status</p> <p>This is a normal reference code during the IPL of the system. You may suspect that the IPL is not advancing correctly when the 6 rightmost characters do not change for 2 minutes. The IPL may take longer with more I/O units and main storage. Perform the following procedure if you suspect a problem:</p> <ol style="list-style-type: none"> 1. See "IPL Status SRCs" in the <i>AS/400 Service Functions</i>. 2. If there is still a problem, ask your next level of support for assistance.
C6xx, D6xx	For information about these SRCs, see "Status SRCs" in the <i>AS/400 Service Functions</i> .

Table 6. SRC exception table (continued)

First 4 characters of SRC	What You Should Do
D1xx 3xxx	Service Processor Main Storage Dump Status This is a normal reference code showing the status of the system when performing a main storage dump. You may suspect that the system is not operating correctly when the rightmost characters do not change for 2 minutes. Note: It takes approximately 1 minute to dump each 20MB of main storage. For more information on main storage dumps, see <i>Working with Storage Dumps</i> in the <i>AS/400 Service Functions</i> information.
D1xx xxxx	Service Processor General Status SRCs If you suspect a problem, ask your next level of support for assistance.
EE60, F000	Go to “(0000) Control Panel Reference Codes” and follow the instructions in the SRC table.

Notes:

1. In the SRC tables, x can be any number 0 through 9 or letter A through F.
2. Machine check is a condition that is indicated when the System Attention light is on and SRC data for functions 11-3 through 20-3 is displayed on the system control panel. When the SRC indicates a machine check, the leftmost character in the Data display for function 11-3 is 0 through 9, A, B, or F.

(0000) Control Panel Reference Codes

The control panel detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1110 to 111F	Failure of CEC power supply not identified by SPCN. This referenc code can be caused by something holding the system Power On Reset (POR) line active.	BKSPCN CTLPNL FI00120 ANYBUS
2222	Service processor failure caused machine check interrupt. Before exchanging the MFIOP, remove the adapter cards from the MFIOP and perform an IPL. If the IPL completes successfully, one of the adapter cards you removed is defective.	FI00120 CTLPNL ANYBUS

0000

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3333	SPCN - control panel interface error. An attempt to communicate between the SPCN and the control panel failed.	BKSPCN CTLPNL BACKPLN
4444	Power on request failure A power-on request was not completed successfully. A control panel-detected power-on failure occurred.	CTLPNL BKSPCN BACKPLN
5550 to 555F	Incorrect key used or the key is not completely inserted The key inserted is not the correct key or is not completely inserted.	CTLPNL
AABB	Remote power-on failure An attempt was made to power on the system by a remote power-on operation with the keylock mode on the control panel set to Secure or Manual. To correct the problem, select Normal or Auto mode on the control panel and perform the remote power-on operation again, if necessary.	CTLPNL FI00120 BACKPLN
AACC	Service processor power-on failure An attempt was made to power on the system from the service processor with Secure or Manual mode selected on the control panel. To correct the problem, select Normal or Auto mode on the control panel and perform the service processor power-on operation again, if necessary. Note: This reference code may occur if the service processor card was exchanged and Manual mode was selected. Select Normal mode on the control panel.	CTLPNL FI00120 BACKPLN
AADD	Manual power-on failure An attempt was made to power on the system manually with Secure or Auto mode selected on the control panel. To correct the problem, select Manual or Normal mode on the control panel and manually power on the system again.	CTLPNL
AAEE	SPCN - control panel interface error. An attempt was made to power on the system from the SPCN with Secure or Manual mode selected on the control panel. To correct the problem, select Normal or Auto mode and attempt the remote power-on operation again. If this does not correct the problem, exchange the failing items.	CTLPNL BKSPCN BACKPLN
BBBB	Battery not working correctly A problem was detected with the battery supplying power to the time-of-day clock. The battery is either weak or is not connected securely. Note: This is not a critical failure. However, if there is a power failure, the time of day will be lost.	PNLBAT CTLPNL FI00120 BACKPLN
CCCC	Service processor error to or from control panel An attempt to communicate between the service processor and the control panel failed.	FI00120 CTLPNL BKSPCN ANYBUS
DDDD	Interface error. A service and manufacturing interface error to or from the control panel occurred. Verify that the external interface device is connected correctly and attempt the power-on operation again. If the SRC is still displayed after a power-on operation go to "ROC-PIP7" on page 574 before replacing the failing items.	CTLPNL BKSPCN BACKPLN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
EEEE	IPL1 failed in the service processor Before exchanging the MFIOP, remove the adapter cards from the MFIOP and perform an IPL. If the IPL completes successfully, one of the adapter cards you removed is defective. Any card connected to the system bus can also cause this reference code. If exchanging the failing items does not correct the problem, perform "BUS-PIP1" on page 443.	FI00120 ANYBUS BKSPCN CTLPNL
FFF0 to FFFF	Control panel self-test failed	CTLPNL BKSPCN

Control Panel Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Back Plane Unit	Problem Analysis; Symbolic FRU Isolation
BKSPCN	SPCN card	Problem Analysis; Symbolic FRU Isolation
CTLPNL	Control Panel	Problem Analysis; Symbolic FRU Isolation
PNLBAT	Control Panel Battery	Problem Analysis; Symbolic FRU Isolation

(1xxx) System Power Control Network (SPCN) Reference Codes

The system power control network (SPCN) detected a failure.

Note: The second and third characters of the SRC indicate the frame number of the failing unit.

Note: The C in the SRC (1xxC xxxx) indicates the problem is on the 9251 base I/O frame side. Any value other than C indicates the problem is on the processor side.

1. Look at the 4 rightmost characters of the Data display for function 11-3 or 5. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the

address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A0	SPCN BATs in process No action required. This reference code is logged for information only. If this reference code is present for more than 1 minute, exchange the failing items.	TWRCARD
00A1	Regulator 1 has been turned off by system No action required. This reference code is logged for information only.	
00A2	Regulator 2 has been turned off by system No action required. This reference code is logged for information only.	
00A3	Regulator 3 has been turned off by system No action required. This reference code is logged for information only.	
00A4	Regulator 4 has been turned off by system No action required. This reference code is logged for information only.	
00A5	Regulator 5 has been turned off by system No action required. This reference code is logged for information only.	
00A6	Regulator 6 has been turned off by system No action required. This reference code is logged for information only.	
00A7	The system is running on the Battery Power Unit. No action required. This reference code is logged for information only.	
00A8	The Battery Power Unit is not fully charged. No action required. This reference code is logged for information only.	
00A9	Battery Power Unit test is in process. No action required. This reference code is logged for information only.	
00AA	Download in process No action required. This reference code is logged for information only.	
00AB	Rack UEPO switch is OFF. Informational reference code. The UEPO switch must be returned to the On position to power on the rack.	TWRCARD CTLPNL 6462417
00AC	Detected AC loss If system powers on normally or stays powered on after AC power failure, no replacement of parts may be needed.	ACMODUL
00BA	The system is running on the Battery Power Unit. No action required. This reference code is displayed for information only.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00BC	Battery Power Unit test is in process. No action required. This reference code is displayed for information only.	
00CA	CPM power down is complete. No action required. This reference code is displayed for information only.	
00EF	Remote EPO switch is OFF	
0100	Install Disk Unit 1 Concurrent maintenance informational reference code.	
0101	Install Disk Unit 2 Concurrent maintenance informational reference code.	
0102	Install Disk Unit 3 Concurrent maintenance informational reference code.	
0103	Install Disk Unit 4 Concurrent maintenance informational reference code.	
0104	Install Disk Unit 5 Concurrent maintenance informational reference code.	
0105	Install Disk Unit 6 Concurrent maintenance informational reference code.	
0106	Install Disk Unit 7 Concurrent maintenance informational reference code.	
0107	Install Disk Unit 8 Concurrent maintenance informational reference code.	
0108	Install Disk Unit K1 Concurrent maintenance informational reference code.	
0109	Install Disk Unit K2 Concurrent maintenance informational reference code.	
010A	Install Disk Unit K3 Concurrent maintenance informational reference code.	
010B	Install Disk Unit K4 Concurrent maintenance informational reference code.	
010C	Install Disk Unit K5 Concurrent maintenance informational reference code.	
010D	Install Disk Unit K6 Concurrent maintenance informational reference code.	
010E	Install Disk Unit K7 Concurrent maintenance informational reference code.	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
010F	Install Disk Unit K8 Concurrent maintenance informational reference code.	
0110	Install Disk Unit K9 Concurrent maintenance informational reference code.	
0111	Install Disk Unit K10 Concurrent maintenance informational reference code.	
0112	Install Disk Unit K11 Concurrent maintenance informational reference code.	
0113	Install Disk Unit K12 Concurrent maintenance informational reference code.	
0114	Install Disk Unit K13 Concurrent maintenance informational reference code.	
0115	Install Disk Unit K14 Concurrent maintenance informational reference code.	
0116	Install device 1 Concurrent maintenance informational reference code.	
0117	Install device 2 Concurrent maintenance informational reference code.	
0118	Install Disk Unit 9 Concurrent maintenance informational reference code.	
0119	Install Disk Unit 10 Concurrent maintenance informational reference code.	
011A	Install Disk Unit 11 Concurrent maintenance informational reference code.	
011B	Install Disk Unit 12 Concurrent maintenance informational reference code.	
011C	Install device 3 Concurrent maintenance informational reference code.	
011D	Install Disk Unit K15 Concurrent maintenance informational reference code.	
011E	Install Disk Unit K16 Concurrent maintenance informational reference code.	
011F	Install Device 4 Concurrent maintenance informational reference code.	
0120	Install Disk Unit K17 Concurrent maintenance informational reference code.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0121	Install Disk Unit K18 Concurrent maintenance informational reference code.	
0122	Install Disk Unit K19 Concurrent maintenance informational reference code.	
0123	Install Disk Unit K20 Concurrent maintenance informational reference code.	
0124	Install Disk Unit K21 Concurrent maintenance informational reference code.	
0125	Install Disk Unit K22 Concurrent maintenance informational reference code.	
0126	Install Disk Unit K23 Concurrent maintenance informational reference code.	
0127	Install Disk Unit K24 Concurrent maintenance informational reference code.	
0128	Install Disk Unit K25 Concurrent maintenance informational reference code.	
0129	Install Disk Unit K26 Concurrent maintenance informational reference code.	
012A	Install Disk Unit K27 Concurrent maintenance informational reference code.	
012B	Install Disk Unit K28 Concurrent maintenance informational reference code.	
012C	Install Disk Unit K29 Concurrent maintenance informational reference code.	
012D	Install Disk Unit K30 Concurrent maintenance informational reference code.	
012E	Install Disk Unit K31 Concurrent maintenance informational reference code.	
012F	Install Disk Unit K32 Concurrent maintenance informational reference code.	
0200	Remove Disk Unit 1 Concurrent maintenance informational reference code.	
0201	Remove Disk Unit 2 Concurrent maintenance informational reference code.	
0202	Remove Disk Unit 3 Concurrent maintenance informational reference code.	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0203	Remove Disk Unit 4 Concurrent maintenance informational reference code.	
0204	Remove Disk Unit 5 Concurrent maintenance informational reference code.	
0205	Remove Disk Unit 6 Concurrent maintenance informational reference code.	
0206	Remove Disk Unit 7 Concurrent maintenance informational reference code.	
0207	Remove Disk Unit 8 Concurrent maintenance informational reference code.	
0208	Remove Disk Unit K1 Concurrent maintenance informational reference code.	
0209	Remove Disk Unit K2 Concurrent maintenance informational reference code.	
020A	Remove Disk Unit K3 Concurrent maintenance informational reference code.	
020B	Remove Disk Unit K4 Concurrent maintenance informational reference code.	
020C	Remove Disk Unit K5 Concurrent maintenance informational reference code.	
020D	Remove Disk Unit K6 Concurrent maintenance informational reference code.	
020E	Remove Disk Unit K7 Concurrent maintenance informational reference code.	
020F	Remove Disk Unit K8 Concurrent maintenance informational reference code.	
0210	Remove Disk Unit K9 Concurrent maintenance informational reference code.	
0211	Remove Disk Unit K10 Concurrent maintenance informational reference code.	
0212	Remove Disk Unit K11 Concurrent maintenance informational reference code.	
0213	Remove Disk unit K12 Concurrent maintenance informational reference code.	
0214	Remove Disk Unit K13 Concurrent maintenance informational reference code.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0215	Remove Disk Unit K14 Concurrent maintenance informational reference code.	
0216	Remove device 1 Concurrent maintenance informational reference code.	
0217	Remove device 2 Concurrent maintenance informational reference code.	
0218	Remove Disk Unit 9 Concurrent maintenance informational reference code.	
0219	Remove Disk Unit 10 Concurrent maintenance informational reference code.	
021A	Remove Disk Unit 11 Concurrent maintenance informational reference code.	
021B	Remove Disk Unit 12 Concurrent maintenance informational reference code.	
021C	Remove device 3 Concurrent maintenance informational reference code.	
021D	Remove Disk Unit K15 Concurrent maintenance informational reference code.	
021E	Remove Disk Unit K16 Concurrent maintenance informational reference code.	
021F	Remove device 4 Concurrent maintenance informational reference code.	
0220	Remove Disk Unit K17 Concurrent maintenance informational reference code.	
0221	Remove Disk Unit K18 Concurrent maintenance informational reference code.	
0222	Remove Disk Unit K19 Concurrent maintenance informational reference code.	
0223	Remove Disk Unit K20 Concurrent maintenance informational reference code.	
0224	Remove Disk Unit K21 Concurrent maintenance informational reference code.	
0225	Remove Disk Unit K22 Concurrent maintenance informational reference code.	
0226	Remove Disk Unit K23 Concurrent maintenance informational reference code.	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0227	Remove Disk Unit K24 Concurrent maintenance informational reference code.	
0228	Remove Disk Unit K25 Concurrent maintenance informational reference code.	
0229	Remove Disk Unit K26 Concurrent maintenance informational reference code.	
022A	Remove Disk Unit K27 Concurrent maintenance informational reference code.	
022B	Remove Disk Unit K28 Concurrent maintenance informational reference code.	
022C	Remove Disk Unit K29 Concurrent maintenance informational reference code.	
022D	Remove Disk Unit K30 Concurrent maintenance informational reference code.	
022E	Remove Disk Unit K31 Concurrent maintenance informational reference code.	
022F	Remove Disk Unit K32 Concurrent maintenance informational reference code.	
0300	Disk Unit 1 regulator has been turned on Installation of disk unit 1 is complete, and the regulator is turned on.	
0301	Disk Unit 2 regulator has been turned on Installation of disk unit 2 is complete, and the regulator is turned on.	
0302	Disk Unit 3 regulator has been turned on Installation of disk unit 3 is complete, and the regulator is turned on.	
0303	Disk Unit 4 regulator has been turned on Installation of disk unit 4 is complete, and the regulator is turned on.	
0304	Disk Unit 5 regulator has been turned on Installation of disk unit 5 is complete, and the regulator is turned on.	
0305	Disk Unit 6 regulator has been turned on Installation of disk unit 6 is complete, and the regulator is turned on.	
0306	Disk Unit 7 regulator has been turned on Installation of disk unit 7 is complete, and the regulator is turned on.	
0307	Disk Unit 8 regulator has been turned on Installation of disk unit 8 is complete, and the regulator is turned on.	
0308	Disk Unit K1 regulator has been turned on Installation of disk unit K1 is complete, and the regulator is turned on.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0309	Disk Unit K2 regulator has been turned on Installation of disk unit K2 is complete, and the regulator is turned on.	
030A	Disk Unit K3 regulator has been turned on Installation of disk unit K3 is complete, and the regulator is turned on.	
030B	Disk Unit K4 regulator has been turned on Installation of disk unit K4 is complete, and the regulator is turned on.	
030C	Disk Unit K5 regulator has been turned on Installation of disk unit K5 is complete, and the regulator is turned on.	
030D	Disk Unit K6 regulator has been turned on Installation of disk unit K6 is complete, and the regulator is turned on.	
030E	Disk Unit K7 regulator has been turned on Installation of disk unit K7 is complete, and the regulator is turned on.	
030F	Disk Unit K8 regulator has been turned on Installation of disk unit K8 is complete, and the regulator is turned on.	
0310	Disk Unit K9 regulator has been turned on Installation of disk unit K9 is complete, and the regulator is turned on.	
0311	Disk Unit K10 regulator has been turned on Installation of disk unit K10 is complete, and the regulator is turned on.	
0312	Disk Unit K11 regulator has been turned on Installation of disk unit K11 is complete, and the regulator is turned on.	
0313	Disk Unit K12 regulator has been turned on Installation of disk unit K12 is complete, and the regulator is turned on.	
0314	Disk Unit K13 regulator has been turned on Installation of disk unit K13 is complete, and the regulator is turned on.	
0315	Disk Unit K14 regulator has been turned on Installation of disk unit K14 is complete, and the regulator is turned on.	
0316	Device 1 regulator has been turned on Installation of device 1 is complete, and the regulator is turned on.	
0317	Device 2 regulator has been turned on Installation of device 2 is complete, and the regulator is turned on.	
0318	Disk Unit 9 regulator has been turned on Installation of disk unit 9 is complete, and the regulator is turned on.	
0319	Disk Unit 10 regulator has been turned on Installation of disk unit 10 is complete, and the regulator is turned on.	
031A	Disk Unit 11 regulator has been turned on Installation of disk unit 11 is complete, and the regulator is turned on.	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
031B	Disk Unit 12 regulator has been turned on Installation of disk unit 12 is complete, and the regulator is turned on.	
031C	Device 3 regulator has been turned on Installation of device 3 is complete, and the regulator is turned on.	
031D	Disk Unit K15 regulator has been turned on Installation of disk unit K15 is complete, and the regulator is turned on.	
031E	Disk Unit K16 regulator has been turned on Installation of disk unit K16 is complete, and the regulator is turned on.	
031F	Device 4 regulator has been turned on Installation of device 4 is complete, and the regulator is turned on.	
0320	Disk Unit K17 regulator has been turned on Installation of disk unit K17 is complete, and the regulator is turned on.	
0321	Disk Unit K18 regulator has been turned on Installation of disk unit K18 is complete, and the regulator is turned on.	
0322	Disk Unit K19 regulator has been turned on Installation of disk unit K19 is complete, and the regulator is turned on.	
0323	Disk Unit K20 regulator has been turned on Installation of disk unit K20 is complete, and the regulator is turned on.	
0324	Disk Unit K21 regulator has been turned on Installation of disk unit K21 is complete, and the regulator is turned on.	
0325	Disk Unit K22 regulator has been turned on Installation of disk unit K22 is complete, and the regulator is turned on.	
0326	Disk Unit K23 regulator has been turned on Installation of disk unit K23 is complete, and the regulator is turned on.	
0327	Disk Unit K24 regulator has been turned on Installation of disk unit K24 is complete, and the regulator is turned on.	
0328	Disk Unit K25 regulator has been turned on Installation of disk unit K25 is complete, and the regulator is turned on.	
0329	Disk Unit K26 regulator has been turned on Installation of disk unit K26 is complete, and the regulator is turned on.	
032A	Disk Unit K27 regulator has been turned on Installation of disk unit K27 is complete, and the regulator is turned on.	
032B	Disk Unit K28 regulator has been turned on Installation of disk unit K28 is complete, and the regulator is turned on.	
032C	Disk Unit K29 regulator has been turned on Installation of disk unit K29 is complete, and the regulator is turned on.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
032D	Disk Unit K30 regulator has been turned on Installation of disk unit K30 is complete, and the regulator is turned on.	
032E	Disk Unit K31 regulator has been turned on Installation of disk unit K31 is complete, and the regulator is turned on.	
032F	Disk Unit K32 regulator has been turned on Installation of disk unit K32 is complete, and the regulator is turned on.	
0400	Removal of Disk Unit 1 is complete	
0401	Removal of Disk Unit 2 is complete	
0402	Removal of Disk Unit 3 is complete	
0403	Removal of Disk Unit 4 is complete	
0404	Removal of Disk Unit 5 is complete	
0405	Removal of Disk Unit 6 is complete	
0406	Removal of Disk Unit 7 is complete	
0407	Removal of Disk Unit 8 is complete	
0408	Removal of Disk Unit K1 is complete	
0409	Removal of Disk Unit K2 is complete	
040A	Removal of Disk Unit K3 is complete	
040B	Removal of Disk Unit K4 is complete	
040C	Removal of Disk Unit K5 is complete	
040D	Removal of Disk Unit K6 is complete	
040E	Removal of Disk Unit K7 is complete	
040F	Removal of Disk Unit K8 is complete	
0410	Removal of Disk Unit K9 is complete	
0411	Removal of Disk Unit K10 is complete	
0412	Removal of Disk Unit K11 is complete	
0413	Removal of Disk Unit K12 is complete	
0414	Removal of Disk Unit K13 is complete	
0415	Removal of Disk Unit K14 is complete	
0416	Removal of device 1 is complete	
0417	Removal of device 2 is complete	
0418	Removal of Disk Unit 9 is complete	
0419	Removal of Disk Unit 10 is complete	
041A	Removal of Disk Unit 11 is complete	
041B	Removal of Disk Unit 12 is complete	
041C	Removal of device 3 is complete	
041D	Removal of Disk Unit K15 is complete	
041E	Removal of Disk Unit K16 is complete	
041F	Removal of device 4 is complete	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0500	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit 1, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0501	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit 2, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0502	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit 3, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0503	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 4, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0504	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 5, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0505	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 6, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0506	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 7, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0507	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 8, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0508	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K1, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0509	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K2, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050A	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K3, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050B	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K4, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050C	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K5, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050D	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K6, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050E	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K7, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050F	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K8, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0510	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K9, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0511	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K10, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0512	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K11, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0513	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K12, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0514	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K13, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0515	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K14, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0516	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of device 1, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0517	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of device 2, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0518	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 9, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0519	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 10, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
051A	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 11, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
051B	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 12, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
051C	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of device 3, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
051D	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K15, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
051E	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K16, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
051F	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of device 4, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0700	<p>Timeout, no action detected. Reinitialize the operation</p> <p>Disk unit 1 was powered off but not removed.</p> <p>Concurrent maintenance informational reference code.</p>	
0701	<p>Timeout, no action detected. Reinitialize the operation</p> <p>Disk unit 2 was powered off but not removed.</p> <p>Concurrent maintenance informational reference code.</p>	
0702	<p>Timeout, no action detected. Reinitialize the operation</p> <p>Disk unit 3 was powered off but not removed.</p> <p>Concurrent maintenance informational reference code.</p> <p>You must reinitialize the operation to continue.</p>	
0703	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>Disk unit 4 was powered off but not removed.</p> <p>Concurrent maintenance informational reference code.</p>	
0704	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>Disk unit 5 was powered off but not removed.</p> <p>Concurrent maintenance informational reference code.</p>	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0705	Timeout, no action detected. Reinitialize the operation. Disk unit 6 was powered off but not removed. Concurrent maintenance informational reference code.	
0706	Timeout, no action detected. Reinitialize the operation. Disk unit 7 was powered off but not removed. Concurrent maintenance informational reference code.	
0707	Timeout, no action detected. Reinitialize the operation. Disk unit 8 was powered off but not removed. Concurrent maintenance informational reference code.	
0708	Timeout, no action detected. Reinitialize the operation Disk unit K1 was powered off but not removed. Concurrent maintenance informational reference code.	
0709	Timeout, no action detected. Reinitialize the operation Disk unit K2 was powered off but not removed. Concurrent maintenance informational reference code.	
070A	Timeout, no action detected. Reinitialize the operation Disk unit K3 was powered off but not removed. Concurrent maintenance informational reference code.	
070B	Timeout, no action detected. Reinitialize the operation Disk unit K4 was powered off but not removed. Concurrent maintenance informational reference code.	
070C	Timeout, no action detected. Reinitialize the operation Disk unit K5 was powered off but not removed. Concurrent maintenance informational reference code.	
070D	Timeout, no action detected. Reinitialize the operation Disk unit K6 was powered off but not removed. Concurrent maintenance informational reference code.	
070E	Timeout, no action detected. Reinitialize the operation Disk unit K7 was powered off but not removed. Concurrent maintenance informational reference code.	
070F	Timeout, no action detected. Reinitialize the operation Disk unit K8 was powered off but not removed. Concurrent maintenance informational reference code.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0710	Timeout, no action detected. Reinitialize the operation Disk unit K9 was powered off but not removed. Concurrent maintenance informational reference code.	
0711	Timeout, no action detected. Reinitialize the operation Disk unit K10 was powered off but not removed. Concurrent maintenance informational reference code.	
0712	Timeout, no action detected. Reinitialize the operation Disk unit K11 was powered off but not removed. Concurrent maintenance informational reference code.	
0713	Timeout, no action detected. Reinitialize the operation Disk unit K12 was powered off but not removed. Concurrent maintenance informational reference code.	
0714	Timeout, no action detected. Reinitialize the operation Disk unit K13 was powered off but not removed. Concurrent maintenance informational reference code.	
0715	Timeout, no action detected. Reinitialize the operation Disk unit K14 was powered off but not removed. Concurrent maintenance informational reference code.	
0716	Timeout, no action detected. Reinitialize the operation Device 1 was powered off but not removed. Concurrent maintenance informational reference code.	
0717	Timeout, no action detected. Reinitialize the operation Device 2 was powered off but not removed. Concurrent maintenance informational reference code.	
0718	Timeout, no action detected. Reinitialize the operation. Disk unit 9 was powered off but not removed. Concurrent maintenance informational reference code.	
0719	Timeout, no action detected. Reinitialize the operation. Disk unit 10 was powered off but not removed. Concurrent maintenance informational reference code.	
071A	Timeout, no action detected. Reinitialize the operation. Disk unit 11 was powered off but not removed. Concurrent maintenance informational reference code.	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
071B	Timeout, no action detected. Reinitialize the operation. Disk unit 12 was powered off but not removed. Concurrent maintenance informational reference code.	
071C	Timeout, no action detected. Reinitialize the operation Device 3 was powered off but not removed. Concurrent maintenance informational reference code.	
071D	Timeout, no action detected. Reinitialize the operation Disk unit K15 was powered off but not removed. Concurrent maintenance informational reference code.	
071E	Timeout, no action detected. Reinitialize the operation Disk unit K16 was powered off but not removed. Concurrent maintenance informational reference code.	
071F	Timeout, no action detected. Reinitialize the operation Device 4 was powered off but not removed. Concurrent maintenance informational reference code.	
0800	Blower B01 powered off for concurrent maintenance	
0801	Blower B02 powered off for concurrent maintenance	
0802	Blower B03 powered off for concurrent maintenance	
0803	Blower B04 powered off for concurrent maintenance	
0900	Power Supply P01 powered off for concurrent maintenance	
0901	Power Supply P02 powered off for concurrent maintenance	
0902	Power Supply P03 powered off for concurrent maintenance	
0903	Power Supply P04 powered off for concurrent maintenance	
0904	Power Supply P05 powered off for concurrent maintenance	
0905	Power Supply P06 powered off for concurrent maintenance	
0F0F	AC Module Failure The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F12	Undefined box ID, EEPROM test failed The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F13	Undefined box ID, Code type mismatch The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F1F	Undefined box ID, LCD test failed The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0F2C	Unknown box ID The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F2D	Unknown box ID, Code level mismatch. The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F2E	SPCN Network Fault The box ID is not defined. A network communications failure occurred.	TWRCARD BACKPLN 21F9429
1001	Device 1 regulator fault. The regulator for the save/restore device installed in position 1 of the FC 5032 Removable Storage Unit reported a fault.	FI00239 21F5680 21F8872
1002	Device 2 regulator fault. The regulator for the save/restore device installed in position 2 of the FC 5032 Removable Storage Unit reported a fault.	FI00239 21F5680 21F8872
1003	Device 3 regulator fault. The regulator for the save/restore device installed in position 3 of the FC 5032 Removable Storage Unit reported a fault.	FI00239 21F5680 21F8872
1004	Device 4 regulator fault. The regulator for the save/restore device installed in position 4 of the FC 5032 Removable Storage Unit reported a fault.	FI00239 21F5680 21F8872
1005	D-SE regulator fault. The regulator that powers the DSE converter module in the FC 5032 Removable Storage Unit reported a fault.	21F8890 FI00239 21F8872 21F5680
1008	DC Bulk Module over-current. The dc bulk module installed in the FC 5032 Removable Storage Unit detected an over current condition. Perform SPCN-PIP9 in "System Power Control Network Problem Isolation Procedures" on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.	FI00256 21F9530 21F5680 21F8872
100B	DC Bulk Module fault. The dc bulk module installed in the FC 5032 Removable Storage Unit reported a fault.	21F9530 21F5680 21F8872
100F	AC Module Failure The ac module installed in the FC 5032 Removable Storage Unit detected a failure during its BATs.	21F5680
1012	AC Module fault (EEPROM) The SPCN EEPROM test of the ac module in the FC 5032 Removable Storage Unit failed.	21F5680

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1013	<p>SPCN Licensed Internal Code Type not valid.</p> <p>The Licensed Internal Code loaded into the ac module installed in the FC 5032 Removable Storage Unit is the wrong type.</p> <p>A reload of the Licensed Internal Code is attempted automatically. The reload operation failed to correct the problem.</p>	<p>21F5680 AJDG301</p>
1014	<p>Power Control Line Test Failed</p> <p>The Power Control Line Test failed in the ac module installed in the FC 5032 Removable Storage Unit.</p>	<p>21F5680 FI00256 21F9530 21F8872</p>
1018	<p>Cooling problem in the 5032.</p> <p>The SPCN node installed in the FC 5032 Removable Storage Unit detected a problem with the fans. This fault also occurs if the fans are not installed.</p>	<p>21F5680 21F5793</p>
101F	<p>LCD Test Failed</p> <p>The FC 5032 Removable Storage Unit control panel test failed.</p>	<p>21F8888 21F5680 21F8872</p>
1025	<p>D-SE regulator not present.</p> <p>The DSE module and its regulator (regulator 5) are not installed in the FC 5032 Removable Storage Unit.</p> <p>If the DSE module is installed, exchange the failing items.</p>	<p>21F8890 21F5680 21F8872</p>
1028 to 1029	<p>AC Module Failure</p> <p>The ac module in the FC 5032 Removable Storage Unit detected a fault.</p>	<p>21F5680 21F8872</p>
102A	<p>No DC Bulk Module installed.</p> <p>The FC 5032 Removable Storage Unit does not have a dc bulk module installed. If the dc bulk module is installed, exchange the failing items.</p>	<p>21F5680 21F9530 21F8872</p>
102B	<p>PCC Overcurrent</p> <p>The power control compartment is causing an over current condition in the FC 5032 Removable Storage Unit power system.</p> <p>The ac module and the SPCN port cable should be exchanged together.</p>	<p>TWRCARD 21F5680 21F5793 21F9362</p>
102D	<p>SPCN Licensed Internal Code Reload Required.</p> <p>An error occurred in the SPCN Licensed Internal Code (LIC) installed in the FC 5032 Removable Storage Unit. The LIC was not correct for this hardware. The SPCN Licensed Internal Code was reloaded.</p> <p>The reload operation failed to correct the problem.</p>	<p>21F5680 AJDG301</p>
102E	<p>SPCN Network Fault</p> <p>An SPCN communications failure was detected by the FC 5032 Removable Storage Unit.</p> <p>Perform SPCN-PIP8 in "System Power Control Network Problem Isolation Procedures" on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.</p>	<p>21F5680 TWRCARD 21F9362 AJDG301</p>
102F	<p>AC Module Fault Failure.</p> <p>A fault detection failure occurred in the ac module installed in the FC 5032 Removable Storage Unit.</p>	<p>21F5680 21F9530 21F8872</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1100	Power Supply P01 error A fault detection failure occurred for Power Supply P01.	PWRSPLY ACMODUL BKSPCN CBLALL
1101	Power Supply P02 error A fault detection failure occurred for Power Supply P02.	PWRSPLY ACMODUL BKSPCN CBLALL
1102	Power Supply P03 error A fault detection failure occurred for Power Supply P03.	PWRSPLY ACMODUL BKSPCN CBLALL
1103	Power Supply P04 error A fault detection failure occurred for Power Supply P04.	PWRSPLY ACMODUL BKSPCN CBLALL
1104	Power Supply P05 error A fault detection failure occurred for Power Supply P05.	PWRSPLY ACMODUL BKSPCN CBLALL
1105	Power Supply P06 error A fault detection failure occurred for Power Supply P06.	PWRSPLY ACMODUL BKSPCN CBLALL
1108	Regulator R01 error A fault detection failure occurred for Regulator R01.	PWRREG BKSPCN
1109	Regulator R02 error A fault detection failure occurred for Regulator R02.	PWRREG BKSPCN
110A	Regulator R03 error A fault detection failure occurred for Regulator R03.	PWRREG BKSPCN
110B	Regulator R04 error A fault has been detected for Regulator R04.	PWRREG BKSPCN
110C	Regulator R05 error A fault detection failure occurred for Regulator R05.	PWRREG BKSPCN
110D	Regulator R06 error A fault detection failure occurred for Regulator R06.	PWRREG BKSPCN
110E	Regulator R07 error A fault detection failure occurred for Regulator R07.	PWRREG BKSPCN
110F	Regulator R08 error A fault detection failure occurred for Regulator R08.	BKSPCN
1110	Regulator R09 error A fault detection failure occurred for regulator R09.	PWRREG BKSPCN
1111	Regulator R10 error A fault detection failure occurred for Regulator R10.	PWRREG BKSPCN

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1112	Regulator R11 error A fault detection failure occurred for Regulator R11.	PWRREG BKSPCN
1113	Regulator R12 error A fault detection failure occurred for Regulator R12.	PWRREG BKSPCN
1114	Regulator R13 error A fault detection failure occurred for Regulator R13.	PWRREG BKSPCN
1115	Regulator R14 error A fault detection failure occurred for Regulator R14.	PWRREG BKSPCN
1116	Regulator R15 error A fault detection failure occurred for Regulator R15.	PWRREG BKSPCN
1117	Regulator R16 error A fault detection failure occurred for Regulator R16.	PWRREG BKSPCN
1118	Regulator R17 error A fault detection failure occurred for Regulator R17.	PWRREG BKSPCN
1119	Regulator R18 error A fault detection failure occurred for Regulator R18.	PWRREG BKSPCN
111A	Regulator R19 error A fault detection failure occurred for Regulator R19.	PWRREG BKSPCN
111B	Regulator R20 error A fault detection failure occurred for Regulator R20.	PWRREG BKSPCN
111C	Regulator R21 error A fault detection failure occurred for Regulator R21.	PWRREG BKSPCN
111D	Regulator R22 error A fault detection failure occurred for Regulator R22.	PWRREG BKSPCN
111E	Regulator R23 error A fault detection failure occurred for Regulator R23.	PWRREG BKSPCN
1200	29V Buss Fault A 29V Bus fault has been detected.	BUSPWR BKSPCN
1201	3.3V Memory 2 Control Regulator Fault A 3.3V Memory 2 Control Regulator fault has been detected.	DMREG BKSPCN
1202	2.5V Memory Control Regulator Fault A 2.5V Memory Control Regulator fault has been detected.	DMREG BKSPCN
1203	Cache Regulator Fault A Cache Regulator fault has been detected.	DMREG BKSPCN
1204	3.3V Memory 1 Control Regulator Fault A 3.3V Memory 1 Control Regulator fault has been detected.	DMREG BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1205	Processor 1 Regulator Fault A Processor 1 Regulator fault has been detected.	DMREG BKSPCN
1206	Processor 2 Regulator Fault A Processor 2 Regulator fault has been detected.	DMREG BKSPCN
1207	Clock Regulator Fault .A Clock Regulator fault has been detected.	DMREG BKSPCN
1300	Power Supply P01 Fault A fault has been detected for Power Supply P01.	PWRSPLY BKSPCN
1301	Power Supply P02 Fault A fault has been detected for Power Supply P02.	PWRSPLY BKSPCN
1302	Power Supply P03 Fault A fault has been detected for Power Supply P03.	PWRSPLY BKSPCN
1303	Power Supply P04 Fault A fault has been detected for Power Supply P04.	PWRSPLY BKSPCN
1304	Power Supply P05 Fault A fault has been detected for Power Supply P05.	PWRSPLY BKSPCN
1305	Power Supply P06 Fault A fault has been detected for Power Supply P06.	PWRSPLY BKSPCN
1308	Regulator R01 Fault A fault has been detected for Regulator R01.	PWRREG BKSPCN
1309	Regulator R02 Fault A fault has been detected for Regulator R02.	PWRREG BKSPCN
130A	Regulator R03 Fault A fault has been detected for Regulator R03.	PWRREG BKSPCN
130B	Regulator R04 Fault A fault has been detected for Regulator R04.	PWRREG BKSPCN
130C	Regulator R05 Fault A fault has been detected for Regulator R05.	PWRREG BKSPCN
130D	Regulator R06 Fault A fault has been detected for Regulator R06.	PWRREG BKSPCN
130E	Regulator R07 Fault A fault has been detected for Regulator R07.	PWRREG BKSPCN
130F	Regulator R08 Fault A fault has been detected for Reulator R08.	BKSPCN
1310	Regulator R09 Fault A fault has been detected for Regulator R09.	PWRREG BKSPCN

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1311	Regulator R10 Fault A fault has been detected for Regulator R10.	PWRREG BKSPCN
1312	Regulator R11 Fault A fault has been detected for Regulator R11.	PWRREG BKSPCN
1313	Regulator R12 Fault A fault has been detected for Regulator R12.	PWRREG BKSPCN
1314	Regulator R13 Fault A fault has been detected for Regulator R13.	PWRREG BKSPCN
1315	Regulator R14 Fault A fault has been detected for Regulator R14.	PWRREG BKSPCN
1316	Regulator R15 Fault A fault has been detected for Regulator R15.	PWRREG BKSPCN
1317	Regulator R16 Fault A fault has been detected for Regulator R16.	PWRREG BKSPCN
1318	Regulator R17 Fault A fault has been detected for Regulator R17.	PWRREG BKSPCN
1319	Regulator R18 Fault A fault has been detected for Regulator R18.	PWRREG BKSPCN
131A	Regulator R19 Fault A fault has been detected for Regulator R19.	PWRREG BKSPCN
131B	Regulator R20 Fault A fault has been detected for Regulator R20.	PWRREG BKSPCN
131C	Regulator R21 Fault A fault has been detected for Regulator R21.	PWRREG BKSPCN
131D	Regulator R22 Fault A fault has been detected for Regulator R22.	PWRREG BKSPCN
131E	Regulator R23 Fault A fault has been detected for Regulator R23.	PWRREG BKSPCN
1401	3.3V Memory Control 2 Domain Fault A 3.3V Memory 2 Control Domain fault has been detected.	DMREG BKSPCN
1402	2.5V Memory Control Domain Fault A 2.5V Memory Control Domain fault has been detected.	DMREG BKSPCN
1403	Cache Regulator Domain Fault A Cache Regulator Domain fault has been detected.	DMREG BKSPCN
1404	3.3V Memory Control 1 Domain Fault A 3.3V Memory Control 1 Domain fault has been detected.	DMREG BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1405	Processor 1 Regulator Domain Fault A Processor 1 Regulator Domain fault has been detected.	DMREG BKSPCN
1406	Processor 2 Regulator Domain Fault A Processor 2 Regulator Domain fault has been detected.	DMREG BKSPCN
1407	Clock Regulator Domain Fault .A Clock Regulator Domain fault has been detected.	DMREG BKSPCN
1510	AC Loss to Power Supply 1 or Power Supply 1 Failure Before replacing any parts, verify that the voltage is correct at the AC outlet and the power supply input connector.	PWRSPLY TWRCARD
1511	Power Supply P01 Fault A fault has been detected for Power Supply 1.	PWRSPLY TWRCARD
1512	Power Supply P01 Fault A fault has been detected for Power Supply 1.	PWRSPLY TWRCARD CBLALL
1513	Power Supply P01 Fault A fault has been detected for Power Supply 1.	PWRSPLY TWRCARD
1520	AC Loss to Power Supply 2 or Power Supply 2 Failure Before replacing any parts, verify that the voltage is correct at the AC outlet and the power supply input connector.	PWRSPLY TWRCARD
1521	Power Supply P02 Fault A fault has been detected for Power Supply 2.	PWRSPLY TWRCARD
1522	Power Supply P02 Fault A fault has been detected for Power Supply 2.	PWRSPLY TWRCARD CBLALL
1523	Power Supply P02 Fault A fault has been detected for Power Supply 2.	PWRSPLY TWRCARD
1530	AC Loss to Power Supply 3 or Power Supply 3 Failure Before replacing any parts, verify that the voltage is correct at the AC outlet and the power supply input connector.	PWRSPLY TWRCARD
1531	Power Supply P03 Fault A fault has been detected for Power Supply 3.	PWRSPLY TWRCARD
1532	Power Supply P03 Fault A fault has been detected for Power Supply 3.	PWRSPLY TWRCARD CBLALL
1533	Power Supply P03 Fault A fault has been detected for Power Supply 3.	PWRSPLY TWRCARD
1810	Domain 1 Fault An overcurrent has been detected. A POW-PIP is required for identifying which load is at fault.	PWROC TWRCARD

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1820	<p>Domain 2 Fault</p> <p>An overcurrent has been detected.</p> <p>A POW-PIP is required for identifying which load is at fault.</p>	PWROC TWRCARD
1830	<p>Domain 3 Fault</p> <p>An overcurrent has been detected.</p> <p>A POW-PIP is required for identifying which load is at fault.</p>	PWROC TWRCARD
1840	<p>Domain 4 Fault</p> <p>An overcurrent has been detected.</p> <p>A POW-PIP is required for identifying which load is at fault.</p>	PWROC TWRCARD
2600	<p>Power Good Fault</p>	PGDPART TWRCARD PWRSPLY
2612	<p>Optical Converter 5V Fault</p> <p>The SPCN detected a fault on the SPCN card optical converter 5V.</p>	CBLALL TWRCARD
3001	<p>Regulator 1 Fault</p> <p>I/O regulator 1 (slots 19-20) in the 9309 Frame-Mounted Expansion Unit (504x) reported a fault.</p> <p>Perform SPCN-PIP2 in "System Power Control Network Problem Isolation Procedures" on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.</p>	21F9215 FI00237 21F5680 21F9429 FI00248
3002	<p>Regulator 2 Fault</p> <p>I/O regulator 2 (slots 17-18) in the 9406 Expansion Unit (FC 504x) reported a fault.</p> <p>Perform SPCN-PIP2 in "System Power Control Network Problem Isolation Procedures" on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.</p>	21F9215 FI00238 21F5680 21F9429 FI00248
3008	<p>DC Bulk Module 1 Overcurrent</p> <p>DC bulk module 1 detected an over current condition in the 9406 Expansion Unit (FC 504x). This is usually caused by one of the regulators.</p> <p>Perform SPCN-PIP5 in "System Power Control Network Problem Isolation Procedures" on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.</p>	21F9215 21F9530 21F5680 FI00248 21F9429
3009	<p>DC Bulk Module 2 Overcurrent</p> <p>DC bulk module 2 detected an over current condition in the 9406 Expansion Unit (FC 504x). This is usually caused by one of the regulators.</p> <p>Perform SPCN-PIP5 in "System Power Control Network Problem Isolation Procedures" on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.</p>	21F9215 21F9530 21F5680 FI00248 21F9429

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
300A	<p>DC Bulk Module 3 Overcurrent</p> <p>DC bulk module 3 detected an over current condition in the 9406 Expansion Unit (FC 504x). This is usually caused by one of the regulators.</p> <p>Perform SPCN-PIP5 in “System Power Control Network Problem Isolation Procedures” on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.</p>	<p>21F9215 21F9530 21F5680 FI00248 21F9429</p>
300B	<p>DC Bulk Module 1 Fault</p> <p>DC bulk module 1 installed in a FC 504x Expansion Unit reported a fault. Bulk module 2 or bulk module 3 also can cause this fault.</p>	<p>21F9530 21F5680 21F9429</p>
300C	<p>DC Bulk Module 2 Fault</p> <p>DC bulk module 2 installed in a FC 504x Expansion Unit reported a fault. Bulk module 1 or bulk module 3 also can cause this fault.</p>	<p>21F9530 21F5680 21F9429</p>
300D	<p>DC Bulk Module 3 Fault</p> <p>DC bulk module 3 installed in a FC 504x Expansion Unit reported a fault. Bulk module 1 or bulk module 2 also can cause this fault.</p>	<p>21F9530 21F5680 21F9429</p>
300E	<p>EPO Circuit Fault</p> <p>The ac module installed in the 9406 Expansion Unit (FC 504x) detected a fault in the UEPO signal. The signal was active and the incoming ac voltage was still present.</p>	<p>TWRCARD 21F9362 21F5680</p>
300F	<p>AC Module Failure</p> <p>A 9406 Expansion Unit ac module detected a failure during its BATs.</p>	<p>21F5680 21F9215 21F9429 FI00248</p>
3010	<p>Battery Power Unit.</p> <p>The battery power unit in the 9406 Expansion Unit (FC 504x) reported a fault.</p>	<p>21F9380 21F5680 21F9429</p>
3011	<p>Battery Power Unit Failed</p> <p>The battery power unit in the 9406 Expansion Unit (FC 504x) failed.</p>	<p>21F9380 21F5680 21F9429</p>
3012	<p>AC Module fault (EEPROM)</p> <p>The SPCN EEPROM test of the ac module in the 9406 Expansion Unit (FC 504x) failed.</p> <p>This may be a temporary error. Allow the system to complete the IPL. If the fault is not corrected, exchange the failing items.</p>	<p>21F5680 21F9215</p>
3013	<p>SPCN Licensed Internal Code Type not valid.</p> <p>The Licensed Internal Code loaded into the 9406 Expansion Unit (FC 504x) ac module is the wrong type.</p> <p>A reload of the Licensed Internal Code is attempted automatically. The reload operation failed.</p>	<p>21F5680 AJDG301</p>
3014	<p>Power Control Line Test Failed</p> <p>The Power Control Line test failed in the ac module installed in the 9406 Expansion Unit (FC 504x).</p>	<p>21F5680 21F9215 21F9530 21F9429</p>

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3015	Battery Power Unit missing The battery power unit is not installed in the 9406 Expansion Unit (FC 504x).	21F9380 21F5680 21F9429
3018	Cooling Problem. The SPCN node installed in the 9406 Expansion Unit (FC 504x) detected a cooling problem. This can be caused by the blower operating at the wrong speed or by fans not being installed on the back of the Support Box. Note: This error may occur if all empty card slots are not filled with an airflow card, part 74F1604.	21F5521 21F5680 21F9631 21F9429
301A	Battery Power Unit discharge life has been exceeded. The discharge cycle life of the battery power unit in the 9406 Expansion Unit (FC 504x) power supply was exceeded.	21F9380 21F5680 21F9429
301B	Battery Power Unit install life exceeded. The install life of the battery power unit in the 9406 Expansion Unit (FC 504x) power supply was exceeded.	21F9380 21F5680 21F9429
301F	LCD Test Failed The 9406 Expansion Unit (FC 504x) control panel test failed.	21F8888 21F5680 21F9429
3021	Regulator 1 Not Present 9406 Expansion I/O regulator 1 (slots 19-20) is not installed. If the regulator is installed, exchange the failing items. Ensure that the cable carrier drive rod is tight.	21F5680 21F9215 21F9429 FI00248
3022	Regulator 2 Not Present 9406 Expansion unit I/O regulator 2 (slots 17-18) is not installed. If the regulator is installed, exchange the failing items. Ensure that the cable carrier drive rod is tight.	21F5680 21F9215 21F9429 FI00248
3028	Overload on the +28 V line from regulator 1. 9406 Expansion Unit I/O regulator 1 detected a fault.	FI00244 21F9215 21F5680 FI00248
3029	Overload on the +28V line from regulator 2. 9406 Expansion Unit I/O regulator 2 detected a fault.	FI00246 21F9215 21F5680 FI00248
302A	No DC Bulk Module installed. No dc bulk modules are installed in the 9406 Expansion Unit.	21F5680 21F9530 21F9429
302B	PCC Overcurrent The power control compartment is causing an over current condition in the 9406 Expansion Unit power system. Exchange the ac module and the SPCN port cable at the same time.	TWRCARD 21F5680 21F9631 21F9362

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
302D	SPCN Licensed Internal Code Reload Required. A 9406 Expansion Unit SPCN Licensed Internal Code error occurred. The SPCN Licensed Internal Code was reloaded. The reload operation failed. Exchange the failing items.	21F5680 AJDG301
302E	SPCN Network Fault The 504x Expansion Unit detected an SPCN communications failure. Perform SPCN-PIP8 in "System Power Control Network Problem Isolation Procedures" on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.	21F5680 TWRCARD CBLALL
302F	AC Module Fault Failure. A 504x Expansion Unit ac module fault detection failure occurred. Any of the dc bulk modules also could cause this fault.	21F5680 21F9530 21F9429
3031	DC Bulk Module 1 is not installed. DC bulk module 1 is not installed in the or 504x Expansion Unit. If dc bulk module 1 is installed, exchange the failing items.	21F5680 21F9530 21F9429
3032	DC Bulk Module 2 is not installed. DC bulk module 2 is not installed in the 504x Expansion Unit. If dc bulk module 2 is installed, exchange the failing items.	21F5680 21F9530 21F9429
3033	DC Bulk Module 3 is not installed. DC bulk module 3 is not installed in the 504x Expansion Unit. If dc bulk module 3 is installed, exchange the failing items.	21F5680 21F9530 21F9429
4410	Internal Battery Power Unit Fault Internal Battery Power Unit in the system has failed.	BATRY BATCHGR TWRCARD CBLALL
4411	Internal Battery Power Unit Charger Fault Internal Battery Power Unit Charger in the system has failed.	BATCHGR TWRCARD CBLALL
4412	Internal Battery Power Unit Charger Fault Internal Battery Power Unit Charger in the system has failed.	BATCHGR BATRY TWRCARD CBLALL
4413	Internal Battery Power Unit Charger Fault Internal Battery Power Unit Charger in the system has failed.	BATCHGR TWRCARD CBLALL
4414	Internal Battery Power Unit Charger Fault Internal Battery Power Unit Charger in the system has failed.	PWROC BATRY TWRCARD CBLALL
6018	One of the regulators has reported a fault A regulator fault was detected.	PWRREG BKSPCN

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
601A	One of the CPM regulators has reported a fault A CPM regulator fault was detected.	PWRREG BKSPCN FI00030
6118	Regulator over current fault One of the regulators detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG BKSPCN
6218	Regulator over current fault Regulator 1 detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG BKSPCN
6238	Regulator over current fault Regulator 2 detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG BKSPCN
6258	Regulator over current fault Regulator 3 detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG ACMODUL
6318	Regulator Fault Regulator 1 has reported a fault.	PWRREG BKSPCN
631A	Regulator Fault Regulator 1 has reported a fault.	PWRREG ACMODUL FI00030
6338	Regulator Fault Regulator 2 reported a fault.	PWRREG BKSPCN
633A	Regulator Fault Regulator 2 reported a fault.	PWRREG ACMODUL FI00030
6358	Regulator Fault A regulator 3 reported a fault.	PWRREG ACMODUL
6518	One of the regulators has reported a fault An over current sensor failure occurred for a regulator. The ac module or one of the regulators can cause this fault.	PWRREG BKSPCN
6618	Regulator over current fault Regulator 1 reported a false over current condition. Fault tolerance may allow continued system operation.	PWRREG BKSPCN
6638	Regulator over current fault Regulator 2 reported a false over current condition. Fault tolerance may allow continued system operation.	PWRREG BKSPCN
6658	Regulator over current fault Regulator 3 reported a false over current condition. Fault tolerance may allow continued system operation.	PWRREG ACMODUL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6718	Regulator fault Regulator 1 reported a fault. Fault tolerance may allow continued system operation.	PWRREG BKSPCN
671A	Regulator fault Regulator 17 has reported a fault. Fault tolerance may allow continued system operation.	PWRREG BKSPCN FI00030
6738	Regulator fault Regulator 2 reported a fault. Fault tolerance may allow continued system operation.	PWRREG BKSPCN
673A	Regulator fault Regulator 18 reported a fault. Fault tolerance may allow continued system operation.	PWRREG BKSPCN FI00030
6758	Regulator fault Regulator 3 reported a fault. Fault tolerance may allow continued system operation.	PWRREG ACMODUL
6818	One of the regulators has reported a fault A fault detection failure occurred for a regulator. The regulator or the ac module/SPCN card can cause this fault.	PWRREG BKSPCN
6918	One of the regulators has reported a fault An over current fault detection failure occurred for a regulator. The regulator or the ac module/SPCN card can cause this fault.	PWRREG BKSPCN
6A18	Regulator Fault A regulator fault detection failure occurred for regulator 1. The ac module or the regulator can cause this fault.	PWRREG BKSPCN BACKPLN
6A38	Regulator Fault A regulator fault detection failure occurred for regulator 2. The regulator or the ac module/SPCN card can cause this fault.	PWRREG BKSPCN BACKPLN
6A58	Regulator Fault A regulator fault detection failure occurred for regulator 3. The regulator or the ac module/SPCN card can cause this fault.	PWRREG ACMODUL BACKPLN
6B00	Disk Unit 1 regulator fault The regulator that powers disk unit 1 reported a fault.	DISKTRY DISKDRV BKSPCN
6B01	Disk Unit 2 regulator fault The regulator that powers disk unit 2 reported a fault.	DISKTRY DISKDRV BKSPCN
6B02	Disk Unit 3 regulator fault The regulator that powers disk unit 3 reported a fault.	DISKTRY DISKDRV BKSPCN

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6B03	Disk Unit 4 regulator fault The regulator that powers disk unit 4 reported a fault.	DISKTRY DISKDRV BKSPCN
6B04	Disk Unit 5 regulator fault The regulator that powers disk unit 5 reported a fault.	DISKTRY DISKDRV BKSPCN
6B05	Disk Unit 6 regulator fault The regulator that powers disk unit 6 reported a fault.	DISKTRY DISKDRV BKSPCN
6B06	Disk Unit 7 regulator fault The regulator that powers disk unit 7 reported a fault.	DISKTRY DISKDRV BKSPCN
6B07	Disk Unit 8 regulator fault The regulator that powers disk unit 8 reported a fault.	DISKTRY DISKDRV BKSPCN
6B08	Disk Unit K1 regulator fault The regulator that powers disk unit K1, located in slot K1 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B09	Disk Unit K2 regulator fault The regulator that powers disk unit K2, located in slot K2 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0A	Disk Unit K3 regulator fault The regulator that powers disk unit K3, located in slot K3 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0B	Disk Unit K4 regulator fault The regulator that powers disk unit K4, located in slot K4 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0C	Disk Unit K5 regulator fault The regulator that powers disk unit K5, located in slot 5 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0D	Disk Unit K6 regulator fault The regulator that powers disk unit K6, located in slot K6 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0E	Disk Unit K7 regulator fault The regulator that powers disk unit K7, located in slot K7 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0F	Disk Unit K8 regulator fault The regulator that powers disk unit K8, located in slot K8 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B10	Disk Unit K9 regulator fault The regulator that powers disk unit K9, located in slot K9 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6B11	Disk Unit K10 regulator fault The regulator that powers disk unit K10, located in slot K10 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B12	Disk Unit K11 regulator fault The regulator that powers disk unit K11, located in slot K11 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B13	Disk Unit K12 regulator fault The regulator that powers disk unit K12, located in slot K12 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B14	Disk Unit K13 regulator fault The regulator that powers disk unit K13, located in slot K13 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B15	Disk Unit K14 regulator fault The regulator that powers disk unit K14, located in slot K14 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B16	Device 1 regulator fault The regulator for device 1 or D01 reported a fault.	RMDEV BKSPCN
6B17	Device 2 regulator fault The regulator for device 2 or D02 reported a fault.	RMDEV BKSPCN
6B18	Disk Unit 9 regulator fault The regulator that powers disk unit 9 reported a fault.	DISKTRY DISKDRV BKSPCN
6B19	Disk Unit 10 regulator fault The regulator that powers disk unit 10 reported a fault.	DISKTRY DISKDRV BKSPCN
6B1A	Disk Unit 11 regulator fault The regulator that powers disk unit 11 reported a fault.	DISKTRY DISKDRV BKSPCN
6B1B	Disk Unit 12 regulator fault The regulator that powers disk unit 12 reported a fault.	DISKTRY DISKDRV BKSPCN
6B1C	Device 3 regulator fault The regulator for device 3 reported a fault.	RMDEV BKSPCN
6B1D	Disk Unit K15 regulator fault The regulator that powers disk unit K15, located in slot K15 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B1E	Disk Unit K16 regulator fault The regulator that powers disk unit K16, located in slot K16 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B1F	Device 4 regulator fault The regulator for device 4 reported a fault.	RMDEV BKSPCN

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6B20	Disk Unit K17 regulator fault The regulator that powers disk unit K17 reported a fault.	DISKTRY DISKDRV BKSPCN
6B21	Disk Unit K18 regulator fault The regulator that powers disk unit K18 reported a fault.	DISKTRY DISKDRV BKSPCN
6B22	Disk Unit K19 regulator fault The regulator that powers disk unit K19 reported a fault.	DISKTRY DISKDRV BKSPCN
6B23	Disk Unit K20 regulator fault The regulator that powers disk unit K20 reported a fault.	DISKTRY DISKDRV BKSPCN
6B24	Disk Unit K21 regulator fault The regulator that powers disk unit K21 reported a fault.	DISKTRY DISKDRV BKSPCN
6B25	Disk Unit K22 regulator fault The regulator that powers disk unit K22 reported a fault.	DISKTRY DISKDRV BKSPCN
6B26	Disk Unit K23 regulator fault The regulator that powers disk unit K23 reported a fault.	DISKTRY DISKDRV BKSPCN
6B27	Disk Unit K24 regulator fault The regulator that powers disk unit K24 reported a fault.	DISKTRY DISKDRV BKSPCN
6B28	Disk Unit K25 regulator fault The regulator that powers disk unit K25 reported a fault.	DISKTRY DISKDRV BKSPCN
6B29	Disk Unit K26 regulator fault The regulator that powers disk unit K26 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2A	Disk Unit K27 regulator fault The regulator that powers disk unit K27 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2B	Disk Unit K28 regulator fault The regulator that powers disk unit K28 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2C	Disk Unit K29 regulator fault The regulator that powers disk unit K29 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2D	Disk Unit K30 regulator fault The regulator that powers disk unit K30 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2E	Disk Unit K31 regulator fault The regulator that powers disk unit K31 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2F	Disk Unit K32 regulator fault The regulator that powers disk unit K32 reported a fault.	DISKTRY DISKDRV BKSPCN
6C00	Disk Unit 1 regulator fault A fault detection failure occurred for the regulator that powers disk unit 1 or F01. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C01	Disk Unit 2 regulator fault A fault detection failure occurred for the regulator that powers disk unit 2 or F02. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C02	Disk Unit 3 regulator fault A fault detection failure occurred for the regulator that powers disk unit 3 or F03. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C03	Disk Unit 4 regulator fault A fault detection failure occurred for the regulator that powers disk unit 4 or F04. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C04	Disk Unit 5 regulator fault A fault detection failure occurred for the regulator that powers disk unit 5 or F05. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C05	Disk Unit 6 regulator fault A fault detection failure occurred for the regulator that powers disk unit 6 or F06. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C06	Disk Unit 7 regulator fault A fault detection failure occurred for the regulator that powers disk unit 7 or F07. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C07	Disk Unit 8 regulator fault A fault detection failure occurred for the regulator that powers disk unit 8 or F08. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C08	Disk Unit K1 regulator fault A fault detection failure occurred for the regulator that powers disk unit K1, located in slot 1 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C09	Disk Unit K2 regulator fault A fault detection failure occurred for the regulator that powers disk unit K2, located in slot 2 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0A	Disk Unit K3 regulator fault A fault detection failure occurred for the regulator that powers disk unit K3, located in slot 3 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0B	Disk Unit K4 regulator fault A fault detection failure occurred for the regulator that powers disk unit K4, located in slot 4 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0C	Disk Unit K5 regulator fault A fault detection failure occurred for the regulator that powers disk unit K5, located in slot 5 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C0D	Disk Unit K6 regulator fault A fault detection failure occurred for the regulator that powers disk unit K6, located in slot 6 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0E	Disk Unit K7 regulator fault A fault detection failure occurred for the regulator that powers disk unit K7, located in slot 7 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0F	Disk Unit K8 regulator fault A fault detection failure occurred for the regulator that powers disk unit K8, located in slot 8 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C10	Disk Unit K9 regulator fault A fault detection failure occurred for the regulator that powers disk unit K9, located in slot 9 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C11	Disk Unit K10 regulator fault A fault detection failure occurred for the regulator that powers disk unit K10, located in slot 10 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C12	Disk Unit K11 regulator fault A fault detection failure occurred for the regulator that powers disk unit K11, located in slot 11 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C13	Disk Unit K12 regulator fault A fault detection failure occurred for the regulator that powers disk unit K12, located in slot 12 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C14	Disk Unit K13 regulator fault A fault detection failure occurred for the regulator that powers disk unit K13, located in slot 13 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C15	Disk Unit K14 regulator fault A fault detection failure occurred for the regulator that powers disk unit K14, located in slot 14 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C16	Device 1 regulator fault A fault detection failure occurred for the regulator that powers device 1 or D01. The regulator or the ac module can cause this fault.	RMDEV BKSPCN
6C17	Device 2 regulator fault A fault detection failure occurred for the regulator that powers device 2 or D02. The regulator or the ac module can cause this fault.	RMDEV BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C18	Disk Unit 9 regulator fault A fault detection failure occurred for the regulator that powers disk unit 9. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C19	Disk Unit 10 regulator fault A fault detection failure occurred for the regulator that powers disk unit 10. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1A	Disk Unit 11 regulator fault A fault detection failure occurred for the regulator that powers disk unit 11. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1B	Disk Unit 12 regulator fault A fault detection failure occurred for the regulator that powers disk unit 12. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1C	Device 3 regulator fault A fault detection failure occurred for the regulator that powers device 3. The regulator or the ac module can cause this fault.	RMDEV BKSPCN
6C1D	Disk Unit K15 regulator fault A fault detection failure occurred for the regulator that powers disk unit K15, located in slot 15 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1E	Disk Unit K16 regulator fault A fault detection failure occurred for the regulator that powers disk unit K16, located in slot 16 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1F	Device 4 regulator fault A fault detection failure occurred for the regulator that powers device 4. The regulator or the ac module can cause this fault.	RMDEV BKSPCN
6C20	Disk Unit K17 regulator fault A fault detection failure occurred for the regulator that powers disk unit K17.	DISKTRY BKSPCN
6C21	Disk Unit K18 regulator fault A fault detection failure occurred for the regulator that powers disk unit K18.	DISKTRY BKSPCN
6C22	Disk Unit K19 regulator fault A fault detection failure occurred for the regulator that powers disk unit K19.	DISKTRY BKSPCN
6C23	Disk Unit K20 regulator fault A fault detection failure occurred for the regulator that powers disk unit K20.	DISKTRY BKSPCN
6C24	Disk Unit K21 regulator fault A fault detection failure occurred for the regulator that powers disk unit K21.	DISKTRY BKSPCN

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C25	Disk Unit K22 regulator fault A fault detection failure occurred for the regulator that powers disk unit K22.	DISKTRY BKSPCN
6C26	Disk Unit K23 regulator fault A fault detection failure occurred for the regulator that powers disk unit K23.	DISKTRY BKSPCN
6C27	Disk Unit K24 regulator fault A fault detection failure occurred for the regulator that powers disk unit K24.	DISKTRY BKSPCN
6C28	Disk Unit K25 regulator fault A fault detection failure occurred for the regulator that powers disk unit K25.	DISKTRY BKSPCN
6C29	Disk Unit K26 regulator fault A fault detection failure occurred for the regulator that powers disk unit K26.	DISKTRY BKSPCN
6C2A	Disk Unit K27 regulator fault A fault detection failure occurred for the regulator that powers disk unit K27.	DISKTRY BKSPCN
6C2B	Disk Unit K28 regulator fault A fault detection failure occurred for the regulator that powers disk unit K28.	DISKTRY BKSPCN
6C2C	Disk Unit K29 regulator fault A fault detection failure occurred for the regulator that powers disk unit K29.	DISKTRY BKSPCN
6C2D	Disk Unit K30 regulator fault A fault detection failure occurred for the regulator that powers disk unit K30.	DISKTRY BKSPCN
6C2E	Disk Unit K31 regulator fault A fault detection failure occurred for the regulator that powers disk unit K31.	DISKTRY BKSPCN
6C2F	Disk Unit K32 regulator fault A fault detection failure occurred for the regulator that powers disk unit K32.	DISKTRY BKSPCN
7000 to 7004	Air Moving Device Fault A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR BKSPCN
7101	Power supply failure The ac power supply module reported a fault. One of the other power supplies may also cause this error.	PWRSPLY

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
7102	Power supply failure Feature power supply 2 reported a fault. An ac module or one of the other feature power supplies may also cause this error.	PWRSPLY ACMODUL
7103	Power supply failure Feature power supply 1 reported a fault. The ac module or one of the other feature power supplies may also cause this error.	PWRSPLY ACMODUL
7201	Power Supply over current fault The ac module reported an over current condition. This is usually caused by one of the regulators. Perform "SPCN-PIP10" on page 625.	PWRREG PWRSPLY ACMODUL
7202	Power Supply over current fault Feature power supply 2 reported an over current condition. This is usually caused by one of the regulators. Perform "SPCN-PIP10" on page 625.	PWRREG PWRSPLY ACMODUL
7203	Power Supply over current fault Feature power supply 1 reported an over current condition. This is usually caused by one of the regulators. Perform "SPCN-PIP10" on page 625.	PWRREG PWRSPLY ACMODUL
7300	AC Module Over current The ac module or one of the feature power supplies reported an over current condition. Perform "SPCN-PIP10" on page 625.	ACMODUL PWRSPLY
7400	Control Supply fault A control supply fault was reported in the ac module.	ACMODUL BKSPCN
7401	Control Supply over current A control supply over current condition was detected in the ac module.	ACMODUL PWRREG BKSPCN
7402	Control Supply 5V regulator fault The SPCN detected a fault in the +5 V dc regulator of the control supply in the ac module.	ACMODUL BKSPCN
7403	Control Supply 12V regulator fault The SPCN detected a fault in the +12 V dc regulator of the control supply in the ac module.	ACMODUL
7404	Control Supply 12V regulator over current An over current condition was detected in the +12 V dc regulator of the control supply in the ac module. Perform "SPCN-PIP10" on page 625.	ACMODUL PWRSPLY BATCHGR
7405	Control Supply 5VSW Regulator Fault The Spcn detected a fault in the 5VSW dc regulator of the control supply in the ac module.	IDPART BKSPCN

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
7406	Control Supply 5VSW power off failure This failure must be corrected before removing powered VPDPART to avoid damage.	ACMODUL CTLPNL BKSPCN
7407	Optical Converter 5V Fault The SPCN detected a fault on the SPCN card optical converter 5V.	90H6287 SPNLCRD
7500 to 7503	Air Moving Device missing error A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed. Install Air Moving Device if missing, replace if already installed.	AIRMOVR BKSPCN
7610	Air Moving Device 1 Fault The Air Moving Device is operating at the wrong speed.	AIRMOVR TWRCARD
7620	Air Moving Device 2 Fault The Air Moving Device is operating at the wrong speed.	AIRMOVR TWRCARD
8001	A Battery Power Unit 1 Failed A response was received from battery power unit 1 charger that was not valid.	46G3890 ACMODUL BACKPLN
8002	Battery Power Unit 2 Failed A response was received from battery power unit 2 charger that was not valid.	46G3890 ACMODUL BACKPLN
8101	A Battery Power Unit 1 Failed Battery power unit 1 capacity test failed.	46G3890
8102	Battery Power Unit 2 Failed Battery power unit 2 capacity test failed.	46G3890
8110	Battery Power Unit 1 and 2 Failed Replace both batteries.	BATRY
8201	A Battery Power Unit 1 Failed Battery power unit 1 charging fault was detected.	46G3890
8202	Battery Power Unit 2 Failed Battery power unit 2 charging fault was detected.	46G3890
8301	A Battery Power Unit 1 Failed Battery power unit 1 load test fault occurred.	46G3890
8302	Battery Power Unit 2 Failed Battery power unit 2 load test fault occurred.	46G3890
8400	No VPD Found due to Invalid Bypass	TWRCARD
8401	Timeout on Panel for Request of VPD	VPDPART TWRCARD
8402	No VPD Found due to Clock Card Failure	VPDPART TWRCARD
8403	VPD Critical Mismatch	VPDPART TWRCARD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
8404 to 8406	Processor Unit VPD Mismatch	VPDPART TWRCARD
8407	Cache Voltage Mismatch	VPDPART BKSPCN
8409	No Processor Installed	VPDPART BKSPCN
8413 to 8416	Invalid Processor VPD	VPDPART TWRCARD
8423 to 8426	No Processor VPD	VPDPART TWRCARD
8610, 8620	Air Moving Device missing error	AIRMOVR TWRCARD
8810	Battery Power Unit missing	BATRY
8811	Battery Power Unit missing Battery Charger Not Present	BATCHGR
9012	Address not valid. LIC command had a frame address that was not valid. Exchange the SPCN frame-to-frame cables to the failing frame.	TWRCARD CBLALL
9013	Invalid Node Address. The address in the SPCN command does not match the secondary nodes assigned address. Exchange the failing items for the SPCN node reporting the error.	TWRCARD CBLALL
9014	A command has an invalid address mode. A command from the system unit specified a unit address of D or E or had a frame address of 00. Exchange the failing items in the system unit.	AJDG301 TWRCARD
9021	A command to an SPCN node was rejected. No action required. This reference code is logged for information only.	
9022	Addressed Unit not in frame. The addressed unit does not exist in the addressed frame. No action required. This reference code is logged for information only.	
9023	Addressed Unit exists, but the frame is powered off. The addressed unit is in a frame that is powered off. No action required. This reference code is logged for information only.	
9024	SPCN Licensed Internal Code not valid. The Licensed Internal Code in one of the secondary nodes is not valid. The code will be reloaded. No action required. This reference code is logged for error analysis only.	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9025	<p>SPCN Licensed Internal Code is not valid.</p> <p>The Licensed Internal Code in one of the frames is not valid. The code will be reloaded.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9026	<p>Battery Power Unit is reporting a low charge.</p> <p>The battery power unit is not charged enough to run a test.</p> <p>No action required. This reference code is logged for information only.</p>	
9027	<p>Battery Power Unit is defective.</p> <p>No action required. This reference code is logged for information only.</p>	
9028	<p>SPCN Licensed Internal Code is not valid.</p> <p>The Licensed Internal Code in the primary node is not valid. The code will be reloaded.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9029	<p>SPCN VPD Damaged</p> <p>The VPD record in the EEPROM has bad data.</p> <p>Exchange the failing items for the node reporting the failure.</p>	TWRCARD
902C	<p>Battery Power Unit test was aborted.</p> <p>The battery power unit test was aborted.</p> <p>No action required. This reference code is logged for information only.</p>	
902D	<p>Addressed frame is not in SPCN configuration table.</p> <p>The addressed frame is not in the SPCN configuration table.</p> <p>No action required. This reference code is logged for information only.</p>	
9031	<p>Frame-to-Frame Communications Failure</p> <p>The SPCN detected a BCC error on a transmission from another frame. The transmission is attempted again.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9032	<p>SPCN Communications Failure, unit to rack.</p> <p>The frame detected a BCC error on a transmission from a secondary node to the frame. The transmission is attempted again.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9033	<p>SPCN Communications Failure, rack to unit.</p> <p>A secondary node detected a BCC error on a transmission from the frame. The transmission is attempted again.</p> <p>No action required. This reference code is logged for error analysis only.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9034	<p>Unsupported Packet Size</p> <p>The receiving node detected a packet exceeding 70 bytes. The frame can also return this code if a secondary node returns more than 10 bytes to a PAS command.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9035	<p>Secondary SPCN node timeout.</p> <p>A secondary SPCN node did not respond to a command. The command was attempted again and failed.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9036	<p>Frame Timeout</p> <p>One or more frames did not respond to a command. The command is attempted again.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
903B	<p>Invalid Packet Length for data sent.</p> <p>The number of bytes sent or received does not match the number of bytes specified in the command.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9041	<p>Invalid Load Type</p> <p>The down load was successful, but the wrong type of Licensed Internal Code was loaded. The operation was attempted again but was not successful. Exchange the failing items for the node reporting the fault.</p>	AJDG301 TWRCARD
9042	<p>EEPROM Failure</p> <p>The EEPROM in an SPCN node cannot be written successfully.</p> <p>Exchange the SPCN node reported in the failure.</p>	TWRCARD
9043	<p>Download Failure</p> <p>The Licensed Internal Code download to an SPCN node was completed but was not successful.</p> <p>Exchange the failing SPCN node.</p>	TWRCARD
9046	<p>QDS Packet Sequence Error</p> <p>The Packet Sequence number is wrong. The download was stopped.</p>	TWRCARD
9047	<p>QDS Block Sequence Error</p> <p>The Block Sequence number is wrong. The download was stopped.</p>	TWRCARD
9048	<p>The SPCN ROS and EEPROM LIC is not compatible.</p> <p>The LIC levels in the nodes ROS and EEPROM are not compatible.</p> <p>Exchange the failing items for the failing node.</p>	TWRCARD AJDG301
9080	<p>Undefined Status Code</p> <p>An SPCN node returned an unknown status code.</p> <p>Exchange the failing SPCN node.</p>	TWRCARD AJDG301

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
90F0	A frame was dropped from the SPCN configuration. A frame was dropped from the SPCN configuration. This is usually caused by a loss of ac power or a problem with the frame-to-frame cable.	TWRCARD CBLALL
90F1	A frame was added to the SPCN configuration. No action required. This reference code is logged for information only.	
9100	Battery capacity test completed. No action required. This reference code is logged for information only.	
9101	VLIC-SPCN Timeout A Licensed Internal Code timeout occurred. The SPCN failed to respond to a Licensed Internal Code command.	TWRCARD CTLPNL SVCPROC
9102	Assign Permanent Address command failure A node failed to perform an Assign Permanent Address command.	TWRCARD
9103	Download Initialize Timeout An SPCN node failed to enter the download state after an Initialize for Download command. Exchange the failing SPCN node.	TWRCARD
9104	Download Completion Timeout An SPCN node failed to leave the download state. Exchange the failing SPCN node.	TWRCARD
9105	Load Damaged Timeout An SPCN node failed to enter the operational state. Exchange the failing SPCN node.	TWRCARD
9106	An SPCN LID was not found. No action required. This reference code is logged for information only.	
9107	An SPCN microcode download is required. No action required. This reference code is logged for error analysis only.	
9108	A status change occurred in one of the SPCN nodes. No action required. This reference code is logged for information only.	
9109	Licensed Internal Code part number is not correct. The AROS part number field was not updated to the correct level after the system attempted to load new Licensed Internal Code.	TWRCARD
9110	Battery Power Unit capacity test failed. The battery power unit was not able to pass the capacity test.	BATRY
9111	SPCN is too large for VLIC. There are more nodes in the network than VLIC can service.	AJDG301
9112	Primary SPCN node is reporting load damaged. The Licensed Internal Code for the primary SPCN node is damaged. The reload failed because the code could not be found.	TWRCARD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9113	Secondary SPCN node is reporting load damaged. The Licensed Internal Code for the secondary SPCN node is damaged. The reload failed because the code could not be found.	TWRCARD
9114	Frame SPCN node is reporting load damaged. The Licensed Internal Code for a SPCN node is damaged. The reload failed because the code could not be found.	TWRCARD
9115	SPCN Command rejected by the Service Processor. The service processor rejected an SPCN command from the Licensed Internal Code. No action required. This reference code is logged for information only.	
9116	SPCN - Control Panel interface failure. The SPCN to control panel interface is not working.	
9117	SPCN - Control Panel interface is now working. The SPCN to control panel interface is now working. No action required. This reference code is logged for information only.	
9212	Frame Address field not valid. A Licensed Internal Code command had a frame address that is not valid. Exchange the failing items for the failing node.	TWRCARD
9213	Invalid Address status, secondary node. The address in the SPCN command does not match the assigned address of the secondary node. Exchange the failing items for the failing node.	TWRCARD
9214	Invalid Address Mode status Invalid Address Mode occurred during Frame Command processing.	TWRCARD AJDG301
9215	Invalid Frame Command status Invalid Frame Command occurred during Frame Command processing.	TWRCARD AJDG301
921B	System Unit SPCN Port Fault status. System Unit Port Fault occurred during Command processing.	TWRCARD AJDG301
922B	Address Unassigned status A secondary node has no address assigned during Command processing.	TWRCARD AJDG301
9231	Frame-to-Frame Communications Failure A frame-to-frame communications failure occurred during STF processing.	TWRCARD CBLALL
9232	Intrarack Communications Failure An SPCN secondary node to frame communications failure occurred during Command processing.	TWRCARD CBLALL
9233	Intrarack Communications Failure An SPCN frame to secondary node communications failure occurred during Command processing.	TWRCARD CBLALL

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9234	Unsupported Packet Size status Unsupported Packet Size occurred during STF and Secondary Node Command processing.	TWRCARD CTLPNL SVCPROC
9235	SPCN Secondary Node Timeout status An SPCN Secondary Node Timeout occurred during Command processing. If the failing secondary node is in a 9337, go to the "Analyzing Problems" section in the <i>9337 Disk Array Service Information</i> manual.	TWRCARD AJDG301 CBLALL
9236	Frame Timeout status An SPCN Frame Node Timeout occurred during Network post processing.	TWRCARD CBLALL
9238	Secondary Node Fault An SPCN Secondary Node Fault occurred during Command processing.	TWRCARD AJDG301
9239	Frame Node Fault An internal error in the SPCN frame node prevents the running of a Frame command.	TWRCARD AJDG301
923A	ASA Failure The frame address returned by a secondary node does not match the address of the frame.	TWRCARD AJDG301
923B	Invalid Packet Length for data sent. An Invalid Packet Length occurred for data exchanged.	AJDG301 TWRCARD
9280	Response Stack Overflow Too many responses were received during System Frame command processing.	CBLALL AJDG301 TWRCARD
9281	Response Overrun Response Overrun occurred during System Frame processing.	CBLALL AJDG301 TWRCARD
9282	No Free Entries No free entries were found during System Frame processing.	CBLALL AJDG301 TWRCARD
9283	ARA Failure An Assign Frame Address Failure occurred during ARA Preprocessing.	TWRCARD AJDG301
9284	Undefined status Undefined Status occurred during Frame or STF processing.	TWRCARD AJDG301
9285	BCC Fault A BCC Error was detected during Network post processing.	TWRCARD
9286	Length Check Error. Length Check occurred during SPCN post processing.	TWRCARD AJDG301
9287	Undefined status Undefined Status occurred during Command processing.	TWRCARD AJDG301
9288	Configuration Error A configuration error was detected during System Frame processing.	TWRCARD AJDG301

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9289	Invalid Packet Length for data sent. Invalid Packet Length occurred for data exchanged.	AJDG301 TWRCARD
A100	Battery Power Unit capacity test failure The battery power unit capacity test time exceeds the installed battery capacity. The battery power may not be enough to provide a controlled stop during a loss of incoming ac voltage. This reference code is logged for information only.	
A201	A Battery Power Unit 1 Failed Battery power unit 1 capacity test failed.	BATRY BATCHGR
A202	Battery Power Unit 2 Failed Battery power unit 2 capacity test failed.	BATRY BATCHGR
A300	Battery Power Unit missing The existing number of battery power units installed may not be adequate for the current configuration. If the battery power units are installed, insure that they are properly connected before replacing any FRUs.	BATCHGR BATRY
A301	A Battery Power Unit 1 Failed The installed SPCN Licensed Internal Code does not give support to the type of battery power unit installed. Install the latest SPCN code.	AJDG301 BATCHGR
A302	Battery Power Unit 2 Failed The installed SPCN Licensed Internal Code does not give support to the type of battery power unit installed. Install the latest SPCN code.	AJDG301 BATCHGR
AC01 to AC02	Internal Battery Power Unit Charger Fault	BATCHGR BKSPCN
AC11	AC Loss to Power Supply 1 or Power Supply 1 Failure If the Power Supply 1 powers on normally or stays powered on after AC power failure, no replacement of parts may be needed.	PWRSPLY BKSPCN
AC22	AC Loss to Power Supply 2 or Power Supply 2 Failure If the Power Supply 2 powers on normally or stays powered on after AC power failure, no replacement of parts may be needed.	PWRSPLY BKSPCN
AC33	AC Loss to Power Supply 3 or Power Supply 3 Failure If the Power Supply 3 powers on normally or stays powered on after AC power failure, no replacement of parts may be needed.	PWRSPLY BKSPCN
AC44	AC Loss to Power Supply 4 or Power Supply 4 Failure If the Power Supply 4 powers on normally or stays powered on after AC power failure, no replacement of parts may be needed.	PWRSPLY BKSPCN
AC55	AC Loss to Power Supply 5 or Power Supply 5 Failure If the Power Supply 5 powers on normally or stays powered on after AC power failure, no replacement of parts may be needed.	PWRSPLY BKSPCN
B101	A Battery Power Unit 1 Failed Battery power unit reported an over current condition on the +29 V dc bus.	PWRREG BATCHGR BACKPLN

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B102	Battery Power Unit 2 Failed Battery power unit 2 reported an over current condition on the +29 V dc bus.	PWRREG BATCHGR BACKPLN
B201	A Battery Power Unit 1 Failed Battery power unit 1 reported an over current condition on the +31 V dc bus.	PWRREG BATCHGR BACKPLN
B202	Battery Power Unit 2 Failed Battery power unit 2 reported an over current condition on the +31 V dc bus.	PWRREG BATCHGR BACKPLN
C510	A Battery Power Unit 1 Failed SPCN-to-battery power unit 1 or 3 communications fault occurred.	BATCHGR ACMODUL BACKPLN
C511	Battery Power Unit 2 Failed SPCN-to-battery power unit 2 communications fault occurred.	BATCHGR ACMODUL BACKPLN
C512	AC Module Failure SPCN serial port communications fault occurred.	ACMODUL
C600	AC Module Failure The AC module control supply failed to turn off.	ACMODUL
C601	AC Module Failure AC module bus voltage control test fault occurred.	ACMODUL
C602	AC Module Failure AC module fault detection failure occurred.	ACMODUL
C609	Clock Card Failure The clock card in slot 17 is missing or defective.	CLKCARD BKSPCN
C62E	SPCN Network Fault An SPCN frame-to-frame communication failure was detected. "Cannot Power On Secondary Frame (No SRC)" on page 41 or "System or Frame Cannot Become Powered Off" on page 55.	TWRCARD CBLALL
C701	AC Module Failure An SPCN frame-to-frame communication failure was detected.	TWRCARD CBLALL
C702	AC Module Failure An SPCN frame-to-frame communication failure was detected. This reference code indicates that an AC loss was detected. "Cannot Power On Secondary Frame (No SRC)" on page 41.	TWRCARD CBLALL
C703	AC Module Failure An SPCN frame-to-frame communication failure was detected. "Cannot Power On Secondary Frame (No SRC)" on page 41.	TWRCARD CBLALL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C900	Power Problem in the 9337. A failure occurred in the 9337 Disk Array operator panel.	
C901	Power Problem in the 9337. Fan 1 in the 9337 Disk Array failed.	
C902	Power Problem in the 9337. Fan 2 in the 9337 Disk Array failed.	
C903	Power Problem in the 9337. Both fans in the 9337 Disk Array failed.	
C906	Power Problem in the 9337. Watchdog timeout 1 occurred.	
C907	Power Problem in the 9337. Watchdog timeout 2 occurred.	
C908	Power Problem in the 9337. Communication with all modules in the 9337 Disk Array failed.	
C909	Power Problem in the 9337. All controllers in the 9337 Disk Array failed.	
C90A	Power Problem in the 9337. Communications with power module 1 in the 9337 Disk Array failed.	
C90B	Power Problem in the 9337. Communications with power module 2 in the 9337 Disk Array failed.	
C90C	Power Problem in the 9337. Communications with power module 3 in the 9337 Disk Array failed.	
C90D	Power Problem in the 9337. Controller 1 in a 9337 Disk Array reported a communications timeout.	
C90E	Power Problem in the 9337. Controller 2 in a 9337 Disk Array reported a communications timeout.	
C90F	Power Problem in the 9337. SPCN communications failure in a 9337 Disk Array.	
C990	Power Problem in the 9337. More than one power module failed in a 9337 Disk Array.	
C991	Power Problem in the 9337. +5 V dc failed on more than one power module in a 9337 Disk Array.	
C992	Power Problem in the 9337. +12 V dc failed on more than one power module in a 9337 Disk Array.	
C9A0	Power Problem in the 9337. Power module 1 in a 9337 Disk Array reported a failure.	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C9A1	Power Problem in the 9337. Power module 1 in a 9337 Disk Array reported a failure with the +5 V dc.	
C9A2	Power Problem in the 9337. Power module 1 in a 9337 Disk Array reported a failure with the +12 V dc.	
C9A3	Power Problem in the 9337. Power module 1 in a 9337 Disk Array reported a failure in its power envelope.	
C9B0	Power Problem in the 9337. Power module 2 in a 9337 Disk Array reported a failure.	
C9B1	Power Problem in the 9337. Power module 2 in a 9337 Disk Array reported a failure with the +5 V dc.	
C9B2	Power Problem in the 9337. Power module 2 in a 9337 Disk Array reported a failure with the +12 V dc.	
C9B3	Power Problem in the 9337. Power module 2 in a 9337 Disk Array reported a failure in its power envelope.	
C9C0	Power Problem in the 9337. Power module 3 in a 9337 Disk Array reported a failure.	
C9C1	Power Problem in the 9337. Power module 3 in a 9337 Disk Array reported a failure with the +5 V dc.	
C9C2	Power Problem in the 9337. Power module 3 in a 9337 Disk Array reported a failure with the +12 V dc.	
C9C3	Power Problem in the 9337. Power module 3 in a 9337 Disk Array reported a failure in its power envelope.	
CB00	Unknown box ID The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN
CB05 to CB06	AC Module Failure The SPCN ROS and EPROMs test failed.	ACMODUL
CB1D	AC Module Failure The LCD test failure was detected on an Extension/Expansion Unit.	ACMODUL 17G0573
CC00	AC Module Failure An unknown fault was detected. The machine failed to power up.	ACMODUL FI00065 BKSPCN
CD00	No Power Supplies Present SPCN cannot detect any power supplies installed.	BKSPCN PWRSPLY

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
CE18	Regulator Not Present No regulators can be found. If the regulators are installed, exchange the failing items.	PWRREG ACMODUL
CE1A	Regulator Not Present If regulator 3 in slot R03 is installed, exchange the failing items.	PWRREG BKSPCN
D001	A Battery Power Unit 1 Failed A response was received from battery power unit 1 charger that was not valid.	86G8020 ACMODUL BACKPLN
D002	Battery Power Unit 2 Failed A response was received from battery power unit 2 charger that was not valid.	86G8020 ACMODUL BACKPLN
D101	A Battery Power Unit 1 Failed Battery power unit 1 capacity test failed.	86G8040 86G8020
D102	Battery Power Unit 2 Failed Battery power unit 2 capacity test failed.	86G8040 86G8020
D110	Battery Power Unit 1 and 2 Failed Replace both batteries.	BATRY
D201	A Battery Power Unit 1 Failed Battery power unit 1 charging fault was detected.	86G8020 86G8040
D202	Battery Power Unit 2 Failed Battery power unit 2 charging fault was detected.	86G8020 86G8040
D301	A Battery Power Unit 1 Failed Battery power unit 1 load test fault occurred.	86G8020 86G8040
D302	Battery Power Unit 2 Failed Battery power unit 2 load test fault occurred.	86G8020 86G8040
E002	Battery Power Unit 2 Failed A response was received from battery power unit 2 charger that was not valid.	86G7750 ACMODUL BACKPLN
E102	Battery Power Unit 2 Failed External battery power unit 2 capacity test failed.	86G7714 86G7750
E202	Battery Power Unit 2 Failed External battery power unit 2 charging fault was detected.	86G7750 86G7714
E302	Battery Power Unit 2 Failed External battery power unit 2 load test fault occurred.	86G7750 86G7714
F401	Internal Battery Power Unit Charger Fault	BATCHGR BKSPCN
F501	Internal Battery Power Unit Fault	BATRY BATCHGR

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
F601	Internal Battery Power Unit or Charger Fault	BATCHGR BATRY
F701	Internal Battery Power Unit Charger Fault	BATCHGR BATRY
F802	External Battery Power Unit Charger Fault	BATCHGR BKSPCN
F902	External Battery Power Unit Fault	BATRY BATCHGR
FA02	External Battery Power Unit or Charger Fault	BATCHGR BATRY
FB02	External Battery Power Unit Charger Fault	BATCHGR BATRY

System Power Control Network Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
17G0573	Expansion Unit Control Panel	Repair and Parts
17G1150	Power Supply	Repair and Parts
21F5521	Blower Assembly	Repair and Parts
21F5680	AC Module, SPCN Secondary node.	Repair and Parts
21F5793	Fan assembly.	Repair and Parts
21F8872	5032 Cable Carrier.	Repair and Parts
21F8888	Expansion Unit/Extension Unit Control Panel	Repair and Parts
21F8890	D-SE Converter Module.	Repair and Parts
21F9215	I/O Regulator.	Repair and Parts
21F9362	SPCN Port Cable	Repair and Parts
21F9380	Battery Power Unit	Repair and Parts
21F9429	Cable Carrier, 504x feature.	Repair and Parts
21F9530	DC Bulk Module.	Repair and Parts
21F9631	Fan assembly.	Repair and Parts
46G3890	Internal Battery Power Unit	Repair and Parts
6462417	Rack Control Panel cable.	Repair and Parts
86G7714	External Battery Power Unit	Repair and Parts
86G7750	Battery Power Unit Charger	Repair and Parts
86G8020	Battery Power Unit Charger	Repair and Parts
86G8040	Battery Power Unit	Repair and Parts
87G6110	Power Supply	Repair and Parts

Failing Item	Description	Document Description
87G6235	SPCN Frame-to-Frame or PCC port cable.	Repair and Parts
87G6300	AC Module	Repair and Parts
90H6287	Optical Converter	Repair and Parts
ACMODUL	AC Module	Problem Analysis; Symbolic FRU Isolation
AIRMOVR	Fan and Blower assemblies	Problem Analysis; Symbolic FRU Isolation
AJDG301	Vertical Licensed Internal Code.	Service Functions; APAR or LICTR
AJSDJ01	Secondary SPCN node Licensed Internal Code.	Service Functions; APAR or LICTR
AJSDJ01	Primary SPCN node Licensed Internal Code.	Service Functions; APAR or LICTR
BACKPLN	Back Plane Unit	Problem Analysis; Symbolic FRU Isolation
BATCHGR	Battery Power Unit Charger	Problem Analysis; Symbolic FRU Isolation
BATRY	Battery Power Unit	Problem Analysis; Symbolic FRU Isolation
BKSPCN	SPCN card	Problem Analysis; Symbolic FRU Isolation
DISKDRV	Disk Unit Power regulator	Problem Analysis; Symbolic FRU Isolation
DISKTRY	Disk unit tray	Problem Analysis; Symbolic FRU Isolation
DMREG	Domain Regulator	Problem Analysis; Symbolic FRU Isolation
PGDPART	Power Good Parts	Problem Analysis; Symbolic FRU Isolation
PWRREG	Regulator.	Problem Analysis; Symbolic FRU Isolation
PWRSPLY	Power Supply	Problem Analysis; Symbolic FRU Isolation
RMDEV	Disk Unit or Removable Media Device	Problem Analysis; Symbolic FRU Isolation
TWRCARD	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation

(2440) Magnetic Tape Subsystem Reference Codes

A tape or a 2440 Tape Unit failure occurred.

Note: For tape device and IOP reset procedures, see “TU-PIP4” on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes No

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see “Determining the Dominant Operating System” in the *AS/400 Service Functions*)?

No Yes

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 2440 is powered on.
4. Clean the tape path as described in the 2440 service information.
5. Load the first tape.
6. Start a type D IPL from the system unit control panel.
7. Does the IPL complete successfully?

No Yes

↓ The problem has been corrected.

This ends the procedure.

8. Obtain another copy of the tape. Repeat steps 5 and 6 using the new tape. If the problem continues, continue with step 9.
9. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
10. If the tape unit indicator panel shows an error condition, see the tape unit maintenance manual for more information.
11. Find the reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2001	Tape path dirty or write data error Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i> , G571-0149. If this does not correct the problem, exchange the failing items.	MH50001 DH50002
2003	Tape path dirty or write identification record error Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i> , G571-0149. If this does not correct the problem, exchange the failing items.	MH50001 DH50002
2008	Tape path dirty or more than one channel drop error Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i> , G571-0149. If this does not correct the problem, exchange the failing items.	MH50001 DH50002
2009	Tape path dirty or read identification record error Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i> , G571-0149. If this does not correct the problem, exchange the failing items.	MH50001 DH50002
2015	Tape unit failure Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i> , G571-0149. If this does not correct the problem, exchange the failing items.	MH50001 DH50002

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2016	Tape unit ready status lost during read or write operation Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i> , G571-0149. If this does not correct the problem, exchange the failing items.	MH50001 DH50002
FFD5	Tape unit error reported by 2440 tape unit IOP Perform the "Powering Up the System" procedures in the <i>2440 Magnetic Tape Subsystem Service Guide</i> , G571-0166.	UH50003 DH50002 FI00830 FI00856
FFF6	Volume statistics; logged only	

Magnetic Tape Subsystem Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
DH50002	Tape unit	2440 Magnetic Tape Subsystem Operator's Manual, G571-0149
MH50001	Tape	2440 Magnetic Tape Subsystem Operator's Manual, G571-0149
UH50003	Tape unit not communicating	2440 Magnetic Tape Subsystem Operator's Manual, G571-0149

(2621) SCSI I/O Processor Reference Codes

The SCSI I/O processor detected a failure.

1. Verify that the tape unit is powered on.
2. Clean the tape path as described in the service information for the specific tape unit.
3. Load the first tape.
4. Start a type D IPL from the system unit control panel.
5. Does the IPL complete successfully?

No **Yes**

↓ The problem has been corrected.

This ends the procedure.

6. Obtain another copy of the tape. Repeat steps 3 and 4 using the new tape. If this does not correct the problem, continue with step 7.
7. If the tape unit indicator panel shows an error condition, see the service information for the specific tape unit.
8. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A1	I/O processor detected a buffer allocation error	AJEDA00 2621
09A2	I/O processor detected a recoverable system bus error No action required. This reference code is logged for information only.	
0A17	A permanent I/O processor failure occurred	2621 AJEDA00
0A18	I/O processor detected a random interrupt	2621 FI00884
0A20	I/O processor resource not available	FI00882 2621 AJEDA00
0A21	I/O processor detected a storage transfer error	2621 FI00884
0A22	I/O processor detected a storage transfer error	2621 AJEDA00
0A41	I/O processor parity error	2621
0AA3	A permanent I/O processor failure occurred	AJEDA00 2621
0AC9	I/O processor detected a buffer allocation error	AJEDA00 2621 ANYBUS
0AD0	I/O processor detected a storage sequence error	AJEDA00 2621 ANYBUS
0AD1	A permanent I/O processor failure occurred	2621
1070	I/O processor memory error	2621 AJEDA00
1071	Problem with removable media, possibly a user error See the service information for the specific tape device.	MDMMEDA AJEDA00 FI00882
1072	I/O processor Licensed Internal Code error	AJEDA00
1073	I/O processor memory error No action required. This reference code is logged for information only.	
1074	Problem with removable media, possibly a user error See the service information for the specific tape device. If this does not correct the problem, ask your next level of support for assistance.	MDMMEDA

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1075	I/O processor detected a buffer allocation error See the service information for the specific tape device.	AJEDA00 MDMMEDA
1076	I/O processor Licensed Internal Code error	AJEDA00
1077	EEPROM update occurred No action required. This reference code is logged for information only.	
107F	I/O processor Licensed Internal Code error	AJEDA00
1A03	I/O processor resource not available	AJEDA00 AJDG301
1A10	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	2621 FI00884 DEVTERM EXTSCSI AJEDA00 BACKPLN
2800	I/O processor Licensed Internal Code error	AJEDA00
2806	A permanent I/O processor failure occurred	FI00120 2621
2808	I/O processor Licensed Internal Code error	AJEDA00
280A	A permanent I/O processor failure occurred	2621
2810	Device not ready during IPL	FI00882 AJEDA00 EXTSCSI 2621
2816	I/O processor Licensed Internal Code error	AJEDA00
281A	Removable media error during IPL	MDMMEDA 2621 FI00882
281E	Removable media error during IPL	MDMMEDA FI00882 2621
2820, 2900, 2904	I/O processor Licensed Internal Code error	AJEDA00
2906	I/O processor Licensed Internal Code error	MDMMEDA FI00884 AJEDA00 2621
290A, 2A00, 2A02	I/O processor Licensed Internal Code error	AJEDA00
2B00	System I/O bus error	FI00120 ANYBUS AJEDA00
2B02	System I/O bus error	FI00120 2621 ANYBUS AJEDA00
3000	A permanent I/O processor failure occurred	2621
3002	Tape/CD or disk device failed to respond to selection	FI00882 2621 FI01141 EXTSCSI

2621

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3005	Storage unit detected a media problem A blank tape was found, or the physical limits of the tape were reached because of a device error.	FI00882 2621 AJEDA00
3006	A permanent I/O processor failure occurred	2621 ANYBUS
300C to 300D	A tape/CD or disk device reported a failure	FI00882 2621
3010	A tape/CD or disk device reported a failure	FI00882 AJEDA00
3020	I/O processor detected a SCSI bus configuration error Use the FI codes to find failing devices. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP18" on page 592.	UDMUSER FI00882 FI00883 2621
3030	A tape/CD or disk device reported a failure	FI00882 2621
3031	Type of tape/CD or disk unit not known	FI00882 AJEDA00
3100	Tape/CD or disk bus interface error occurred	2621 FI00882 DEVTERM EXTSCSI FI00883
3110	A tape/CD or disk device reported a failure	FI00882 2621 EXTSCSI DEVTERM
3200	A tape/CD or disk device reported a failure	FI00882 MDMMEDA
3300	Storage unit detected a media problem See the service information for the specific tape device.	MDMMEDA FI00882 FI01141
3400	Failure in initialization of a device task Perform "SDIOP-PIP18" on page 592.	FI00882 2621
3500	I/O processor Licensed Internal Code error	AJEDA00 2621
3501	I/O processor Licensed Internal Code error	AJEDA00
4003 to 4006	I/O processor Licensed Internal Code error	AJEDA00 2621
4030	Data decompression failure, I/O processor operational See the service information for the specific tape device.	MDMMEDA 2621
B300 to B301	A permanent I/O processor failure occurred	2621
B701	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B711	Control storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B720	A permanent I/O processor failure occurred	2621

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B740	Reset of the I/O processor header failed	2621
B780	A permanent I/O processor failure occurred	2621 EXTSCSI
B783	Data compression failure, I/O processor operational	2621
B787	I/O processor detected an internal error	2621
B790	A permanent I/O processor failure occurred	2621
B791	I/O processor detected a recoverable device error No action required. This reference code is logged for information only.	
B7A2	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B980	Tape/CD or disk bus interface error occurred	2621 EXTSCSI FI00884 FI01141 DEVTERM
B981	Tape/CD or disk bus interface error occurred	EXTSCSI FI00884 2621 FI01141 DEVTERM
B982	I/O processor detected a storage device failure	FI00882 2621 EXTSCSI FI01141 DEVTERM
B983	Storage unit detected a media problem See the service information for the specific tape device.	MDMMEDA FI00882 FI00883 2621 EXTSCSI DEVTERM
B986	Tape/CD or disk bus interface error occurred	FI00882 EXTSCSI 2621 FI01141 DEVTERM
B98F	Type of tape/CD or disk unit not known See the specific device service information for details.	FI00882 AJEDA00
BB00	System bus error	2621 ANYBUS BACKPLN
BE01	I/O processor was not ready for interrupt that occurred	AJEDA00 2621
BE04	I/O processor Licensed Internal Code error	AJEDA00 2621
BE18	I/O processor detected a random interrupt	2621
BE1A	I/O processor was not ready for interrupt that occurred	2621 AJEDA00

2621

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
BE1B	I/O processor was not ready for interrupt that occurred	AJEDA00 DEVTERM 2621 EXTSCSI FI00884
BE1C to BE1E	I/O processor was not ready for interrupt that occurred	AJEDA00 2621
BE40, BE48	A permanent I/O processor failure occurred	2621 AJEDA00
BE50	I/O processor detected a random interrupt	2621
BE51	I/O processor memory error	2621
BE52	I/O processor card or Licensed Internal Code error	2621 AJEDA00
BE53 to BE54	I/O processor Licensed Internal Code error	AJEDA00 2621
BE55	I/O processor memory error	2621
BE57	A permanent I/O processor failure occurred	2621
BE58	I/O processor detected a random interrupt	2621 AJEDA00
BE60	I/O processor detected a random interrupt	2621
FF3D	I/O processor detected an internal error	2621
FF4D, FF5D	I/O processor detected a recoverable SCSI bus error No action required. This reference code is logged for information only.	
FF6D	I/O processor detected a recoverable system bus error	2621 ANYBUS

SCSI I/O Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
2621	I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
EXTSCSI	Cable assembly	Problem Analysis; Symbolic FRU Isolation
MDMMEDA	Defective removable media	Refer to I/O device service information

Failing Item	Description	Document Description
UDMUSER	Operator/User Error	System operation information

(2624) Magnetic Storage I/O Processor Reference Codes

The magnetic storage I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A1	I/O processor detected a buffer allocation error	AJEDA00 2624
09A2	I/O processor detected a recoverable system bus error No action required. This reference code is logged for information only.	
0A17	A permanent I/O processor failure occurred	2624 AJEDA00
0A18	I/O processor detected a random interrupt Perform “SDIOP-PIP13” on page 582.	2624 FI01107
0A20	I/O processor resource not available	FI01105 2624 AJEDA00
0A21	I/O processor detected a storage transfer error Perform “SDIOP-PIP13” on page 582.	2624 FI01107
0A22	I/O processor detected a storage transfer error	2624 AJEDA00
0A41	I/O processor parity error	2624 FI01104
0AA3	A permanent I/O processor failure occurred	AJEDA00 2624
0AC9	I/O processor detected a buffer allocation error Perform “BUS-PIP1” on page 443.	AJEDA00 2624 FI00010 FI01104

2624

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0AD0	I/O processor detected a storage sequence error Perform "BUS-PIP1" on page 443.	AJEDA00 2624 FI00010 FI01104
0AD1	A permanent I/O processor failure occurred	2624 FI01104
1070	I/O processor memory error	2624 AJEDA00
1071	Problem with removable media, possibly a user error Perform "SDIOP-PIP1" on page 577.	MDNMEDA AJEDA00 FI01105
1072	I/O processor Licensed Internal Code error	AJEDA00
1073	I/O processor memory error No action required. This reference code is logged for information only.	
1074	Problem with removable media, possibly a user error Perform "SDIOP-PIP1" on page 577. If this does not correct the problem, ask your next level of support for assistance.	MDNMEDA
1075	I/O processor detected a buffer allocation error Perform "SDIOP-PIP1" on page 577.	AJEDA00 MDNMEDA
1076	I/O processor Licensed Internal Code error	AJEDA00
1077	EEPROM update occurred No action required. This reference code is logged for information only.	
107F	I/O processor Licensed Internal Code error	AJEDA00
1A03	I/O processor resource not available	AJEDA00 AJDG301
1A10	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	2624 FI01104 FI01107 DEVTERM FI01140 AJEDA00 BACKPLN
3000	A permanent I/O processor failure occurred	2624
3002	Tape/CD or disk device failed to respond to selection Perform "SDIOP-PIP16" on page 585.	FI01105 2624 FI01106 FI01141 FI01140
3006	A permanent I/O processor failure occurred Perform "BUS-PIP1" on page 443.	2624 FI00010
3020	I/O processor detected a SCSI bus configuration error Use the failing item (FI) codes to find failing devices. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 589.	UDNUSER FI01105 FI01106 2624
3030	A tape/CD or disk device reported a failure	FI01105 2624

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3031	Type of tape/CD or disk unit not known Ensure that the device indicated by FI01105 is supported by the system. If it is, exchange the FRUs, one at a time.	FI01105 AJEDA00
3100	Tape/CD or disk bus interface error occurred Perform "SDIOP-PIP13" on page 582.	2624 FI01105 DEVTERM FI01140 FI01106
3200	A tape/CD or disk device reported a failure	FI01105 MDNMEDA
3300	Storage unit detected a media problem Perform "SDIOP-PIP1" on page 577.	MDNMEDA FI00121 FI01141
3400	Failure in initialization of a device task Perform "SDIOP-PIP17" on page 589.	FI01105 2624
3500	I/O processor Licensed Internal Code error	AJEDA00 2624
3501	I/O processor Licensed Internal Code error	AJEDA00
4002 to 4003, 4006	I/O processor Licensed Internal Code error	AJEDA00 2624
4030	Data decompression failure, I/O processor operational Perform "SDIOP-PIP1" on page 577.	MDNMEDA 2624
B300 to B301	A permanent I/O processor failure occurred	2624 FI01104
B701	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B711	Control storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B720	A permanent I/O processor failure occurred	2624
B740	Reset of the I/O processor header failed	2624
B780	A permanent I/O processor failure occurred	2624 FI01140
B783	Data compression failure, I/O processor operational	2624
B787	I/O processor detected an internal error	2624
B790	A permanent I/O processor failure occurred	2624
B791	I/O processor detected a recoverable device error No action required. This reference code is logged for information only.	
B7A2	Read only storage failed, I/O processor is operational	
B940	Adapter card storage failure	FI01104 2624
B950	Adapter card storage or vital product data (VPD) failure	FI01104 2624

2624

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B960	Type of adapter card not known Ensure that the adapter card is supported by the system. If it is, exchange the FRUs, one at a time.	AJEDA00 FI01104
B980	Tape/CD or disk bus interface error occurred Perform "SDIOP-PIP13" on page 582.	2624 FI01140 FI01107 FI01141 DEVTERM
B981	Tape/CD or disk bus interface error occurred Perform "SDIOP-PIP16" on page 585.	FI01140 FI01107 2624 FI01141 DEVTERM
B982	I/O processor detected a storage device failure	FI01105 2624 FI01140 FI01141 DEVTERM
B983	Storage unit detected a media problem Perform "SDIOP-PIP1" on page 577.	MDNMEDA FI01105 FI01106 2624 FI01140 DEVTERM
B986	Tape/CD or disk bus interface error occurred	FI01105 FI01140 2624 FI01141 DEVTERM
B98F	Type of tape/CD or disk unit not known Ensure that the device indicated by FI01105 is supported by the system. If it is, exchange the FRUs, one at a time.	FI01105 AJEDA00
B9C5	Diskette automatic write/read wrap test failure	FI00122 2624
B9C7	I/O processor detected error in diskette control register	FI00122
B9C9	Diskette automatic write/read wrap test failure	FI01110 2624 FI00122 FI00142
BB00	System bus error Perform "BUS-PIP1" on page 443.	2624 FI00010 BACKPLN
BE01	I/O processor was not ready for interrupt that occurred	AJEDA00 2624 FI01104
BE04	I/O processor Licensed Internal Code error	AJEDA00 2624
BE18	I/O processor detected a random interrupt	FI01104 2624

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
BE1A	I/O processor was not ready for interrupt that occurred	2624 AJEDA00 FI00122
BE1B	I/O processor was not ready for interrupt that occurred Ask your next level of support if PTFs are available for the I/O processor licensed internal code. If so, apply them to the system. If this does not correct the problem, the I/O processor, its device interface, or an attached device may be causing the problem. If you suspect a hardware problem, perform "SDIOP-PIP13" on page 582.	AJEDA00 DEVTERM 2624 FI01140 FI01107
BE1C to BE1E	I/O processor was not ready for interrupt that occurred	AJEDA00 2624
BE40	A permanent I/O processor failure occurred	2624 AJEDA00
BE45 to BE46	Adapter card not communicating to I/O processor	FI01104 2624 AJEDA00
BE47	Adapter card not communicating to I/O processor Perform "BUS-PIP1" on page 443.	FI00122 2624 AJEDA00
BE48	A permanent I/O processor failure occurred	2624 AJEDA00
BE50	I/O processor detected a random interrupt	2624
BE51	I/O processor memory error	2624
BE52	I/O processor card or Licensed Internal Code error	AJEDA00 2624 FI01104
BE53 to BE54	I/O processor Licensed Internal Code error	AJEDA00 2624
BE55	I/O processor memory error	2624
BE56 to BE57	A permanent I/O processor failure occurred	2624
BE58	I/O processor detected a random interrupt	2624 AJEDA00
BE60	I/O processor detected a random interrupt	2624
FF3D	I/O processor detected an internal error	2624
FF6D	I/O processor detected a recoverable system bus error	2624 FI00010

Magnetic Storage I/O Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
2624	I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
MDNMEDA	Defective removable media	System operation information
UDNUSER	Operator/User Error	System operation information

(2644) Tape I/O Processor Reference Codes

The tape I/O processor detected a failure.

1. Verify that the tape unit is powered on.
2. Clean the tape path as described in the service information for the specific tape unit.
3. Load the first tape.
4. Start a type D IPL from the system unit control panel.
5. Does the IPL complete successfully?

No Yes

↓ The problem has been corrected.

This ends the procedure.

6. Obtain another copy of the tape. Repeat steps 3 and 4 using the new tape. If this does not correct the problem, continue with step 7.
7. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
8. If the tape unit indicator panel shows an error condition, see the service information for the specific tape unit.
9. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A1	I/O processor detected a buffer allocation error	AJEDA00 21F6085
09A2	I/O processor detected a recoverable system bus error	
0A17	I/O processor was not ready for interrupt that occurred	21F6085 AJEDA00

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0A18	I/O processor detected a random interrupt	21F6085 FI00851 FI00850 FI00852
0A20	Tape I/O processor card, tape drive, or Lic Int Code error	FI00851 21F6085 AJEDA00
0A21	I/O processor detected a storage transfer error	21F6085 FI00851
0A22	I/O processor detected a storage transfer error	21F6085 AJEDA00
0A41	I/O processor parity error	21F6085
0AC9	I/O processor detected a buffer allocation error	AJEDA00 21F6085 FI00010
0AD0	I/O processor detected a storage sequence error	AJEDA00 21F6085 FI00010
0AD1	A permanent I/O processor failure occurred	21F6085
1070	I/O processor memory error	21F6085 AJEDA00
1071	Problem with removable media, possibly a user error	MDDTMED FI00851 AJEDA00
1072	I/O processor Licensed Internal Code error	AJEDA00
1073	I/O processor memory error	
1074	Problem with removable media, possibly a user error	MDDTMED
1075	I/O processor detected a buffer allocation error	AJEDA00 MDDTMED
1076	I/O processor Licensed Internal Code error	AJEDA00
1077	EEPROM update occurred	
107F	I/O processor Licensed Internal Code error	AJEDA00
1A03	I/O processor resource not available	AJEDA00 AJDG301
1A06	I/O processor card or Licensed Internal Code error	AJEDA00 21F6085
1A10	I/O processor resource not available The I/O processor error log has been filled. If it is possible to view the error log via DST or other system level methods, correct those errors in the error log before correcting this reference code and continuing. If there are no error log messages, exchange the failing items.	21F6085 FI00851 AJEDA00 FI00850 FI00852 FI00010 FI00853
2800	I/O processor detected an internal error	AJEDA00 21F6085
2806	System processor card or tape I/O processor card error	FI00120 21F6085
2808	I/O processor Licensed Internal Code error	AJEDA00

2644

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
280A	Tape I/O processor card error	21F6085
2810	Device not ready during IPL Perform "TIOP-PIP1" on page 639. Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.	FI00851 AJEDA00 21F6085 FI00850 FI00852
2816	I/O processor Licensed Internal Code error	AJEDA00
281A	Tape too short	MDDTMED 21F6085 FI00851
281E	Wrong tape loaded or tape media error.	MDDTMED FI00851
2820, 2900, 2904, 2906, 290A, 2A00, 2A02	I/O processor Licensed Internal Code error	AJEDA00
2B00	System processor card or tape I/O processor card error	FI00120 FI00010 AJEDA00
2B02	System processor card or tape I/O processor card error	FI00120 21F6085 FI00010 AJEDA00
3000 to 3001, 3006, 3010	Tape I/O processor card error	21F6085
3090	Tape I/O Processor diagnostic detected S/370 interface error Perform "TIOP-PIP1" on page 639. Note: If a channel wrap block is installed on the System/370 channel cable string and I/O processor basic assurance tests (BATS) were run, this SRC indicates that the diagnostic tests detected a failure.	FI00851 21F6085 FI00850 FI00852 FI00853
3100	I/O processor detected S/370 interface error Perform "TIOP-PIP1" on page 639. Note: If a channel wrap block is installed on the System/370 channel cable string and I/O processor basic assurance tests (BATS) were run, this SRC indicates that the I/O processor and the System/370 channel cable string are not failing. This is a normal end indication that the diagnostic tests ran without error.	FI00851 FI00850 21F6085 FI00852 FI00853

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3110	<p>Device is not responding</p> <p>3422/3430 Tape Units:</p> <ul style="list-style-type: none"> • Verify that the control unit and the tape units attached to this tape I/O processor are powered on and that no error conditions are present. • Verify that the Channel Interface switches on the I/O device are set to the Enable position (for 3422) or to the On-line position (for 3430). • Verify that the CE mode switches on the I/O device and I/O device control unit are set to the Off position. <p>3480/3490 Tape Units:</p> <ul style="list-style-type: none"> • Verify that the control unit and the tape units attached to this tape I/O processor are powered on and that no error conditions are present: <ul style="list-style-type: none"> – For 3480 Tape Units: <ul style="list-style-type: none"> - The Local/Remote switch on the 3480 Control Unit is set to the Local position and the Power switch is set to the On position. – For 3490 Tape Units: <ul style="list-style-type: none"> - The 3490 Rack Unit Emergency Power Off switch is set to the On position. - Ensure that the 3490 Rack Enable/Off switch is set to the Enable position. - Press the 3490 Rack Power On button. • The Channel Enable/Disable switches are set to the Enable position. • The Normal/Test switch is set to the Normal position. • The control unit Online/Offline switch is set to the Online position. • The Drive Address Online/Offline switches are set to the Online position. • The Drive DC Power switches are set to the On position. <p>Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.</p>	FI00851 UDDUSER
3120	<p>Disconnect-In active on S/370 interface; I/O error alert</p> <p>Perform “TIOP-PIP1” on page 639.</p> <p>Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.</p>	FI00851 21F6085 FI00850 FI00852 FI00853
3130	<p>I/O processor detected Bus-in parity check</p> <p>Perform “TIOP-PIP1” on page 639.</p> <p>Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.</p>	FI00851 21F6085 FI00850 FI00852 FI00853
3135	<p>Device busy condition could not be cleared</p> <p>If the control unit that is attached to this tape I/O processor has multiple channels attached to it, verify that the tape device is not being used by another system or I/O processor.</p> <p>Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.</p>	UDDUSER FI00851 21F6085
3136	<p>The removable media device is assigned elsewhere</p> <p>Perform “TIOP-PIP5” on page 640.</p>	UDDUSER FI00851 21F6085

2644

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3140	Tape I/O processor card error	21F6085
3150	Device address-in/system address-out; mismatch Perform "TIOP-PIP1" on page 639. Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.	FI00851 21F6085 FI00850 FI00852
3170	Tape I/O processor card error	21F6085
3180	S/370 interface time-out error Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor. Perform "TIOP-PIP1" on page 639.	FI00851 FI00850 FI00852 AJEDA00 FI00853 21F6085
3195	I/O configuration is not supported by this I/O processor Use the specific device service information to correct the problem. If this does not correct the problem, exchange the failing items.	FI00855 FI00851 21F6085
3196 to 3197	I/O configuration is not supported by this I/O processor	FI00855 FI00851 21F6085
3198	Tape Control Unit Channel type not supported on this IOP.	UDDUSR1
3199	User switched device type or model without IOP reset	UDDUSR2
3200	Device status; not permitted Not valid ending status, unexpected sense data, or an interrupt condition from the tape device that cannot be cleared was received. Perform "TIOP-PIP1" on page 639.	FI00851 AJEDA00 21F6085
3202	I/O device detected word-count-0 error Perform "TIOP-PIP1" on page 639.	FI00851 FI00850 FI00852 FI00853
3211	I/O device detected even parity on bus-out Perform "TIOP-PIP1" on page 639.	21F6085 FI00851 FI00850 FI00852 FI00853
3212	I/O device rejected command Perform "TIOP-PIP1" on page 639.	AJEDA00 FI00851
3214	I/O device detected overrun error Perform "TIOP-PIP1" on page 639.	21F6085 FI00851 FI00850 FI00852 FI00853
4002, 4011 to 4012	Tape I/O Processor licensed internal code error.	AJEDA00
4013	Tape I/O Processor licensed internal code error.	AJEDA00 21F6085
4014	Tape I/O Processor licensed internal code error.	AJEDA00
4015	Tape I/O Processor licensed internal code error.	AJEDA00 21F6085

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4016	Tape I/O Processor licensed internal code error.	AJEHL00
B300 to B301	A permanent I/O processor failure occurred	21F6085
B701	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B711	Control storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B720	A permanent I/O processor failure occurred	21F6085
B740	Reset of the I/O processor header failed	21F6085
B7A2	Read only storage failed, I/O processor is operational	
BB00	Undetermined data error	21F6085 FI00010 FI00040
BE01	I/O processor was not ready for interrupt that occurred	AJEDA00 21F6085
BE04	I/O processor Licensed Internal Code error	AJEDA00 21F6085
BE18	I/O processor detected a random interrupt	21F6085
BE1A	I/O processor was not ready for interrupt that occurred	21F6085 AJEDA00
BE1B to BE1E	I/O processor was not ready for interrupt that occurred	AJEDA00 21F6085
BE40	A permanent I/O processor failure occurred	21F6085 AJEDA00
BE48	A permanent I/O processor failure occurred	21F6085
BE50	I/O processor detected a random interrupt	21F6085
BE51	I/O processor memory error	21F6085
BE52 to BE54	I/O processor Licensed Internal Code error	AJEDA00 21F6085
BE55	I/O processor memory error	21F6085
BE57	A permanent I/O processor failure occurred	21F6085
BE58	I/O processor detected a random interrupt	21F6085 AJEDA00
BE60	I/O processor detected a random interrupt	21F6085

Tape I/O Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
21F6085	Tape I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Vertical Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	Tape I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	Tape I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	Tape I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	Tape I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJEHL00	Tape I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
MDDTMED	Tape	Magnetic tape subsystem operator's information
UDDUSER	Operator action required	Magnetic tape subsystem operator's information
UDDUSR1	Channel type set incorrectly	Magnetic tape subsystem operator's information
UDDUSR2	Operator action required	System operation information

(266A) Workstation Adapter Reference Codes

A workstation adapter failure occurred.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0101	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01
0103	WS IOP detected parity error from device	FI00601 GAG7777 FI00631 AJLAG01
0104	Device detected parity error from WS IOP	FI00601 GAG7777 FI00631 AJLAG01
0105	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0106	WS IOP detected wrong data from device	FI00601 FI00631 GAG7777 AJLAG01
0107	WS IOP detected wrong address from device	FI00601 GAG7777 AJLAG01
0108	WS IOP detected device power turned off, and then on	GAGEEEE FI00601
0109	WS IOP detected wrong device response to start command	FI00601 AJLAG01
0111	WS IOP detected wrong keyboard scan code from display	FI00601 AJLAG01
0120	Device detected wrong command or device ID from WS IOP	FI00601 AJLAG01
0121	Device detected not valid value from WS IOP	FI00601 AJLAG01
0122	Device detected storage or data overrun	FI00601 AJLAG01
0123	Device detected null or attribute exception error	FI00601 AJLAG01
0124	Device detected wrong start command from WS IOP	FI00601 AJLAG01
0125	WS IOP detected wrong exception response from device	FI00601 AJLAG01
0126	WS IOP detected not valid pass-through command	GAG9999 AJLAG01
0149	WS IOP detected wrong request or response from device	FI00601 AJLAG01
0190	WS IOP detected no status change from device	FI00601 GAG7777 AJLAG01
0191	WS IOP detected busy time-out from device	FI00601 AJLAG01
0201	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01
0203	WS IOP detected parity error from device	FI00604 GAG7777 FI00631 AJLAG01
0204	Device detected parity error from WS IOP	FI00604 GAG7777 FI00631 AJLAG01
0205	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01

266A

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0206	WS IOP detected wrong data from device	FI00604 FI00631 AJLAG01
0207	WS IOP detected wrong address from device	FI00604 GAG7777 AJLAG01
0208	WS IOP detected device power turned off, and then on	GAGEEEE FI00604
0209	WS IOP detected wrong device response to start command	FI00604 AJLAG01
0210	Printer detected equipment error	FI00604
0211	Printer detected equipment error	FI00604 AJLAG01
0212	Printer detected equipment error	FI00604
0220	Device detected wrong command or device ID from WS IOP	FI00604 AJLAG01
0221	Device detected not valid value from WS IOP	FI00604 AJLAG01
0222	Device detected storage or data overrun	FI00604 AJLAG01
0223	WS IOP detected start command to printer was lost	FI00604 FI00631 AJLAG01
0224	Device detected wrong start command from WS IOP	FI00604 AJLAG01
0225	WS IOP detected wrong exception response from device	FI00604 AJLAG01
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 AJLAG01
0281, 0283 to 0289	Printer detected equipment error	FI00604
0290	WS IOP detected no status change from device	FI00604 AJLAG01
0291	WS IOP detected busy time-out from device	FI00604 AJLAG01
A000	Too many devices active on the workstation IOP	GAGBBBB
C000, D000	WS IOP error not known	AJLAG01
F000	WS IOP or IOA operating system program error	AJLAG01
F003	WS IOA buffer utilization threshold exceeded temporarily	AJLAG01
FFFF	User believes there is a problem Reference code FFFF is assigned by the ANZPRB (Analyze Problems) for user-detected errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.	UAGFF00

Workstation Adapter Failing Items

Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 341.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 362.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 374.

Failing Item	Description	Document Description
AJLAG01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
GAG7777	Electrical interference	
GAG9999	Error occurred with pass-through command	
GAGBBBB	Too many work stations are active on the workstation IOP	
GAGEEEE	Active device turned off	
UAGFF00	User believes there is a problem	

(2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532 - 6534, 6751, 6754) Reference Codes

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.
4. The 673x is a read cache. Perform all actions required for 673x as a disk drive and logic card except where separate 673x cache instructions are provided.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0A17	A permanent I/O processor failure occurred	IOP AJDGP01 STORIOA
0A22	I/O processor detected a storage transfer error	IOP AJDGP01 STORIOA
102E	Out of alternate sectors for disk storage	FI01105
1307	I/O processor resource not available	AJDGP01 AJDG301

2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532, 6533, 6534, 6751, 6754

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1310	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	IOP STORIOA FI01107 FI01104 AJDGP01 FI01140 ANYBUS CACHE
2200	I/O processor Licensed Internal Code error	AJDGP01
2201	Removable media error during IPL	USER FI01105
2202	Removable media error during IPL	FI00022 FI01105
3000	A permanent I/O processor failure occurred	STORIOA IOP
3002	Addressed device failed to respond to selection Perform "SDIOP-PIP16" on page 585.	FI01105 STORIOA FI01140 FI01141 FI01106
3006	System bus error	IOP ANYBUS STORIOA
3020	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 0. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 589. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3021	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 1. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 589. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3022	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 2. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 589. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3080	I/O processor Licensed Internal Code error	AJDGP01 IOP STORIOA
3100	I/O processor card detected interface error Error occurred on SCSI bus 0. Perform "SDIOP-PIP13" on page 582.	STORIOA FI01107 FI01140 BACKPLN
3101	I/O processor card detected interface error Error occurred on SCSI bus 1. Perform "SDIOP-PIP13" on page 582.	STORIOA FI01107 FI01140 BACKPLN

2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532, 6533, 6534, 6751, 6754

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3102	I/O processor card detected interface error Error occurred on SCSI bus 2. Perform "SDIOP-PIP13" on page 582.	STORIOA FI01107 FI01140 BACKPLN
3109	I/O processor timed out a device command Perform "SDIOP-PIP16" on page 585.	FI01105 STORIOA FI01140 BACKPLN FI01106
3110	I/O processor card detected interface error Perform "SDIOP-PIP16" on page 585.	FI01105 STORIOA FI01140 BACKPLN FI01106
3136	The removable media device is assigned elsewhere	USER FI01105
3200	A tape/CD or disk device reported a failure	FI01105 STORIOA IOP MEDIA
3203	Disk media format bad	FI01105
3205, 3215	Disk sector read error Disk unit data may need to be reloaded, but the disk unit does not need to be replaced.	FI01105
3250	Disk unit requires initialization before use. Perform a D-IPL and work on errors found in the log.	USER
3300	Storage unit detected a media problem Perform "SDIOP-PIP1" on page 577.	MEDIA FI00121 FI01141
3400	I/O processor card detected device error NOTE: If external devices are attached check EXTSCSI and DEVTERM first.	FI02112 STORIOA FI01106 DEVTERM FI01140
3401	Device backplane problem	DEVBPLN
3501	I/O processor Licensed Internal Code error	AJDGP01 IOP
3600 to 3601	System log entry only, no service action required	
6010	Any device attached to Bus 1	ANYBUS STORIOA
6070	A permanent I/O processor failure occurred	IOP
6071	I/O processor Licensed Internal Code error	AJDGP01
6072	I/O processor Licensed Internal Code error	AJDGP01 IOP
6073	I/O processor Licensed Internal Code error	MEDIA FI01105 USER
6075	I/O processor resource not available	AJDGP01

2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532, 6533, 6534, 6751, 6754

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6076	I/O processor Licensed Internal Code error	AJDGP01 FI01105
6081 to 6083, 6085	I/O processor Licensed Internal Code error	AJDGP01 IOP
6602	An I/O processor Licensed Internal Code error occurred.	AJDGP01
8000	A permanent IOP or cache adaptor card failure occurred. Note: DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	STORIOA CACHE
8002	A permanent cache adaptor card failure occurred. Note: DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	CACHE STORIOA
8004	Voltage drop detected on I/O processor 5 volt power supply.	FI01141 STORIOA
8005	A recoverable IOP or cache adaptor card error occurred. Note: DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	STORIOA CACHE
8007	A recoverable cache adaptor card error occurred. Note: DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	CACHE STORIOA
8010 to 8011	A permanent cache adaptor card failure occurred. The cache adaptor card may be missing, broken or incompatible. Note: DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	CACHE STORIOA
8100	I/O processor Licensed Internal Code error	AJDGP01 IOP
8140	Temporary disk bus error A service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	STORIOA FI01107 FI01140 BACKPLN
8141	Disk device detected recoverable error No action required. This reference code is logged for information only.	
8145	A recoverable I/O processor error occurred.	STORIOA
8146	Disk device detected recoverable error	FI01105
8150	A permanent I/O processor failure occurred	STORIOA IOP FI01107 ANYBUS
8151	I/O processor Licensed Internal Code error	AJDGP01 STORIOA
8155 to 8156	A permanent I/O processor failure occurred	AJDGP01 STORIOA
8200	I/O processor Licensed Internal Code error	AJDGP01 IOP

2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532, 6533, 6534, 6751, 6754

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
8300	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	STORIOA IOP AJDGP01
8301	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code found a condition that should not have occurred.	STORIOA AJDGP01 IOP
8400	I/O processor Licensed Internal Code error	AJDGP01
8ABF	System log entry only, no service action required	
9000 to 9001	I/O processor card detected device error	FI01105 STORIOA
9002	I/O processor card detected device error Perform "SDIOP-PIP16" on page 585.	FI01105 STORIOA FI01140 BACKPLN FI01106
9008	I/O card does not support functions expected by devices Perform "SDIOP-PIP25" on page 603.	SVCDOCS
9010	Cache data associated with attached devices cannot be found Perform "SDIOP-PIP19" on page 594.	SVCDOCS
9011	Cache data belongs to devices other than those attached Perform "SDIOP-PIP19" on page 594.	SVCDOCS
9012	IOP requires a cache adaptor card but cannot find it. The cache adapter card is missing or broken. Perform "SDIOP-PIP29" on page 610.	CACHE
9013	The IOP and attached cache adaptor card are not compatible. Perform "SDIOP-PIP19" on page 594.	SVCDOCS
9020 to 9021	Array not functional due to present hardware configuration. Perform "SDIOP-PIP20" on page 596.	SVCDOCS
9022 to 9024	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 600.	SVCDOCS
9025	Disk unit is not supported at its physical location. Perform "SDIOP-PIP21" on page 598.	SVCDOCS
9026 to 9027	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 600.	SVCDOCS
9028	Incorrect hardware configuration change has been detected. Reduce the number of arrays on IOP. Either move all devices in an array to another IOP that supports arrays, or stop an array on this IOP.	SVCDOCS
9029	Incorrect hardware configuration change has been detected. Contact your next level of support.	SVCDOCS

2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532, 6533, 6534, 6751, 6754

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9030	Array no longer protected due to missing or failed disk unit Perform "SDIOP-PIP21" on page 598.	SVCDPCS
9031, 9040	Array protection temporarily suspended No action required. Protection will be automatically restarted.	
9041	Array protection temporarily suspended Protection will be automatically restarted. Call your next level of support to report the problem.	AJDGP01
9050	Required cache data cannot be located for a disk unit. Perform "SDIOP-PIP23" on page 600.	SVCDPCS
9051	IOP cache data exists for a missing or failed device. If all configured units are missing, a 9054 reference code may appear in the product activity log. If so, perform the action indicated for the 9054 reference code. Otherwise, perform "SDIOP-PIP27" on page 608.	SVCDPCS
9052	Cache data exists for device that has been modified. Perform "SDIOP-PIP28" on page 610.	SVCDPCS
9053	IOP resources not available due to previous problems. Take action on other IOP reference codes which have surfaced. If you cannot get to SST or DST, and cannot perform a type A or B IPL, perform a type D IPL from removable media. Look for Product Activity Log entries for other IOP reference codes and take action on them.	SVCDPCS
9054	IOP resources not available due to previous problems. Power off the system and remove all new or replacement disk units. IPL the system to DST. If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Look for Product Activity Log entries for other IOP reference codes and take action on them.	SVCDPCS
9081	I/O processor card detected device error	FI01105 STORIOA
9082	I/O processor card detected device error Perform "SDIOP-PIP16" on page 585.	FI01105 STORIOA FI01140 BACKPLN FI01106
9090	Disk unit has been modified after the last known status. Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem. If you cannot resolve the problem, contact your next level of support.	SVCDPCS

2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532, 6533, 6534, 6751, 6754

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9091	<p>Incorrect hardware configuration change has been detected.</p> <p>Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem.</p> <p>If you cannot resolve the problem, contact your next level of support.</p>	SVDCOCS
9092	<p>Disk unit requires initialization before use.</p> <p>Perform "SDIOP-PIP26" on page 606.</p>	SVDCOCS
B300	A permanent I/O processor failure occurred	IOP
B3B1 to B3B6	<p>A permanent I/O processor failure occurred</p> <p>The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIOP is 0001-01-00. Find the MFIOP for this system in "System Unit Locations and Addresses" on page 695 and go to "Chapter 6. Removal and Installation Procedures" on page 793 to exchange the failing item.</p>	IOP
B3B7 to B3B8	<p>A permanent I/O processor failure occurred</p> <p>The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIOP is 0001-01-00. Find the MFIOP for this system in "System Unit Locations and Addresses" on page 695 and go to "Chapter 6. Removal and Installation Procedures" on page 793 to exchange the failing item.</p>	IOP STORIOA PCIBUS
B3B9	<p>A permanent I/O processor failure occurred</p> <p>The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIOP is 0001-01-00. Find the MFIOP for this system in "System Unit Locations and Addresses" on page 695 and go to "Chapter 6. Removal and Installation Procedures" on page 793 to exchange the failing item.</p>	IOP
B3E0	<p>I/O processor detected a fault condition.</p> <p>The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIOP is 0001-01-00. Find the MFIOP for this system in "System Unit Locations and Addresses" on page 695 and go to "Chapter 6. Removal and Installation Procedures" on page 793 to exchange the failing item.</p>	IOP
B3E1	<p>I/O processor detected a fault condition.</p> <p>The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIOP is 0001-01-00. Find the MFIOP for this system in "System Unit Locations and Addresses" on page 695 and go to "Chapter 6. Removal and Installation Procedures" on page 793 to exchange the failing item.</p>	IOP STORIOA PCIBUS
B410 to B411	A permanent I/O processor failure occurred	STORIOA
B412	<p>Tape/CD or disk bus interface error occurred</p> <p>Perform "SDIOP-PIP16" on page 585.</p>	FI01107 FI01140 STORIOA DEVTERM

2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 6532, 6533, 6534, 6751, 6754

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B6D1	Service processor is in incorrect state during IPL The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIO is 0001-01-00. Find the MFIO for this system in "System Unit Locations and Addresses" on page 695 and go to "Chapter 6. Removal and Installation Procedures" on page 793 to exchange the failing item.	IOP
B6EF	System log entry only, no service action required	
B7E4 to B7E6	I/O processor detected errors in control panel interface	CTLPNL IOP
B7E8	Service processor time-of-day hardware failed	IOP
B900 to B901	A permanent I/O processor failure occurred	IOP AJDGP01
B902 to B903	A permanent communications or workstation IOA error occurred	FI01101 IOP AJDGP01
B904	A permanent I/O processor failure occurred	IOP AJDGP01
B934	Incompatible hardware detected.	STORIOA
B935	Unknown hardware detected	FI01101 AJDGP01 IOP BACKPLN
B9E8	Service processor time-of-day hardware failed	IOP
BE00	I/O processor detected a fault condition.	FI01104 AJDGP01 IOP
FF3D	I/O processor card	STORIOA IOP
FF6D	I/O processor detected a recoverable system bus error	IOP ANYBUS

Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJDGP01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
CACHBAT	Cache battery pack	Problem Analysis; Symbolic FRU Isolation
CACHE	Cache adaptor card	Problem Analysis; Symbolic FRU Isolation

Failing Item	Description	Document Description
COMPRES1	Compressed device and compression IOA are not compatible	Problem Analysis; Symbolic FRU Isolation
CTLPNL	Control panel, or the interface to the Control panel	Problem Analysis; Symbolic FRU Isolation
DEVBPLN	Device backplane	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
IOP	I/O processor card	Problem Analysis; Symbolic FRU Isolation
MEDIA	Defective media	Problem Analysis; Symbolic FRU Isolation
PCIBUS	Any PCI card on the PCI bus	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
SVCDPCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
USER	Operator/User Error	Problem Analysis; Symbolic FRU Isolation

(2740, 2748) Reference Codes

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.
4. The 673x is a read cache. Perform all actions required for 673x as a disk drive and logic card except where separate 673x cache instructions are provided.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3006	System bus error	IOP ANYBUS STORIOA
3020	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 0. To correct or isolate a possible user error or configuration error, perform “SDIOP-PIP17” on page 589. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3021	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 1. To correct or isolate a possible user error or configuration error, perform “SDIOP-PIP17” on page 589. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA

2740, 2748

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3022	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 2. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 589. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3100	I/O processor card detected interface error Error occurred on SCSI bus 0. Perform "SDIOP-PIP13" on page 582.	STORIOA FI01107 FI01140 BACKPLN
3101	I/O processor card detected interface error Error occurred on SCSI bus 1. Perform "SDIOP-PIP13" on page 582.	STORIOA FI01107 FI01140 BACKPLN
3102	I/O processor card detected interface error Error occurred on SCSI bus 2. Perform "SDIOP-PIP13" on page 582.	STORIOA FI01107 FI01140 BACKPLN
3400	I/O processor card detected device error	FI02112 STORIOA FI01106 DEVTERM FI01140
3401	Device backplane problem	DEVBPLN
3501	I/O processor Licensed Internal Code error	AJDGP01 IOP
3600 to 3601	System log entry only, no service action required	
8008	A permanent cache battery pack failure occurred	CACHBAT STORIOA
8009	Impending cache battery pack failure	CACHBAT
8012	Attached read cache devices exceed capacity supported by IOA Reduce the number of read caches on the IOA.	SVCDOCS
8100	I/O processor Licensed Internal Code error	AJDGP01 IOP
8140	Temporary disk bus error A service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	STORIOA FI01107 FI01140 BACKPLN
8141	Disk device detected recoverable error No action required. This reference code is logged for information only.	
8145	A recoverable I/O processor error occurred.	STORIOA
8146	Disk device detected recoverable error	FI01105
8150	A permanent I/O processor failure occurred	STORIOA IOP FI01107 ANYBUS

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
8151	I/O processor Licensed Internal Code error	AJDGP01 STORIOA
8155 to 8156	A permanent I/O processor failure occurred	AJDGP01 STORIOA
8200	I/O processor Licensed Internal Code error	AJDGP01 IOP
9000 to 9001	I/O processor card detected device error	FI01105 STORIOA
9002	I/O processor card detected device error Perform "SDIOP-PIP16" on page 585.	FI01105 STORIOA FI01140 BACKPLN FI01106
9008	I/O card does not support functions expected by devices Perform "SDIOP-PIP25" on page 603.	SVCDOCS
9010	Cache data associated with attached devices cannot be found Perform "SDIOP-PIP31" on page 613.	SVCDOCS
9011	Cache data belongs to devices other than those attached Perform "SDIOP-PIP32" on page 615.	SVCDOCS
9014	Mode jumper overridden due to cache data in conflicting mode See "Mode Jumper has been Overridden" on page 748.	SVCDOCS
9015	Mode jumper missing See "Mode Jumper is Missing" on page 748.	SVCDOCS
9020 to 9021	Array not functional due to present hardware configuration. Perform "SDIOP-PIP20" on page 596.	SVCDOCS
9022 to 9024	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 600.	SVCDOCS
9025	Disk unit is not supported at its physical location. Perform "SDIOP-PIP21" on page 598.	SVCDOCS
9026 to 9027	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 600.	SVCDOCS
9028	Incorrect hardware configuration change has been detected. Reduce the number of arrays on IOP. Either move all devices in an array to another IOP that supports arrays, or stop an array on this IOP.	SVCDOCS
9029	Incorrect hardware configuration change has been detected. Contact your next level of support.	SVCDOCS
9030	Array no longer protected due to missing or failed disk unit Perform "SDIOP-PIP21" on page 598.	SVCDOCS
9031, 9040	Array protection temporarily suspended No action required. Protection will be automatically restarted.	

2740, 2748

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9041	<p>Array protection temporarily suspended</p> <p>Protection will be automatically restarted. Call your next level of support to report the problem.</p>	AJDGP01
9050	<p>Required cache data cannot be located for a disk unit.</p> <p>Perform "SDIOP-PIP30" on page 612.</p>	SVCDPCS
9051	<p>IOP cache data exists for a missing or failed device.</p> <p>If all configured units are missing, a 9054 reference code may appear in the product activity log. If so, perform the action indicated for the 9054 reference code.</p> <p>Otherwise, perform "SDIOP-PIP27" on page 608.</p>	SVCDPCS
9052	<p>Cache data exists for device that has been modified.</p> <p>Contact your next level of support.</p>	SVCDPCS
9053	<p>IOP resources not available due to previous problems.</p> <p>Take action on other IOP reference codes which have surfaced.</p> <p>If you cannot get to SST or DST, and cannot perform a type A or B IPL, perform a type D IPL from removable media. Look for Product Activity Log entries for other IOP reference codes and take action on them.</p>	SVCDPCS
9054	<p>IOP resources not available due to previous problems.</p> <p>Power off the system and remove all new or replacement disk units. IPL the system to DST. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.</p> <p>Look for Product Activity Log entries for other IOP reference codes and take action on them.</p>	SVCDPCS
9081	I/O processor card detected device error	FI01105 STORIOA
9082	<p>I/O processor card detected device error</p> <p>Perform "SDIOP-PIP16" on page 585.</p>	FI01105 STORIOA FI01140 BACKPLN FI01106
9090	<p>Disk unit has been modified after the last known status.</p> <p>Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem.</p> <p>If you cannot resolve the problem, contact your next level of support.</p>	SVCDPCS
9091	<p>Incorrect hardware configuration change has been detected.</p> <p>Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem.</p> <p>If you cannot resolve the problem, contact your next level of support.</p>	SVCDPCS
9092	<p>Disk unit requires initialization before use.</p> <p>Perform "SDIOP-PIP26" on page 606.</p>	SVCDPCS

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9093	Read cache device not in correct format Contact your next level of support.	SVCDPCS
B934	Incompatible hardware detected.	STORIOA
FF3D	I/O processor card	STORIOA IOP
FF6D	I/O processor detected a recoverable system bus error	IOP ANYBUS

Failing Items

Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 341.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 362.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 374.

Failing Item	Description	Document Description
AJDGP01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
CACHBAT	Cache battery pack	Problem Analysis; Symbolic FRU Isolation
DEVBPLN	Device backplane	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
IOP	I/O processor card	Problem Analysis; Symbolic FRU Isolation
PCIBUS	Any PCI card on the PCI bus	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
SVCDPCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
USER	Operator/User Error	Problem Analysis; Symbolic FRU Isolation

(2746) Twinaxial Workstation Adapter Reference Codes

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Look at the 4 rightmost characters of the Data display for function 13-3. These 4 characters are the direct select address of the card (BBCb). The unit address portion of the card address is the 8 characters of the function 14-3. Card locations can be found using the 12 character address. See “Chapter 5. Locations, Addresses, and Service Reference Information” on page 693.
3. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B904	I/O adapter Licensed Internal Code failed.	AJDGP01 FI00719
B934	Incompatible hardware detected.	FI00719 FI00718
B940	I/O adapter hardware error detected	FI00719 FI00718 AJDGP01
B941 to B942	One half of I/O adapter failed.	FI00719 FI00718 AJDGP01

Workstation Adapter Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
AJDGP01	Licensed Internal Code	Service Functions; APAR or LICTR

(283C, 283D) Device Backplane Reference Codes

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

- a. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
- b. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3002	Addressed device backplane failed to respond to selection	DEVBPLN STORIOA FI01140 FI01106

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3109	I/O adapter timed out a device backplane command	DEVBPLN STORIOA FI01140 FI01106
8401	Removable media power fault	DEVBPLN
FFF4	Device backplane problem	DEVBPLN STORIOA FI01140 FI01106

Failing Items

Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 341.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 362.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 374.

Failing Item	Description	Document Description
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
COMPRES1	Compressed device and compression IOA are not compatible	Problem Analysis; Symbolic FRU Isolation
DEVBPLN	Device backplane	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Device terminator	Problem Analysis; Symbolic FRU Isolation
DISKDRV	Disk drive and logic card	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation

(3422) Tape Unit Reference Codes

A tape or a 3422 Tape Unit failure occurred.

Note: For tape device and IOP reset procedures, see “TU-PIP4” on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes No

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see “Determining the Dominant Operating System” in the *AS/400 Service Functions*)?

No Yes

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3422 is powered on.

4. Verify that the Enable/Disable switches are set to the Enable position.
5. Clean the tape path as described in the 3422 service information.
6. Load the first tape.
7. Start a type D IPL from the system unit control panel.
Does the IPL complete successfully?

No Yes

↓ The problem has been corrected.

This ends the procedure.

8. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 9.
9. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
10. If the 3422 indicator panel shows an error condition, see the 3422 service information.
11. Look at the Data display for function 19-3:
 - The 3 leftmost characters are the fault system code (FSC) from the sense bytes of the failing device. The device FSCs are in the 3422 service information.
12. Look at the Data display for function 13-3:
 - The 4 rightmost characters are the direct select address.
13. Look at the Data display for function 14-3:
 - The second character is the 3422 control unit address.
 - The fourth character is the 3422 drive address that has the error.
14. See the 3422 service information with the FSC.
15. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2001	Tape path dirty or write data check error Clean the tape path using the cleaning procedures in the <i>3422 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0090. Use the 3422 Tape Unit service information to continue analyzing the problem.	MH30001 FI00851

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2003	Tape path dirty or write identification record error Clean the tape path using the cleaning procedures in the <i>3422 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0090. Use the 3422 Tape Unit service information to continue analyzing the problem.	MH30001 FI00851
2008	Tape path dirty or read data check error Clean the tape path using the cleaning procedures in the <i>3422 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0090. Use the 3422 Tape Unit service information to continue analyzing the problem.	MH30001 FI00851
2009	Tape path dirty or read identification record error Clean the tape path using the cleaning procedures in the <i>3422 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0090. Use the 3422 Tape Unit service information to continue analyzing the problem.	MH30001 FI00851
2014	Recoverable tape unit failure; logged only No action required. This reference code is logged for information only.	
2015	Tape unit failure Clean the tape path using the cleaning procedures in the <i>3422 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0090. Use the 3422 Tape Unit service information to continue analyzing the problem.	FI00851 21F6085 FI00850 62X3421
2017	Write Protect violation reported by tape unit; logged only No action required. This reference code is logged for information only.	
FFD5	Device error reported; tape I/O processor Verify that the CE mode switch in the device control unit is set to the Off position. Verify that power is switched on in the 3422 A01 Tape Unit and that the Enable/Disable switch on the tape unit is set to the Enable position. If you are attempting to perform an IPL from the device that had the error, verify that the device has an address of hexadecimal 70. Use the 3422 Tape Unit service information to continue analyzing the problem.	UH30003 FI00851
FFF6	Volume statistics; logged only No action required. This reference code is logged for information only.	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.

2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
21F6085	Tape I/O processor card	Repair and Parts; removal and installation procedures
62X3421	External signal cable	Repair and Parts; removal and installation procedures
MH30001	Tape	Magnetic tape subsystem operator's information
UH30003	I/O device not communicating	Magnetic tape subsystem operator's information

(3430) Tape Unit Reference Codes

A tape or a 3430 Tape Unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes No

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

No Yes

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3430 is powered on.
4. Verify that the 3430 Online/Offline switch is set to the Online position.
5. Clean the tape path as described in the 3430 service information.
6. Load the first tape.
7. Start a type D IPL from the system unit control panel.

Does the IPL complete successfully?

No Yes

↓ The problem has been corrected.

This ends the procedure.

8. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 9.
9. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
10. If the 3430 indicator panel shows an error condition, see the 3430 service information.
11. Look at the Data display for function 19-3:
 - The 2 leftmost characters are the fault symptom code (FSC) and the third character is the FSC pointer from the sense bytes of the failing device. The device FSCs are in the 3430 service information.

12. Look at the Data display for function 13-3:
 - The 4 rightmost characters are the direct select address.
13. Look at the Data display for function 14-3:
 - The second character is the 3430 control unit address.
 - The fourth character is the 3430 drive address that has the error.
14. See the 3430 service information with the FSC.
15. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2001	Tape path dirty or write data check error Clean the tape path using the cleaning procedures in the <i>3430 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0079. Use the 3430 Tape Unit service information to continue analyzing the problem.	MH40001 FI00851
2003	Tape path dirty or write identification record error Clean the tape path using the cleaning procedures in the <i>3430 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0079. Use the 3430 Tape Unit service information to continue analyzing the problem.	MH40001 FI00851
2008	Tape path dirty or read data check error Clean the tape path using the cleaning procedures in the <i>3430 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0079. Use the 3430 Tape Unit service information to continue analyzing the problem.	MH40001 FI00851
2009	Tape path dirty or read identification record error Clean the tape path using the cleaning procedures in the <i>3430 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0079. Use the 3430 Tape Unit service information to continue analyzing the problem.	MH40001 FI00851
2014	Recoverable tape unit failure; logged only No action required. This reference code is logged for information only.	

3430

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2015	Tape unit failure Clean the tape path using the cleaning procedures in the <i>3430 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0079. Use the 3430 Tape Unit service information to continue analyzing the problem.	FI00851 21F6085 FI00850 62X3421
2017	Write Protect violation reported by tape unit; logged only No action required. This reference code is logged for information only.	
FFD5	Device error reported; tape I/O processor Verify that the CE mode switches in both device control units in the device are set to the Off position. Verify that power is switched on in the 3430 A01 Tape Unit and that the On-line/Off-line switch on the tape unit is set to the On-line position. If you are attempting to perform an IPL from the device that had the error, verify that the device has an address of hexadecimal 70. Use the 3430 Tape Unit service information to continue analyzing the problem.	UH40003 FI00851
FFF6	Volume statistics; logged only No action required. This reference code is logged for information only.	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
21F6085	Tape I/O processor card	Repair and Parts; removal and installation procedures
62X3421	External signal cable	Repair and Parts; removal and installation procedures
MH40001	Tape	Magnetic tape subsystem operator's information
UH40003	I/O device not communicating	Magnetic tape subsystem operator's information

(3480) Tape Unit Reference Codes

A tape or a 3480 Tape Unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes No

- ↓ Go to step 3 of this procedure.
2. Is OS/400 available on the system (see “Determining the Dominant Operating System” in the *AS/400 Service Functions*)?

No	Yes
-----------	------------

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.
 3. Verify that the 3480 is powered on.
 4. Verify that the channel Enable/Disable switches are set to the Enable position.
 5. Verify that the 3480 Online/Offline switches are set to the Online position.
 6. Clean the tape path as described in the 3480 service information.
 7. Load the first tape.
 8. Start a type D IPL from the system unit control panel.
Does the IPL complete successfully?

No	Yes
-----------	------------

↓ The problem has been corrected.

This ends the procedure.
 9. Obtain another copy of the tape. Repeat steps 7 and 8 using the new tape. If this does not correct the problem, continue with step 10.
 10. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
 11. If the 3480 indicator panel shows a check (CHK) code, see the “Start” section of the 3480 service information.
 12. Look at the Data display for function 13-3:
 - The 4 rightmost characters are the direct select address.
 13. Look at the Data display for function 14-3:
 - The second character is the 3480 control unit address.
 - The fourth character is the 3480 drive address that has the error.
 14. Find the unit reference code in the following table.
 15. See the “Start” section of the 3480 service information.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

3480

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2001	<p>Tape path dirty or write data check error</p> <p>Clean the tape path using the cleaning procedures in the <i>3480 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0066.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	MHD0001 FI00851
2003	<p>Tape path dirty or write identification record error</p> <p>Clean the tape path using the cleaning procedures in the <i>3480 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0066.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	MHD0001 FI00851
2008	<p>Tape path dirty or read data check error</p> <p>Clean the tape path using the cleaning procedures in the <i>3480 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0066.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	MHD0001 FI00851
2009	<p>Tape path dirty or read identification record error</p> <p>Clean the tape path using the cleaning procedures in the <i>3480 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0066.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	MHD0001 FI00851
2014	<p>Recoverable tape unit failure; logged only</p> <p>No action required. This reference code is logged for information only.</p>	
2015	<p>Tape unit failure</p> <p>Clean the tape path using the cleaning procedures in the <i>3480 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0066.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	FI00851 21F6085 FI00850 62X3421
2017	<p>Write Protect violation reported by tape unit; logged only</p> <p>No action required. This reference code is logged for information only.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFD5	<p>Device error reported; tape I/O processor</p> <p>Verify the following:</p> <ol style="list-style-type: none"> 1. The Local/Remote switch on the 3480 Control Unit is set to the Local position. 2. The 3480 Control Unit Emergency Power Off switch is set to the Power Enable position. 3. The Channel Enable/Disable switches on the 3480 Control Unit are set to the Enable position. 4. The Normal/Test switch on the 3480 Control Unit is set to the Normal position. 5. The CU Online/CU Offline switch on the 3480 Control Unit is set to the CU Online position. 6. The Drive Online/Offline switches on the 3480 Tape Unit are set to the Online position. 7. The Drive DC Power switches on the 3480 Tape Unit are set to the On position. <p>If you are attempting to perform an IPL from the device that had the error, verify that the 3480 Control Unit has an address of hexadecimal 7 and the 3480 Tape Unit has an address of 0.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	UHD0003 FI00851
FFF6	<p>Volume statistics; logged only</p> <p>No action required. This reference code is logged for information only.</p>	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
21F6085	Tape I/O processor card	Repair and Parts; removal and installation procedures
62X3421	External signal cable	Repair and Parts; removal and installation procedures
MHD0001	Tape	Magnetic tape subsystem operator's information
UHD0003	I/O device not communicating	Magnetic tape subsystem operator's information

(3490) Tape Unit Reference Codes

A tape or a 3490 Tape Unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes No

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see “Determining the Dominant Operating System” in the *AS/400 Service Functions*)?

No Yes

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3490 is powered on.
4. Verify that the channel Enable/Disable switches are set to the Enable position.
5. Verify that the 3490 Online/Offline switches are set to the Online position.
6. Load the first tape.
7. Start a type D IPL from the system unit control panel.
Does the IPL complete successfully?

No Yes

↓ The problem has been corrected.

This ends the procedure.

8. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 9.
9. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
10. If the 3490 indicator panel shows a check (CHK) code or an error code, see the “Start” section of the 3490 service information.
11. Look at the Data display for function 13-3:
 - The 4 rightmost characters are the direct select address.
12. Look at the Data display for function 14-3:
 - The second character is the 3490 control unit address.
 - The fourth character is the 3490 drive address that has the error.
13. Find the unit reference code in the following table.
14. See the “Start” section of the 3490 service information.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0xxx, 1xxx, 2000	Tape unit failure Use online problem analysis and the 3490 Tape Unit service information to analyze the problem.	
2001	Tape path dirty or write data check error Clean the tape path using the cleaning procedures in the <i>3490 Magnetic Tape Subsystem Operator's Guide, GA32-0124</i> . Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002
2003	Tape path dirty or write identification record error Clean the tape path using the cleaning procedures in the <i>3490 Magnetic Tape Subsystem Operator's Guide, GA32-0124</i> . Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002
2008	Tape path dirty or read data check error Clean the tape path using the cleaning procedures in the <i>3490 Magnetic Tape Subsystem Operator's Guide, GA32-0124</i> . Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002
2009	Tape path dirty or read identification record error Clean the tape path using the cleaning procedures in the <i>3490 Magnetic Tape Subsystem Operator's Guide, GA32-0124</i> . Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002
2010	Tape unit failure Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	
2014	Recoverable tape unit failure; logged only No action required. This reference code is logged for information only.	
2015	Tape unit failure Clean the tape path using the cleaning procedures in the <i>3490 Magnetic Tape Subsystem Operator's Guide, GA32-0124</i> . Use the 3490 Tape Unit service information to continue analyzing the problem.	DHK0002 FI00856 FI00845
2017	Write Protect violation reported by tape unit; logged only No action required. This reference code is logged for information only.	
202x, 205x, 206x, 21xx, 22xx	Tape unit failure Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
23xx	Tape Library failure Use the 3494 Tape Library Dataserver Maintenance Information to analyze the problem.	
26xx, 27xx, 3xxx, 4xxx, 5xxx, 6xxx, 7xxx, 8xxx	Tape unit failure Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	
9020	I/O processor detected a SCSI bus configuration error Before exchanging any parts, verify that the following conditions are not present: <ul style="list-style-type: none"> • Tape and DASD devices attached to the same type 6501 I/O processor • A device type or model that is not given support 	UHKCNFG FI00851 FI00130
9100	Interface error detected by I/O processor or by tape unit Before exchanging any parts, do the following: <ol style="list-style-type: none"> 1. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 2. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	FI00851 FI00856 05H3834 EXTSCSI 61G8324
9200	I/O processor addressed the tape unit; no response Before exchanging any parts, do the following: <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	FI00851 FI00856 05H3834 EXTSCSI 61G8324
9201	Tape unit command timeout Before exchanging any parts, do the following: <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	FI00851 FI00856 05H3834 EXTSCSI 61G8324
9210	Illegal or unsupported tape unit response	FI00851 FI00856 FI00130
9300	Tape unit failure	DHK0002

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9301	Tape device failure, redundancy lost The tape unit detected a hardware failure that does not prevent the tape unit from completing the present operation. See the 3490 Tape Unit service information to determine the failing item.	DHK0002
9302	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9310	Licensed Internal Code for the tape unit is not correct	FI00851 FI00130
9320	Tape device Licensed Internal Code failure Do the following: 1. Take a dump of the tape device Licensed Internal Code (see the 3490 Tape Drive service information). 2. Power off the tape unit. Then power on the tape unit to resume operation.	FI00851
9350	Tape unit detected a read or write error on tape medium A permanent read or write error occurred, and the tape unit determined that the tape cartridge is defective. Exchange the tape cartridge.	MHKTMED UHKCLN FI00851
9351	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9355	The data format is incorrect; the tape cannot be read The tape device does not give support to the data format on the tape cartridge. Re-initialize the tape cartridge or use a different tape cartridge.	MHKTMED UHKCLN FI00851
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
96xx	Tape unit failure Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	

3490

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9810	<p>Problem analysis has determined a part should be replaced.</p> <p>This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)</p>	
9899	<p>Problem analysis completed, the problem has been corrected.</p> <p>This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.</p>	UHKFIXD
9900	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed.</p> <p>The tape unit will continue to operate with the previous LIC. You may do either of the following:</p> <ul style="list-style-type: none"> • Wait for next IPL when the system will attempt to load the LIC for the tape unit again. • Perform "TU-PIP4" on page 664 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC. 	
Axxx, Bxxx, Cxxx, Dxxx, Exxx, F00x	<p>Tape unit failure</p> <p>Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFD5	<p>Device error reported; tape I/O processor</p> <p>Verify the following:</p> <ol style="list-style-type: none"> That power is switched on in the 3490 Tape Unit Rack: <ul style="list-style-type: none"> Set the 3490 Rack Unit Emergency Power Off switch to the On position. Ensure that the 3490 Rack Enable/Off switch is set to the Enable position. Press the 3490 Rack Power On button. Verify the following on 3490 Tape Unit: <ul style="list-style-type: none"> The Channel Enable/Disable switches are set to the Enable position. The Normal/Test switch is set to the Normal position. The CU Online/Offline switch is set to the Online position. The Drive Address Online/Offline switches are set to the Online position. The Drive DC Power switches are set to the On position. <p>If you are attempting to perform an IPL from the device that had the error, verify that the drive control unit address switch has an address of hexadecimal 7 and the drive unit address switch has an address of 0.</p> <p>Use the 3490 Tape Unit service information to continue analyzing the problem.</p>	UHK0003 DHK0002
FFF6	<p>Volume statistics; logged only</p> <p>No action required. This reference code is logged for information only.</p>	

Tape Unit Failing Items

Notes:

- To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
- To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
- To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
05H3834	Interposer	Magnetic tape subsystem service information
61G8324	Terminating plug	Magnetic tape subsystem service information
DHK0002	I/O device	Use the sense bytes and 3490 MI to find the failing items
EXTSCSI	External signal cable	Problem Analysis; Symbolic FRU Isolation

Failing Item	Description	Document Description
MHK0001	Tape	Magnetic tape subsystem operator's information
MHKTMED	Defective removable media	Magnetic tape subsystem operator's information
UHK0003	I/O device not communicating	Magnetic tape subsystem operator's information
UHKCLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UHKCNFG	Tape configuration detected by I/O processor; not valid	Installation

(3494) Tape Library Reference Codes

A tape or a tape library failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes No

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

No Yes

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2301	Library device failure Library attachment facility equipment check. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2303	Library device failure Device control unit and library manager Licensed Internal Code are incompatible. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	DHALIBC DHADEV
2306 to 2307	Library device failure Library vision failure. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494
2308	Library device failure Library manager equipment check. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY MANAGER HARDWARE PROBLEM"	3494
2309	Library device failure Library equipment check. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494
2310 to 2311	Library device requires operator intervention Put the library into pause mode and perform the intervention indicated on the library manager console.	
2319	Tape unit failure Use the tape unit service information to analyze the failure.	FI00851
2321	Library enclosure environmental alert was detected. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494

Tape Library Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
3494	Library device	IBM 3494 Maintenance Information, SA37-0270
DHADEV	3490 Control Unit Licensed Internal Code	Refer to I/O device service information

Failing Item	Description	Document Description
DHALIBC	3494 Library Manager Licensed Internal Code	IBM 3494 Maintenance Information, SA37-0270

(3570) Tape Unit Reference Codes

A tape or a 3570 Tape Unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes No

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

No Yes

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3570 is powered on.
4. Ensure that the 3570 SCSI address is set to 0.
5. Load the first tape.
6. Start a type D IPL from the system unit control panel.
7. Does the IPL complete successfully?

No Yes

↓ The problem has been corrected.

This ends the procedure.

8. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 10.
9. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
10. If the amber light on the 3570 indicator panel is on continuously, see the "Start" section of the 3570 service information.
11. Look at the Data display for function 13-3:
 - The 4 rightmost characters are the direct select address.
12. Look at the Data display for function 14-3:
 - The second character is the 3570 control unit address.
 - The fourth character is the 3570 drive address that has the error.
13. Find the unit reference code in the following table.
14. See the "Start" section of the 3570 service information.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the

Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	<p>I/O processor detected a SCSI bus configuration error</p> <p>Before exchanging any parts, verify that the following conditions are not present:</p> <ul style="list-style-type: none"> • Tape and DASD devices attached to an I/O processor that does not support tape and DASD devices at the same time. • A device type or model that is not given support. 	UHZCNFG DHZDEV FI00130
9100	<p>Interface error detected by I/O processor or by tape unit</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> 1. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 2. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	DHZDEV FI00131 05H3834 EXTSCSI 61G8324
9200	<p>I/O processor addressed the tape unit; no response</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	DHZDEV FI00131 05H3834 EXTSCSI 61G8324
9201	<p>Tape unit command timeout</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	DHZDEV FI00131 05H3834 EXTSCSI 61G8324

3570

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9202	<p>Tape unit failed after Licensed Internal Code was loaded</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	DHZDEV FI00131 05H3834 EXTSCSI 61G8324
9210	Illegal or unsupported tape unit response	DHZDEV FI00131 FI00130
9300	Tape unit failure	DHZDEV
9301	<p>Tape device failure, redundancy lost</p> <p>The tape unit detected a hardware failure that does not prevent the tape unit from completing the current operation.</p> <p>Refer to the 3570 Tape Unit service information to determine the failing item.</p>	DHZDEV
9302	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.</p>	FI00130
9310	Licensed Internal Code for the tape unit is not correct	DHZDEV FI00130
9320	<p>Tape device Licensed Internal Code failure</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. Take a dump of the tape unit Licensed Internal Code (see the 3570 Tape Unit service information). 2. Power off the tape unit. Then power on the tape unit to resume operation. 3. Ask your next level of support for assistance. 	FI00130 DHZDEV
9350	<p>Tape unit detected a read or write error on tape medium</p> <p>A permanent read or write error occurred, and the tape unit determined that the tape cartridge is defective. Exchange the tape cartridge.</p>	MHZTMED UHZCLN DHZDEV
9351	<p>Tape with excessive error rate was mounted in tape device.</p> <p>The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.</p>	MHZTMED UHZCLN DHZDEV
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape unit does not give support to the data format on the tape cartridge. Use a different tape cartridge.</p>	UHZUSER MHZTMED UHZCLN DHZDEV

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)	
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UHZFIXD
9900	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed. The tape unit will continue to operate with the previous LIC. You may do either of the following: <ul style="list-style-type: none"> • Wait for next IPL when the system will attempt to load the LIC for the tape drive again. • Perform "TU-PIP4" on page 664 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC. 	UHZUSER
FFF6	Tape volume statistics logged (no action required)	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
05H3834	Interposer	IBM 3570 Tape Drive Service Guide
61G8324	Terminating plug	IBM 3570 Tape Drive Service Guide
DHZDEV	Tape unit failure	IBM 3570 Tape Drive Service Guide
EXTSCSI	External signal cable	Problem Analysis; Symbolic FRU Isolation
MHZTMED	Defective removable media	Magnetic tape subsystem service information
UHZCLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UHZCNFG	Tape configuration detected by I/O processor; not valid	Installation
UHZUSER	Operator action required	System operation information

(3590) Tape Unit Reference Codes

A tape or a 3590 Tape Unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes **No**

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

No **Yes**

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3590 is powered on.
4. Ensure that the 3590 SCSI address is set to 0.
5. Verify that the 3590 Online/Offline switches are set to the Online position.
6. Load the first tape.
7. Start a type D IPL from the system unit control panel.
8. Does the IPL complete successfully?

No **Yes**

↓ The problem has been corrected.

This ends the procedure.

9. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 10.
10. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
11. If the 3590 indicator panel shows a FRU identifier (FID) code, see the "Start" section of the 3590 service information.
12. Look at the Data display for function 13-3:
 - The 4 rightmost characters are the direct select address.
13. Look at the Data display for function 14-3:
 - The second character is the 3590 control unit address.
 - The fourth character is the 3590 drive address that has the error.
14. Find the unit reference code in the following table.
15. See the "Start" section of the 3590 service information.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	I/O processor detected a SCSI bus configuration error Before exchanging any parts, verify that the following conditions are <i>not</i> present: <ul style="list-style-type: none"> • Tape and DASD devices attached to an I/O processor that does not support tape and DASD devices at the same time. • A device type or model that is not given support 	UHQCNFG FI00851 FI00130
9100	Interface error detected by I/O processor or by tape unit Before exchanging any parts, do the following: <ol style="list-style-type: none"> 1. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 2. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	FI00851 FI00131 05H3834 EXTSCSI 61G8324
9200	I/O processor addressed the tape unit; no response Before exchanging any parts, do the following: <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	FI00851 FI00131 05H3834 EXTSCSI 61G8324
9201	Tape unit command timeout Before exchanging any parts, do the following: <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	FI00851 FI00131 05H3834 EXTSCSI 61G8324
9202	Tape unit failed after Licensed Internal Code was loaded Before exchanging any parts, do the following: <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	FI00851 FI00131 05H3834 EXTSCSI 61G8324

3590

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9210	Illegal or unsupported tape unit response	FI00851 FI00131 FI00130
9300	Tape unit failure	FI00851
9301	Tape device failure, redundancy lost The tape unit detected a hardware failure that does not prevent the tape unit from completing the present operation. See the 3590 Tape Unit service information to determine the failing item.	FI00851
9302	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9310	Licensed Internal Code for the tape unit is not correct	FI00851 FI00130
9320	Tape device Licensed Internal Code failure Do the following: 1. Take a dump of the tape device Licensed Internal Code (see the 3590 Tape Unit service information). 2. Power off the tape unit. Then power on the tape unit to resume operation.	FI00130 FI00851
9350	Tape unit detected a read or write error on tape medium A permanent read or write error occurred, and the tape unit determined that the tape cartridge is defective. Exchange the tape cartridge.	MHQTMED UHQCLN FI00851
9351	Tape with excessive error rate was mounted in tape device. The tape unit detected that the installed tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.	MHQTMED UHQCLN FI00851
9355	The data format is incorrect; the tape cannot be read The tape device does not give support to the data format on the tape cartridge. Format the tape cartridge again or use a different tape cartridge. See the <i>3590 Tape Drive Operator's Guide</i> for instructions on formatting a tape cartridge.	MHQTMED UHQCLN FI00851
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UHQFIXD
9900	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed. The tape unit will continue to operate with the previous LIC. You may do either of the following: <ul style="list-style-type: none"> • Wait for next IPL when the system will attempt to load the LIC for the tape unit again. • Perform "TU-PIP4" on page 664 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC. 	
FFF6	Tape volume statistics logged (no action required)	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
05H3834	Interposer	IBM 3590 Tape Drive Service Guide
61G8324	Terminating plug	IBM 3590 Tape Drive Service Guide
EXTSCSI	External signal cable	Problem Analysis; Symbolic FRU Isolation
MHQTMED	Defective removable media	Magnetic tape subsystem service information
UHQCLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UHQCNFG	Tape configuration detected by I/O processor; not valid	Installation

(3995) Optical Library Dataserver Reference Codes

A 3995 Optical Library Dataserver failure occurred.

Note:

- If the system is available, use online diagnostic tests when possible.
 - Search the problem log (WRKPRB) for a recent 3995 entry that may assist in analyzing the problem. The WRKPRB entry will provide a unit reference code. This reference code can be found in the *3995 Optical Library Dataserver Maintenance Information Manual* for the 3995 model installed on the system.
1. Verify that the 3995 is powered on.
 2. Verify that the interface cable connections are correct for each 3995.

- Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
- Go to the *3995 Optical Library Dataserver Maintenance Information Manual* for the 3995 model installed on the system and find the unit reference code.

(6050) Twinaxial Workstation I/O Processor Reference Codes

The twinaxial workstation I/O processor detected a failure.

- Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
- Look at the 8 characters of the Data display for function 13-3. These 8 characters are the direct select address of the workstation I/O processor card (BBBBCCbb). See "System Unit Locations and Addresses" on page 695 and the system configuration list to find the failing part.
- Find the unit reference code in the following table.

Notes:

- If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
- If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
- If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0000	Device no response time-out; temporary error	FI00601 FI00602 FI00610
0001	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <p>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500</p> <p>2. "INT-PIP14 Station Protectors" on page 506</p> <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00602 FI00601 GX27777 GX28888 FI00610 22F0097 FI00615
0003	<p>WS IOP detected parity error from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <p>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500</p> <p>2. "INT-PIP14 Station Protectors" on page 506</p> <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00602 FI00601 GX27777 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0004	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00602 FI00601 GX27777 FI00610
0005	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00602 FI00601 GX28888 FI00610 FI00615 22F0097
0006	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00601 FI00602 GX28888 FI00610
0007	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00601 GX28888 GX27777 FI00610
0008	<p>WS IOP detected device power turned off, and then on</p>	GX2EEEE FI00601
0009	<p>WS IOP detected wrong device response to start command</p> <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00601 FI00610
0020	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00601 AJLYD01 FI00610
0021	<p>Device detected not valid value from WS IOP</p> <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00601 AJLYD01 FI00610

6050

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0022	Device detected storage or data overrun Perform "TWSC-PIP1" on page 677 .	FI00601 FI00610 AJLYD01
0023	Device detected null or attribute exception error Perform "TWSC-PIP1" on page 677 .	FI00601 FI00610
0024	Device detected wrong start command from WS IOP Perform "TWSC-PIP1" on page 677 .	FI00601 AJLYD01 FI00610
0025	WS IOP detected wrong exception response from device Perform "TWSC-PIP1" on page 677 .	FI00601 FI00610
0026	WS IOP detected not valid pass-through command	GX29999 FI00610
0049	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0082	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 677.	FI00601
0090	WS IOP detected no status change from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0091	WS IOP detected busy time-out from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0100	Device no response time-out; temporary error Is the problem intermittent? No Yes ↓ Perform the following intermittent problem isolation procedures in the sequence listed: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 Exchange the failing item.	FI00601 FI00602 FI00610
0101	WS IOP detected error when transmitting data Is the problem intermittent? No Yes ↓ Perform the following intermittent problem isolation procedures in the sequence listed: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GX27777 GX28888 FI00610 FI00615

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0103	<p>WS IOP detected parity error from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	<p>FI00602 FI00601 GX27777 FI00610</p>
0104	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	<p>FI00602 FI00601 GX27777 FI00610</p>
0105	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	<p>FI00602 GX28888 FI00601 FI00610 FI00615 22F0097</p>
0106	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	<p>FI00601 FI00602 GX28888 FI00610</p>
0107	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	<p>FI00601 GX28888 GX27777 FI00610</p>

6050

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0108	WS IOP detected device power turned off, and then on	GX2EEEE FI00601
0109	WS IOP detected wrong device response to start command Perform "TWSC-PIP1" on page 677 .	FI00601 FI00610
0111	WS IOP detected wrong keyboard scan code from display Perform "TWSC-PIP1" on page 677 .	FI00601 AJLYD01 FI00610
0120	Device detected wrong command or device ID from WS IOP Perform "TWSC-PIP1" on page 677 .	FI00601 AJLYD01 FI00610
0121	Device detected not valid value from WS IOP Perform "TWSC-PIP1" on page 677 .	FI00601 AJLYD01 FI00610
0122	Device detected storage or data overrun Perform "TWSC-PIP1" on page 677 .	FI00601 FI00610 AJLYD01
0123	Device detected null or attribute exception error Perform "TWSC-PIP1" on page 677 .	FI00601 FI00610
0124	Device detected wrong start command from WS IOP Perform "TWSC-PIP1" on page 677 .	FI00601 AJLYD01 FI00610
0125	WS IOP detected wrong exception response from device Perform "TWSC-PIP1" on page 677 .	FI00601 FI00610
0126	WS IOP detected not valid pass-through command	GX29999 FI00610
0149	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 677 .	FI00601 FI00610
0170	WS IOP detected error downloading printer definition table	AJDG301 FI00601
0171	WS IOP detected error downloading printer definition table	FI00601 AJLYD01
0172	WS IOP detected error downloading printer definition table	CX2PDT AJDG301 FI00601
0173	WS IOP detected error downloading printer definition table	CX2PDT FI00601
0174	WS IOP detected error unloading printer definition table	FI00601 AJLYD01
0175	WS IOP detected device configuration error	FI00601 AJLYD01
0176 to 0177	WS IOP detected error downloading LIC to device	GX2DMCC FI00601
0181	Wrong magnetic stripe reader response	FI00605 MX2FFFF FI00601 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0182	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 677 .	FI00601
0183	WS IOP detected wrong display size value Perform "TWSC-PIP1" on page 677 .	FI00601
0184	WS IOP detected wrong keyboard identification Verify that the correct keyboard is attached correctly to the workstation. If the correct keyboard is attached correctly to the workstation perform "TWSC-PIP1" on page 677 .	FI00601
0189	Wrong magnetic stripe reader or light pen status	FI00601 FI00605 FI00607 FI00610
0190	WS IOP detected no status change from device Is the problem intermittent? No Yes ↓ Perform the following intermittent problem isolation procedures in the sequence listed: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 Perform "TWSC-PIP1" on page 677 .	FI00601 FI00610 GX27777
0191	WS IOP detected busy time-out from device Perform "TWSC-PIP1" on page 677 .	FI00601 FI00610
0200	Device no response time-out; temporary error	FI00604 FI00602 FI00610
0201	WS IOP detected error when transmitting data Is the problem intermittent? No Yes ↓ Perform the following intermittent problem isolation procedures in the sequence listed: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 Perform "TWSC-PIP1" on page 677 .	FI00602 FI00604 GX27777 GX28888 FI00610 22F0097 FI00615
0203	WS IOP detected parity error from device Is the problem intermittent? No Yes ↓ Perform the following intermittent problem isolation procedures in the sequence listed: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 Perform "TWSC-PIP1" on page 677 .	FI00602 FI00604 GX27777 FI00610

6050

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0204	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00602 FI00604 GX27777 FI00610
0205	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00602 GX27777 FI00604 FI00610 FI00615 22F0097
0206	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00604 FI00602 GX28888 FI00610
0207	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00604 GX28888 GX27777 FI00610
0208	<p>WS IOP detected device power turned off, and then on</p>	GX2EEEE FI00604
0209	<p>WS IOP detected wrong device response to start command</p>	FI00604 FI00610
0210	<p>Printer detected equipment error</p>	FI00604
0211	<p>Printer detected equipment error</p>	FI00604 AJLYD01 FI00610
0212	<p>Printer detected equipment error</p>	FI00604

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0220	Device detected wrong command or device ID from WS IOP	FI00604 AJLYD01 FI00610
0221	Device detected not valid value from WS IOP	FI00604 AJLYD01 FI00610
0222	Device detected storage or data overrun	FI00604 AJLYD01 FI00610
0223	WS IOP detected start command to printer was lost	FI00604 FI00602 FI00610
0224	Device detected wrong start command from WS IOP	FI00604 AJLYD01 FI00610
0225	WS IOP detected wrong exception response from device	FI00604 FI00610
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 FI00610
0258	Printer detected end of ribbon check	FI00604
0260 to 0269	Printer detected equipment error	AJDG301 GX2DMCC
0281, 0283 to 0289	Printer detected equipment error	FI00604
0290	WS IOP detected no status change from device	FI00604 FI00610
0291	WS IOP detected busy time-out from device	FI00604 FI00610
A000	<p>Too many devices active on the workstation IOP</p> <p>There are too many devices attached (powered on) to the workstation I/O processor that the console is attached to than are allowed on the workstation I/O processor.</p> <p>Switch off power (or remove) one or more of the devices (except for the console) that are attached to this workstation I/O processor. Perform an initial program load (IPL) from the control panel to correct the problem.</p> <p>Refer to the local workstation diagrams for the location of the workstations if necessary.</p>	GX2BBBB
B000	WS IOP fails to report part, model and serial number	FI00610
C000	WS IOP error not known	AJLYD01 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
D000	<p>Work Station IOA start-up test error</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP7 Electromagnetic Interference (EMI)" on page 500 <p>Exchange the first workstation I/O processor card</p>	FI00610
D010	WS IOP storage failure corrected	FI00610
D011	WS IOP card storage failure	FI00610
D021	WS IOP detected errors on all cables	FI00602 FI00601 FI00610 FI00615 22F0097
D022	WS IOP parity errors detected on all cables	FI00602 FI00601 FI00610 FI00615 22F0097
D023	<p>WS IOP detected errors on some, but not all cables</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP7 Electromagnetic Interference (EMI)" on page 500 <p>Perform "TWSC-PIP1" on page 677 .</p>	FI00602 FI00601 FI00610
E000	WS IOP or IOA error during working operation	AJLYD01 FI00610
F000	WS IOP or IOA operating system program error	AJLYD01
FFFF	<p>User-detected workstation problem</p> <p>Reference code FFFF is assigned by the ANZPRB (Analyze Problems) for user-detected errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.</p>	UX2FF00

Twinaxial Workstation I/O Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
22F0097	Work station attachment conversion cable	Repair Guide; removal and installation procedures
AJDG301	Licensed program	Service Functions; APAR or LICTR
AJLYD01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
CX2PDT	Printer definition table	
GX27777	Electrical interference	
GX28888	Other work station on port is failing	
GX29999	Error occurred with pass-through command	
GX2BBBB	Too many work stations are active on the workstation IOP	
GX2DMCC	Device Licensed Internal Code change	
GX2EEEE	Active device turned off	
MX2FFFF	Magnetic stripe	Refer to I/O device service information
UX2FF00	User believes there is a problem	

(6055) Workstation Adapter Reference Codes

A workstation adapter failure occurred.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0101	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01
0103	WS IOP detected parity error from device	FI00601 GAG7777 FI00631 AJLAG01
0104	Device detected parity error from WS IOP	FI00601 GAG7777 FI00631 AJLAG01

6055

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0105	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01
0106	WS IOP detected wrong data from device	FI00601 FI00631 GAG7777 AJLAG01
0107	WS IOP detected wrong address from device	FI00601 GAG7777 AJLAG01
0108	WS IOP detected device power turned off, and then on	GAGEEEE FI00601
0109	WS IOP detected wrong device response to start command	FI00601 AJLAG01
0111	WS IOP detected wrong keyboard scan code from display	FI00601 AJLAG01
0120	Device detected wrong command or device ID from WS IOP	FI00601 AJLAG01
0121	Device detected not valid value from WS IOP	FI00601 AJLAG01
0122	Device detected storage or data overrun	FI00601 AJLAG01
0123	Device detected null or attribute exception error	FI00601 AJLAG01
0124	Device detected wrong start command from WS IOP	FI00601 AJLAG01
0125	WS IOP detected wrong exception response from device	FI00601 AJLAG01
0126	WS IOP detected not valid pass-through command	GAG9999 AJLAG01
0149	WS IOP detected wrong request or response from device	FI00601 AJLAG01
0190	WS IOP detected no status change from device	FI00601 GAG7777 AJLAG01
0191	WS IOP detected busy time-out from device	FI00601 AJLAG01
0201	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01
0203	WS IOP detected parity error from device	FI00604 GAG7777 FI00631 AJLAG01
0204	Device detected parity error from WS IOP	FI00604 GAG7777 FI00631 AJLAG01

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0205	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01
0206	WS IOP detected wrong data from device	FI00604 FI00631 AJLAG01
0207	WS IOP detected wrong address from device	FI00604 GAG7777 AJLAG01
0208	WS IOP detected device power turned off, and then on	GAGEEEE FI00604
0209	WS IOP detected wrong device response to start command	FI00604 AJLAG01
0210	Printer detected equipment error	FI00604
0211	Printer detected equipment error	FI00604 AJLAG01
0212	Printer detected equipment error	FI00604
0220	Device detected wrong command or device ID from WS IOP	FI00604 AJLAG01
0221	Device detected not valid value from WS IOP	FI00604 AJLAG01
0222	Device detected storage or data overrun	FI00604 AJLAG01
0223	WS IOP detected start command to printer was lost	FI00604 FI00631 AJLAG01
0224	Device detected wrong start command from WS IOP	FI00604 AJLAG01
0225	WS IOP detected wrong exception response from device	FI00604 AJLAG01
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 AJLAG01
0281, 0283 to 0289	Printer detected equipment error	FI00604
0290	WS IOP detected no status change from device	FI00604 AJLAG01
0291	WS IOP detected busy time-out from device	FI00604 AJLAG01
A000	Too many devices active on the workstation IOP	GAGBBBB
C000, D000	WS IOP error not known	AJLAG01
F000	WS IOP or IOA operating system program error	AJLAG01
F003	WS IOA buffer utilization threshold exceeded temporarily	AJLAG01
FFFF	User believes there is a problem Reference code FFFF is assigned by the ANZPRB (Analyze Problems) for user-detected errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.	UAGFF00

Workstation Adapter Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
AJLAG01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
GAG7777	Electrical interference	
GAG9999	Error occurred with pass-through command	
GAGBBBB	Too many work stations are active on the workstation IOP	
GAGEEEE	Active device turned off	
UAGFF00	User believes there is a problem	

(6056) Workstation Adapter Reference Codes

A workstation adapter failure occurred.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0101	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01
0103	WS IOP detected parity error from device	FI00601 GAG7777 FI00631 AJLAG01

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0104	Device detected parity error from WS IOP	FI00601 GAG7777 FI00631 AJLAG01
0105	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01
0106	WS IOP detected wrong data from device	FI00601 FI00631 GAG7777 AJLAG01
0107	WS IOP detected wrong address from device	FI00601 GAG7777 AJLAG01
0108	WS IOP detected device power turned off, and then on	GAGEEEE FI00601
0109	WS IOP detected wrong device response to start command	FI00601 AJLAG01
0111	WS IOP detected wrong keyboard scan code from display	FI00601 AJLAG01
0120	Device detected wrong command or device ID from WS IOP	FI00601 AJLAG01
0121	Device detected not valid value from WS IOP	FI00601 AJLAG01
0122	Device detected storage or data overrun	FI00601 AJLAG01
0123	Device detected null or attribute exception error	FI00601 AJLAG01
0124	Device detected wrong start command from WS IOP	FI00601 AJLAG01
0125	WS IOP detected wrong exception response from device	FI00601 AJLAG01
0126	WS IOP detected not valid pass-through command	GAG9999 AJLAG01
0149	WS IOP detected wrong request or response from device	FI00601 AJLAG01
0190	WS IOP detected no status change from device	FI00601 GAG7777 AJLAG01
0191	WS IOP detected busy time-out from device	FI00601 AJLAG01
0201	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01
0203	WS IOP detected parity error from device	FI00604 GAG7777 FI00631 AJLAG01

6056

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0204	Device detected parity error from WS IOP	FI00604 GAG7777 FI00631 AJLAG01
0205	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01
0206	WS IOP detected wrong data from device	FI00604 FI00631 AJLAG01
0207	WS IOP detected wrong address from device	FI00604 GAG7777 AJLAG01
0208	WS IOP detected device power turned off, and then on	GAGEEEE FI00604
0209	WS IOP detected wrong device response to start command	FI00604 AJLAG01
0210	Printer detected equipment error	FI00604
0211	Printer detected equipment error	FI00604 AJLAG01
0212	Printer detected equipment error	FI00604
0220	Device detected wrong command or device ID from WS IOP	FI00604 AJLAG01
0221	Device detected not valid value from WS IOP	FI00604 AJLAG01
0222	Device detected storage or data overrun	FI00604 AJLAG01
0223	WS IOP detected start command to printer was lost	FI00604 FI00631 AJLAG01
0224	Device detected wrong start command from WS IOP	FI00604 AJLAG01
0225	WS IOP detected wrong exception response from device	FI00604 AJLAG01
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 AJLAG01
0281, 0283 to 0289	Printer detected equipment error	FI00604
0290	WS IOP detected no status change from device	FI00604 AJLAG01
0291	WS IOP detected busy time-out from device	FI00604 AJLAG01
A000	Too many devices active on the workstation IOP	GAGBBBB
C000, D000	WS IOP error not known	AJLAG01
F000	WS IOP or IOA operating system program error	AJLAG01
F003	WS IOA buffer utilization threshold exceeded temporarily	AJLAG01

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFFF	User believes there is a problem Reference code FFFF is assigned by the ANZPRB (Analyze Problems) for user-detected errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.	UAGFF00

Workstation Adapter Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
AJLAG01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
GAG7777	Electrical interference	
GAG9999	Error occurred with pass-through command	
GAGBBBB	Too many work stations are active on the workstation IOP	
GAGEEEE	Active device turned off	
UAGFF00	User believes there is a problem	

(6112) Magnetic Storage I/O Processor Reference Codes

The magnetic storage I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1000	Storage device IOP card failed Perform "MSIOP Parts Location" on page 563.	6112

6112

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1001	Storage device IOP communications to system failed Perform "MSIOP-PIP1" on page 541.	6112 AJER101 FI00580
1010, 1020, 1030, 1050	Storage device IOP statistics have been logged No action required. This reference code is logged for information only.	
2000	Open circuit was detected on device cable Perform "MSIOP-PIP2" on page 541.	FI00580 FI00500 6112 6495246
2010	Shorted circuit was detected on device cable Perform "MSIOP-PIP2" on page 541.	FI00580 FI00500 6112 6495246
2020	Storage device IOP card failed Perform "MSIOP Parts Location" on page 563.	6112
2030	Write and Read test to the device failed Perform "MSIOP-PIP3" on page 543.	FI00581
2040	Storage device IOP detected error on device cable Perform "MSIOP-PIP4" on page 544.	FI00580 6112
2050	Storage device IOP detected error on device cable Perform "MSIOP-PIP5" on page 546.	FI00580 FI00500 6112 6495246
3000	Storage device IOP card failed Perform "MSIOP-PIP11" on page 551.	6112
3001	Storage device IOP card failed Perform "MSIOP Parts Location" on page 563.	6112 AJER101
3002	Storage device IOP communications to device failed The MSIOP cannot select the device because the device is not responding. Is the problem intermittent? No Yes ↓ Perform the following procedures: 1. "INT-PIP7 Electromagnetic Interference (EMI)" on page 500 2. "MSIOP-PIP12" on page 552 Perform "MSIOP-PIP1" on page 541.	FI00581 6112
3003	Storage device IOP card failed Perform "MSIOP-PIP11" on page 551.	6112
3004	Storage device IOP communications to device failed The MSIOP detected an error during a packet transfer from the device controller. Perform "MSIOP-PIP8" on page 549.	FI00581 6112

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3005	Storage device IOP communications to device failed The MSIOP licensed internal code detected a device controller status that was not valid. Perform "MSIOP-PIP1" on page 541.	FI00581 6112
3006	Storage device IOP communications to system failed The system attempted to send the MSIOP a bus command that was not valid. Perform "MSIOP Parts Location" on page 563.	6112 AJER101
3007	Storage device IOP communications to system failed The system detected a failure while the MSIOP was attempting to communicate on the system bus. Perform "MSIOP Parts Location" on page 563.	6112 AJER101
300C	Storage device IOP communications to device failed The device controller reported that an interface protocol error occurred while communicating with the MSIOP. Perform "MSIOP-PIP1" on page 541.	FI00581 6112
300D	Storage device IOP communications to device failed Perform "MSIOP-PIP10" on page 550.	FI00581 6112
300E	Storage device IOP communications to device failed The device controller detected a protocol error while communicating with the MSIOP. Perform "MSIOP-PIP10" on page 550.	FI00581 6112
3010	Storage device IOP detected error in device response Perform "MSIOP-PIP6" on page 547.	FI00581 AJER101
3011 to 3012, 3014 to 3015	Storage device IOP card failed Perform "MSIOP Parts Location" on page 563.	6112
3100	Storage device IOP communications to device failed The MSIOP detected a parity error on the device interface. Retry attempts failed. Perform "MSIOP-PIP1" on page 541.	FI00581 FI00500 6112 6495246
3101	Storage device IOP communications to device failed The MSIOP detected a sequence error on the device interface. Retry attempts failed. Perform "MSIOP-PIP1" on page 541.	FI00581 6112 6495246 FI00500
3104	Storage device IOP communications to device failed The MSIOP detected a ending sequence error on the device interface. Retry attempts failed. Perform "MSIOP-PIP1" on page 541.	FI00581 6112 AJER101

6112

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3106	Storage device IOP communications to device failed The MSIOP detected a synchronization error on the device interface. Retry attempts failed. Perform "MSIOP-PIP1" on page 541.	FI00581 6112 FI00500 6495246
3107	Storage device IOP card failed Perform "MSIOP Parts Location" on page 563.	6112
3108	Storage device IOP statistics have been logged No action required. This reference code is logged for information only.	
3109	Storage device IOP communications to device failed Perform "MSIOP-PIP1" on page 541.	FI00581 6112 6495246 FI00500
3110	Attached storage device stopped working Is the problem intermittent? No Yes ↓ Perform the following procedures: 1. "INT-PIP18 PTFs Not Installed" on page 506 2. "INT-PIP7 Electromagnetic Interference (EMI)" on page 500 3. "MSIOP-PIP12" on page 552 Perform "MSIOP-PIP7" on page 548.	FI00581
3200	Error occurred in device starting sequence Perform "MSIOP-PIP9" on page 550.	FI00581 AJER101
3300	Data Block was assigned to a new location on a disk unit No action required. This reference code is logged for information only.	
4000	Storage device IOP Licensed Internal Code failed Is the problem intermittent? No Yes ↓ Perform the following procedures: 1. "INT-PIP18 PTFs Not Installed" on page 506 2. "INT-PIP7 Electromagnetic Interference (EMI)" on page 500 3. "INT-PIP16 Licensed Internal Code" on page 506 4. "MSIOP-PIP12" on page 552 Perform "MSIOP-PIP13" on page 554.	AJER101 6112 FI00580
4001	IOP Licensed Internal Code failed and recovered No action required. This reference code is logged for information only.	
4002	Storage device IOP Licensed Internal Code failed	AJER101
6000	Storage device IOP statistics have been logged No action required. This reference code is logged for information only.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6001	Device format not set to 520 byte blocks Perform "MSIOP-PIP6" on page 547.	FI00581 AJER101
6002	Storage device IOP Licensed Internal Code failed	AJER101
6003 to 6004	Storage device IOP or Licensed Internal Code failed	AJDG301 AJER101
6005	Configuration not valid; too many devices attached Perform "MSIOP-PIP6" on page 547.	FI00580 AJER101
6006	Device is down level or not supported Perform "MSIOP-PIP6" on page 547.	FI00581 AJER101
6007	Command time-out occurred; reset sent to device Is the problem intermittent? No Yes ↓ Perform the following procedures: 1. "INT-PIP18 PTFs Not Installed" on page 506 2. "INT-PIP7 Electromagnetic Interference (EMI)" on page 500 3. "MSIOP-PIP12" on page 552 Perform "MSIOP-PIP12" on page 552.	FI00581 AJER101 6112 6495246 FI00500 AJDG301
6008	Storage device IOP statistics have been logged No action required. This reference code is logged for information only.	

Magnetic Storage I/O Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
6112	Magnetic storage device IOP card	Repair and Parts; removal and installation procedures
6495246	Terminating plug	Repair and Parts; parts listing
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJER101	Magnetic storage device IOP Licensed Internal Code	Service Functions; APAR or LICTR

(6140) Twinaxial Workstation I/O Processor Reference Codes

The twinaxial workstation I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.

2. Look at the 8 characters of the Data display for function 13-3. These 8 characters are the direct select address of the workstation I/O processor card (BBBBCCbb). See "System Unit Locations and Addresses" on page 695 and the system configuration list to find the failing part.
3. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0000	Device no response time-out; temporary error	FI00601 FI00602 FI00610
0001	WS IOP detected error when transmitting data Is the problem intermittent? No Yes ↓ Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 498: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500. 2. "INT-PIP14 Station Protectors" on page 506. Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GLM7777 GLM8888 FI00610 FI00615 22F0097
0003	WS IOP detected parity error from device Is the problem intermittent? No Yes ↓ Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 498: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500. 2. "INT-PIP14 Station Protectors" on page 506. Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GLM7777 FI00610
0004	Device detected parity error from WS IOP Is the problem intermittent? No Yes ↓ Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 498: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500. 2. "INT-PIP14 Station Protectors" on page 506. Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GLM7777 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0005	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. “INT-PIP14 Station Protectors” on page 506. <p>Perform “TWSC-PIP1” on page 677.</p>	FI00602 FI00601 GLM8888 FI00610 FI00615 22F0097
0006	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498 :</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. INT-PIP14 Station Protectors <p>Perform “TWSC-PIP1” on page 677.</p>	FI00601 FI00602 GLM8888 FI00610
0007	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. “INT-PIP14 Station Protectors” on page 506. <p>Perform “TWSC-PIP1” on page 677.</p>	FI00601 GLM8888 GLM7777 FI00610
0008	<p>WS IOP detected device power turned off, and then on</p> <p>Perform “TWSC-PIP1” on page 677.</p>	GLMEEEE FI00601
0009	<p>WS IOP detected wrong device response to start command</p> <p>Perform “TWSC-PIP1” on page 677.</p>	FI00601 FI00610
0020	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform “TWSC-PIP1” on page 677.</p>	FI00601 AJLYD01 FI00610
0021	<p>Device detected not valid value from WS IOP</p> <p>Perform “TWSC-PIP1” on page 677.</p>	FI00601 AJLYD01 FI00610
0022	<p>Device detected storage or data overrun</p> <p>Perform “TWSC-PIP1” on page 677.</p>	FI00601 AJLYD01 FI00610
0023	<p>Device detected null or attribute exception error</p> <p>Perform “TWSC-PIP1” on page 677.</p>	FI00601 FI00610
0024	<p>Device detected wrong start command from WS IOP</p> <p>Perform “TWSC-PIP1” on page 677.</p>	FI00601 AJLYD01 FI00610

6140

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0025	WS IOP detected wrong exception response from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0026	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 677.	GLM9999 FI00610
0049	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0082	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 677.	FI00601
0090	WS IOP detected no status change from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0091	WS IOP detected busy time-out from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0100	Device no response time-out; temporary error	FI00601 FI00602 FI00610
0101	WS IOP detected error when transmitting data Is the problem intermittent? No Yes ↓ Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 498: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500. 2. "INT-PIP14 Station Protectors" on page 506. Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GLM7777 GLM8888 FI00610 FI00615
0103	WS IOP detected parity error from device Is the problem intermittent? No Yes ↓ Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 498: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500. 2. INT-PIP14 Station Protectors Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GLM7777 FI00610
0104	Device detected parity error from WS IOP Is the problem intermittent? No Yes ↓ Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 498: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500. 2. INT-PIP14 Station Protectors Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GLM7777 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0105	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. INT-PIP14 Station Protectors <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00602 FI00601 GLM8888 FI00610 FI00615 22F0097</p>
0106	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. INT-PIP14 Station Protectors <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00601 FI00602 GLM8888 FI00610</p>
0107	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. INT-PIP14 Station Protectors <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00601 GLM8888 GLM7777 FI00610</p>
0108	<p>WS IOP detected device power turned off, and then on</p> <p>Perform “TWSC-PIP1” on page 677.</p>	<p>GLMEEEE FI00601</p>
0109	<p>WS IOP detected wrong device response to start command</p> <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00601 FI00610</p>
0111	<p>WS IOP detected wrong keyboard scan code from display</p> <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0120	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0121	<p>Device detected not valid value from WS IOP</p> <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0122	<p>Device detected storage or data overrun</p> <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0123	<p>Device detected null or attribute exception error</p> <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00601 FI00610</p>

6140

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0124	Device detected wrong start command from WS IOP Perform "TWSC-PIP1" on page 677.	FI00601 AJLYD01 FI00610
0125	WS IOP detected wrong exception response from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0126	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 677.	GLM9999 FI00610
0149	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0170	WS IOP detected error downloading printer definition table	AJDG301 FI00601
0171	WS IOP detected error downloading printer definition table	FI00601 AJLYD01
0172	WS IOP detected error downloading printer definition table	CLMPDT AJDG301 FI00601
0173	WS IOP detected error downloading printer definition table	CLMPDT FI00601
0174	WS IOP detected error unloading printer definition table	FI00601 AJLYD01
0175	WS IOP detected device configuration error	FI00601 AJLYD01
0176 to 0177	WS IOP detected error downloading LIC to device	GLMDMCC FI00601
0181	Wrong magnetic stripe reader response Perform "TWSC-PIP1" on page 677.	FI00605 MLMFFFF FI00601 FI00610
0182	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 677.	FI00601
0183	WS IOP detected wrong display size value Perform "TWSC-PIP1" on page 677.	FI00601
0184	WS IOP detected wrong keyboard identification Verify that the correct keyboard is attached correctly to the workstation. If the correct keyboard is attached correctly to the workstation, perform "TWSC-PIP1" on page 677.	FI00601
0189	Wrong magnetic stripe reader or light pen status Perform "TWSC-PIP1" on page 677.	FI00601 FI00605 FI00607 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0190	<p>WS IOP detected no status change from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. “INT-PIP14 Station Protectors” on page 506. <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00601 FI00610 GLM7777</p>
0191	<p>WS IOP detected busy time-out from device</p> <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00601 FI00610</p>
0200	<p>Device no response time-out; temporary error</p>	<p>FI00604 FI00602 FI00610</p>
0201	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. “INT-PIP14 Station Protectors” on page 506. <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00602 FI00604 GLM7777 GLM8888 FI00610 FI00615 22F0097</p>
0203	<p>WS IOP detected parity error from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. “INT-PIP14 Station Protectors” on page 506. <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00602 FI00604 GLM7777 FI00610</p>
0204	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. INT-PIP14 Station Protectors <p>Perform “TWSC-PIP1” on page 677.</p>	<p>FI00602 FI00604 GLM7777 FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0205	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. “INT-PIP14 Station Protectors” on page 506. <p>Perform “TWSC-PIP1” on page 677.</p>	FI00602 FI00604 GLM7777 FI00610 FI00615 22F0097
0206	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. “INT-PIP14 Station Protectors” on page 506. <p>Perform “TWSC-PIP1” on page 677.</p>	FI00604 FI00602 GLM8888 FI00610
0207	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 498:</p> <ol style="list-style-type: none"> 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 500. 2. INT-PIP14 Station Protectors <p>Perform “TWSC-PIP1” on page 677.</p>	FI00604 GLM8888 GLM7777 FI00610
0208	<p>WS IOP detected device power turned off, and then on</p>	GLMEEEE FI00604
0209	<p>WS IOP detected wrong device response to start command</p>	FI00604 FI00610
0210	<p>Printer detected equipment error</p>	FI00604
0211	<p>Printer detected equipment error</p>	FI00604 AJLYD01 FI00610
0212	<p>Printer detected equipment error</p>	FI00604
0220	<p>Device detected wrong command or device ID from WS IOP</p>	FI00604 AJLYD01 FI00610
0221	<p>Device detected not valid value from WS IOP</p>	FI00604 AJLYD01 FI00610
0222	<p>Device detected storage or data overrun</p>	FI00604 AJLYD01 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0223	WS IOP detected start command to printer was lost	FI00604 FI00602 FI00610
0224	Device detected wrong start command from WS IOP	FI00604 AJLYD01 FI00610
0225	WS IOP detected wrong exception response from device	FI00604 FI00610
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 FI00610
0258	Printer detected end of ribbon check	FI00604
0281, 0283 to 0289	Printer detected equipment error	FI00604
0290	WS IOP detected no status change from device	FI00604 FI00610
0291	WS IOP detected busy time-out from device	FI00604 FI00610
A000	<p>Too many devices active on the workstation IOP</p> <p>This error occurs if you attempted to activate more workstations than allowed.</p> <p>Switch off power to (or remove) one or more of the display stations (except for the console) that are attached to this workstation I/O processor. Perform an initial program load (IPL) from the control panel to correct the problem.</p> <p>Refer to the local workstation diagrams for the location of workstations if necessary.</p>	GLMBBBB
B000	<p>WS IOP fails to report part, model and serial number</p> <p>Perform "TWSC-PIP1" on page 677.</p>	FI00610
C000	WS IOP error not known	AJLYD01 FI00610
D000	Work Station IOA start-up test error	FI00610
D010	<p>WS IOP storage failure corrected</p> <p>Perform TWSC-PIP1 in "Twinaxial Workstation I/O Processor Problem Isolation Procedures" on page 676.</p>	FI00610
D011	WS IOP card storage failure	FI00610
D021	WS IOP detected errors on all cables	FI00602 FI00601 FI00610 FI00615 22F0097
D022	WS IOP parity errors detected on all cables	FI00602 FI00601 FI00610 FI00615 22F0097

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
D023	WS IOP detected errors on some, but not all cables Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 FI00610
E000	WS IOP or IOA error during working operation	AJLYD01 FI00610
F000	WS IOP or IOA operating system program error	AJLYD01
FFFF	User believes there is a problem	ULMFF00

Twinaxial Workstation I/O Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
22F0097	Work station attachment conversion cable	Cable Attachment
AJDC301	Licensed program	Service Functions; APAR or LICTR
AJLYD01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
CLMPDT	Printer definition table	Communications Configuration
GLM7777	Electrical interference	
GLM8888	Other work station on port is failing	
GLM9999	Error occurred with pass-through command	
GLMBBBB	Too many work stations are active on the workstation IOP	
GLMDMCC	Device Licensed Internal Code change	
GLMEEEE	Active device turned off	
MLMFFFF	Magnetic stripe	Refer to I/O device service information
ULMFF00	User believes there is a problem	

(6141) ASCII Workstation I/O Processor Reference Codes

The ASCII workstation I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Look at the 8 characters of the Data display for function 13-3. These 8 characters are the direct select address of the workstation I/O processor card (BBBBCCbb). See "System Unit Locations and Addresses" on page 695 and the system configuration list to find the failing part.
3. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0101	WS IOP detected a transmit complete time-out Perform “ASCII-PIP2” on page 440.	73F9267 59X3816 AJLYC01
0103	Workstation IOP detected parity error from display Perform “ASCII-PIP1” on page 435.	FI00700 CLN000C FI00612 GLN000A 73F9267 59X3816 21F5097
0104	No response received from workstation; idle time-out Please reference “Finding and Correcting Problems” in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis. Before you exchange part 73F9267 or 59X3816, perform “ASCII-PIP2” on page 440.	GLN000D CLN000C GLN000A AJLYC01 73F9267 59X3816 FI00612
0105	Workstation IOP detected overrun error Exchange the first workstation I/O processor card. If this does not correct the problem, ask your next level of support for assistance.	73F9267 59X3816 AJLYC01
0106	Workstation IOP detected framing error from display Perform “ASCII-PIP1” on page 435.	FI00700 CLN000C FI00612 73F9267 59X3816 21F5097
0107	Data sent by WSC not received by workstation Please reference “Finding and Correcting Problems” in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	73F9267 GLN000D AJLYC01 GLN000A
0108	Workstation IOP detected Xoff-Xon time-out	GLN000D 73F9267 FI00612
0109	Data sent by workstation not received by WSC Please reference “Finding and Correcting Problems” in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	GLN000D CLN000C GLN000A AJLYC01

6141

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0111	Workstation IOP detected wrong scan code	AJLYC01 73F9267
0120	WS IOP detected OS/400 licensed program error; device ID	AJLYC01 73F9267
0121	WS IOP detect OS/400 licensed program error; register value	AJLYC01 73F9267
0122	Workstation IOP detected storage overrun	AJLYC01 73F9267
0123	WS IOP detected null or attribute exception error	AJLYC01 73F9267
0124	Workstation IOP detected a frame error	GLN000D CLN000C GLN000A AJLYC01 73F9267 59X3816
0125	Workstation IOP detected not valid exception status	AJLYC01 73F9267
0126	WS IOP received a frame reject command from workstation	73F9267 GLN000D AJLYC01
0149	WS IOP received unexpected data from workstation Please reference "Finding and Correcting Problems" in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	GLN000D
0181	WS IOP DMA receive buffer overrun; SDLC data	CLN000C 73F9267 AJLYC01 GLN000D
0182	WS IOP detect OS/400 licensed program error; bad device type	AJLYC01 73F9267
0183	WS IOP DMA receive buffer overrun; not valid data	CLN000C GLN000D GLN000A 73F9267 59X3816 AJLYC01
0184	WS IOP DMA receive buffer overrun; not valid data	GLN000D GLN000A CLN000C AJLYC01 73F9267 59X3816
0189	WS IOP frame buffer overrun of valid data	CLN000C GLN000D GLN000A 73F9267 59X3816 AJLYC01

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0190	Start-up failure Please reference "Finding and Correcting Problems" in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	CLN000C GLN000D GLN000A 73F9267 59X3816 AJLYC01
0192	WS IOP failed automatic line speed detection Please reference "Finding and Correcting Problems" in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	CLN000C FI00700 GLN000A AJLYC01 73F9267 59X3816
0193	WS IOP failed automatic device type detection Please reference "Finding and Correcting Problems" in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	FI00700 CLN000C GLN000A AJLYC01 73F9267 59X3816
0203	Workstation IOP detected parity error from printer Before you exchange part 73F9267 or 59X3816, perform "ASCII-PIP2" on page 440.	FI00700 CLN000C FI00612 GLN000A 59X3816 73F9267 21F5097
0205	Workstation IOP detected overrun error Perform "ASCII-PIP2" on page 440.	73F9267 59X3816 AJLYC01
0206	Workstation IOP detected framing error from printer Before you exchange part 73F9267 or 59X3816, perform "ASCII-PIP2" on page 440.	FI00700 CLN000C FI00612 59X3816 73F9267 21F5097
0220	WS IOP detected system program error; device identification	AJLYC01 73F9267
0225	Workstation IOP detected not valid exception status	AJLYC01 73F9267
A000	WS IOP detected more than 18 devices varied on; limit 18 There is no failing item. This error occurs if you attempted to activate more workstations than allowed.	GLN000B
A100	WS IOP detected device configuration mismatch There is no failing item. Ensure that the device configuration values for the display and for the auxiliary printer match.	CLN000C
B000	WS IOP fails to report part, model and serial number Perform "ASCII-PIP1" on page 435.	73F9267
C000	WS IOP error not known	73F9267 AJLYC01

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
D000	Work Station IOA start-up test error	73F9267
D010	WS IOP storage failure corrected Perform "ASCII-PIP1" on page 435.	73F9267
D011	WS IOP card storage failure	73F9267
D050	WS IOP asynchronous port errors on all ports	73F9267
D051	WS IOP asynchronous port errors on some ports	73F9267
D060	WS IOP asynchronous errors on all ports Perform "ASCII-PIP2" on page 440.	59X3816 73F9267
D061	WS IOP asynchronous port errors on 12 port attachment only	59X3816
D062	WS IOP asynchronous errors on some ports Both the 12-port ASCII workstation attachment and the first workstation I/O processor card are failing. Exchange the ASCII workstation attachment and the first workstation I/O processor card.	FI00611
D063	WS IOP asynchronous errors on all ports	FI00611
E000	WS IOP or IOA error during working operation Perform "ASCII-PIP2" on page 440.	73F9267 59X3816
F000	WS IOP or IOA operating system program error Before you exchange part 73F9267 or 59X3816, perform "ASCII-PIP2" on page 440. If this does not correct the problem, ask your next level of support for assistance.	AJLYC01 73F9267 59X3816
FFFF	User believes there is a problem	ULNFF00

ASCII Workstation I/O Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
21F5097	6 port ASCII workstation attachment	ASCII workstation reference information
59X3816	12-port ASCII work station attachment	ASCII workstation reference information
73F9267	ASCII work station IOP card	Repair and Parts; removal and installation procedures
AJLYC01	ASCII work station IOP system Licensed Internal Code	Service Functions; APAR or LICTR
CLN000C	Configuration	Communications Configuration
GLN000A	Electrical interference	

Failing Item	Description	Document Description
GLN000B	More than 18 attempts to vary on device; limit 18	
GLN000D	Programmed workstation with PC Support installed	
ULNFF00	User believes there is a problem	

(6180) Twinaxial Workstation I/O Adapter Reference Codes

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B904	I/O adapter Licensed Internal Code failed.	AJDGP01 FI00719
B940	I/O adapter hardware error detected	FI00719 FI00718 AJDGP01
B941 to B942	One half of I/O adapter failed.	FI00719 FI00718 AJDGP01

Twinaxial Workstation I/O Adapter Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
AJDGP01	Licensed Internal Code	Service Functions; APAR or LICTR

(632x, 6330) Optical Storage Unit Reference Codes

An optical storage unit failure occurred.

Do not replace any failing items until verification of the following:

- If this is an external optical device and has a power switch, ensure that it is set to the ON position.

Notes:

1. If the system is available, use online diagnostic tests when possible.
2. Search the problem log (WRKPRB) for a recent optical storage entry that may assist in analyzing the problem. The WRKPRB entry will provide a unit reference code that can be found in the following table.
3. Use the verify optical (VFYOPT) command to check that the unit is operating correctly.
1. If the system is available, attempt the failing operation again with an optical media that is known to be good.

Does the operation complete successfully?

No Yes

↓ The original optical media may be defective, or the problem may be intermittent.

Attempt the failing operation again with the original optical media to verify.

This ends the procedure.

2. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
3. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C002	SCSI selection or reselection timeout occurred	FI00870 FI01106 FI01112 MMVMEDA FI01140 FI01141 DEVTERM CDTRAY
C010	Undefined sense key returned by device	FI00870
C020	Device internal configuration error	FI00870
C100	SCSI bus command error occurred	FI00870 FI01106 FI01112 MMVMEDA FI01140 FI01141 DEVTERM CDTRAY

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C110	SCSI command timeout occurred	FI00870 FI01106 FI01112 MMVMEDA FI01140 FI01141 DEVTERM CDTRAY
C210	Unexpected device condition recovered The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	
C300	Media or device error occurred Perform the following for CD-ROM : 1. Clean the disk. 2. Attempt the failing operation again. 3. If this does not correct the problem, exchange the failing items. Perform the following for DVD : 1. Exchange the failing items.	MMVMEDA FI00870
C333	Incompatible media was detected Perform the following for CD-ROM : 1. Verify that the disk has a format that is given support. 2. If the format is given support, clean the disk and attempt the failing operation again. 3. If the operation fails again with the same reference code, ask your media source for a replacement disk. Perform the following for DVD : 1. Verify that the disk has a format that is given support. 2. Exchange the failing items.	MMVMEDA FI00870
C400	Interface error detected by device	FI00870 FI01106 FI01112 FI01140 FI01141 DEVTERM CDTRAY
C402	I/O processor internal program error occurred Ask your next level of support for assistance.	FI00130
CFF2	Recovered from device not ready - Start Unit issued The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	
CFF4	Internal device error occurred	FI00870
CFF6	Device recovered from error after retries The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	

632x, 6330

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
CFF7	Recovered device error The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	
CFFE	Recovered SCSI bus error The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	
FF3D	Recovered I/O processor error The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	
FF6D	Recovered System bus error The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	

Optical Storage Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
CDTRAY	Flex cable	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Device terminator	Problem Analysis; Symbolic FRU Isolation
MMVMEDA	Optical media	System operation information

(6335, 636x, 637x, 6380) Tape Unit Reference Codes

A 1/4-inch tape unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes No

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

No Yes

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent

problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:
 - For 6335 in all countries, use part 16G8583.
 - For 6366 and 6378 Tape Units, use part 16G8572.
 - For 6368, 6369, 6379, and 6380 Tape Units:
 - In Canada, the United States, and in all other countries use part 46G2674.
4. Attempt the failing operation again.
Does the operation complete successfully?

No Yes

↓ The original data cartridge is defective. The problem has been corrected.

This ends the procedure.

5. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
6. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0003	The data format is incorrect; the tape cannot be read For information about data cartridges and tape units, refer to operator information manuals for using tapes. Attempt the operation again.	MHPTFOR
3002 to 3003	IOP card addressed 1/4-inch tape unit; no response Perform “TU-PIP1” on page 656.	FI00870 FI01112 FI01106 FI01140 BACKPLN FI01141 DEVTERM

6335, 636x, 637x, 6380

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3004	<p>Tape unit failed after Licensed Internal Code was loaded</p> <p>When this error is detected, the system is available and reference code 3004 is not displayed in the control panel.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. Enter the WRKPRB command. 2. Move the cursor to the message "Interface error detected by IOP or by tape unit". This is the message in the problem log associated with reference code 3004. To display the reference code, use the option <i>Display details</i>. 3. Select the <i>Work with problem</i> option. 4. Select the <i>Analyze problem</i> option to run problem analysis. <p>If you cannot run online problem analysis, exchange the failing items.</p>	FI00870 FI01112 FI01106 FI01140 BACKPLN FI01141 DEVTERM
3010	IOP detected incorrect response from the tape unit.	FI00870
3100	<p>Interface error detected by I/O processor or by tape unit</p> <p>Perform "TU-PIP1" on page 656.</p>	FI00870 FI01112 FI01106 FI01140 BACKPLN FI01141 DEVTERM
3111	<p>Interface error detected by I/O processor or by tape unit</p> <p>Perform "TU-PIP1" on page 656.</p>	FI01112 FI00870 FI01106 FI01140 BACKPLN FI01141 DEVTERM
9020	I/O processor detected a SCSI bus configuration error	UHPCNFG FI00870 FI00130
9100	Interface error detected by I/O processor or by tape unit	FI00870 FI01112 FI01106 DEVTERM FI01140 FI01141
9200	I/O processor addressed the tape unit; no response	FI00870 FI01112 FI01106 DEVTERM FI01140 FI01141
9201	Tape unit command timeout	FI00870 MHPTMED FI01112 FI01106 DEVTERM FI01141 FI01140

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9202	Tape unit failed after Licensed Internal Code was loaded The tape device does not respond to IOP commands after new Licensed Internal Code was transferred to the tape device. Perform "TU-PIP4" on page 664.	FI00870 FI01112 FI01106 FI01141 DEVTERM FI01140
9210	Illegal or unsupported tape unit response	FI00870 FI01112 FI00130
9300	Tape unit failure	FI00870 MHPTMED
9301	Tape device failure, redundancy lost The tape unit detected a hardware failure that does not prevent the tape unit from completing the present operation. See the Tape Unit service information to determine the failing item.	FI00870 MHPTMED
9302	Tape device failure or media error	FI00870 MHPTMED
9310	Licensed Internal Code for the tape unit is not correct	FI00870 FI00130
9320	Tape device Licensed Internal Code failure	FI00130 FI00870
9350	Tape unit detected a read or write error on tape medium	MHPTMED FI00870
9351	Tape with excessive error rate was mounted in tape device. The tape unit detected that the installed tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.	MHPTMED FI00870
9355	The data format is incorrect; the tape cannot be read The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system. Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system. For more information, see the <i>System Operation</i> information.	MHPTMED FI00870
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)	
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UHPFIXD

6335, 636x, 637x, 6380

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9900	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed.</p> <p>The tape unit will continue to operate with the previous LIC.</p> <p>Wait for next IPL when the system will attempt to load the LIC for the tape unit again.</p>	
CC04	<p>Interface error detected by I/O processor or by tape unit</p> <p>Perform "TU-PIP1" on page 656.</p>	<p>FI00870 FI01112 FI01106 FI01140 FI01141 DEVTERM BACKPLN</p>
CC06	<p>Damaged cartridge detected or the tape unit failed</p> <ol style="list-style-type: none"> Remove the data cartridge and inspect it for the following conditions: <ul style="list-style-type: none"> The tape has run off one of the spools (the tape does not pass in front of the mirror). The mirror is broken or skewed out of its normal position. The data cartridge belt is broken or damaged. The tape is not wound correctly on both spools. The tape is broken. Exchange the data cartridge if it has one of the above conditions. Note: If the tape unit has damaged more than one cartridge, also exchange the tape unit. 	<p>MHPTCAR FI00870</p>
CC0C	<p>1/4-inch tape unit failed</p> <p>Perform "TU-PIP1" on page 656.</p>	<p>FI00870</p>
CC18	<p>Unexpected end-of-media detected</p> <p>The tape being used was not written correctly.</p> <ul style="list-style-type: none"> If the tape was not written by an AS/400 system, it may not be readable. If the tape was written by an AS/400 system, refer to operator information manuals for using tapes. 	<p>MHPTFOR</p>
CC1A to CC1B	<p>Damaged cartridge detected or the tape unit failed</p> <ol style="list-style-type: none"> Remove the data cartridge and inspect it for the following conditions: <ul style="list-style-type: none"> The tape has run off one of the spools (the tape does not pass in front of the mirror). The mirror is broken or skewed out of its normal position. The data cartridge belt is broken or damaged. The tape is not wound correctly on both spools. The tape is broken. Exchange the data cartridge if it has one of the above conditions. Note: If the tape unit has damaged more than one cartridge, also exchange the tape unit. 	<p>MHPTCAR FI00870</p>
CC1E	<p>Unexpected end-of-media detected</p> <p>Ensure that you are using an IBM-approved data cartridge (see the <i>System Operation</i> information). If the cartridge is approved, ask your next level of support for assistance.</p>	<p>MHPTFOR</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
CC20, CC22	Tape unit detected a read or write error on tape medium Perform "TU-PIP3" on page 661.	MHPTCAR FI00870
CC36	1/4-inch tape unit failed	FI00870
CC38	1/4-inch tape unit failed Perform "TU-PIP1" on page 656.	FI00870
CC45	Tape unit detected a read or write error on tape medium	MHPTCAR FI00870
CC54	Damaged cartridge detected or the tape unit failed	FI00870 MHPTCAR
CC5F	1/4-inch tape unit failed	FI00870
CC65	Licensed Internal Code for the tape unit is not correct	AJEDA00
CD02 to CD03, CD0D, CD42, CD53	Tape unit detected incorrect request from the IOP. Ask your next level of support for assistance.	FI00130
CF01, CF16	Tape unit detected incorrect request from Vertical LIC. Ask your next level of support for assistance.	AJDG301
CF51	The data format is incorrect; the tape cannot be read	MHPTFOR
CF60	The data format is incorrect; the tape cannot be read For information on the IBM-recommended data cartridges, see "Using Tapes and Diskettes", <i>QIC Formats, Data Cartridges, and Tape Unit Compatibility</i> in the <i>System Operation</i> information.	MHPTFOR
FF03	Cartridge removed; end-of-tape processing did not complete Perform the following: 1. Insert the cartridge again. 2. Send a DSPTAP command to the drive and read through all the files recorded on the tape. 3. If an error occurs, run the job again. If an error does not occur, the tape is good.	UHPUSER
FF04	Cartridge removed; end-of-tape processing did not complete Perform the following: 1. Insert the cartridge again. 2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD. 3. After the status light goes off, remove the cartridge. The tape is now ready for storage.	UHPUSER
FF05	Cartridge changed or device reset; processing not complete Perform the following: 1. If a new cartridge was inserted, remove it and insert the last cartridge used. Otherwise, keep the cartridge in the drive. 2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD. 3. After the status light goes off, remove the cartridge. The tape is now ready for storage.	UHPUSER

6335, 636x, 637x, 6380

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FF06	Cartridge changed or device reset; processing not complete Perform the following: 1. If a new cartridge was inserted, remove it and insert the last cartridge used. Otherwise, keep the cartridge in the drive. 2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD. 3. After the status light goes off, remove the cartridge. The tape is now ready for storage.	UHPUSER
FF07 to FF08	Device powered off; end-of-tape processing not complete If the device is now powered on, perform the following: 1. If the cartridge was removed, insert it again. 2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD. 3. After the status light goes off, remove the cartridge. The tape is now ready for storage. If the device is not powered on, perform "TU-PIP1" on page 656, then perform the steps above when power returns to the tape unit.	FI00870 FI01112 FI01106 FI01140 FI01141 BACKPLN
FF09	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed. The tape unit will continue to operate with the previous LIC. Wait for next IPL when the system will attempt to load the LIC for the tape unit again.	
FF4D, FF4F, FF5D, FF7D, FF8D	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
FFF6	Tape volume statistics logged (no action required) This reference code is logged for information only.	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	Licensed Internal Code for programmable tape unit	Service Functions; APAR or LICTR
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation

Failing Item	Description	Document Description
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
MHPTCAR	Defective tape or damaged cartridge	System operation information
MHPTFOR	The data format is incorrect; the tape cannot be read	System operation information
UHPCNFG	Tape configuration detected by I/O processor; not valid	Installation
UHPFIXD	Problem no longer exists	Magnetic tape subsystem service information
UHPUSER	Operator/User Error	System operation information

(6385) Tape Unit Reference Codes

A 1/4-inch tape unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes No

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

No Yes

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:

- In Canada, the United States, and all other countries use part 46G2674.

4. Attempt the failing operation again.

Does the operation complete successfully?

No Yes

↓ The original data cartridge is defective. The problem has been corrected.

This ends the procedure.

5. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
6. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	I/O processor detected a SCSI bus configuration error Before exchanging any parts, verify the following are not present: <ul style="list-style-type: none"> • Tape and DASD devices attached to the same type I/O processor. • A device type or model that is not given support. 	UH1CNFG FI00870 FI00130
9100	Interface error detected by I/O processor or by tape unit Perform “TU-PIP1” on page 656.	FI00870 FI01112 FI01140 FI01106 DEVTERM FI01141
9200	I/O processor addressed the tape unit; no response Perform “TU-PIP1” on page 656.	FI00870 FI01112 FI01106 FI01140 DEVTERM FI01141
9201	Tape unit command timeout Perform “TU-PIP1” on page 656.	FI00870 MH1TMED FI01112 FI01106 FI01140 DEVTERM FI01141
9202	Tape unit failed after Licensed Internal Code was loaded The tape device does not respond to IOP commands after new Licensed Internal Code was transferred to the tape device. Perform “TU-PIP4” on page 664.	FI00870 FI01112 FI01106 FI01141 DEVTERM FI01140
9210	Illegal or unsupported tape unit response	FI00870 FI00130
9300	Tape unit failure Perform “TU-PIP1” on page 656.	FI00870 MH1TMED
9301	Tape device failure, redundancy lost The tape unit detected a hardware failure that does not prevent the tape unit from completing the current operation. Replace the tape unit	FI00870 MH1TMED
9302	Tape device failure or media error	MH1TMED FI00870
9310	Licensed Internal Code for the tape unit is not correct	FI00870 FI00130
9320	Tape device Licensed Internal Code failure	FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9350	<p>Tape unit detected a read or write error on tape medium</p> <p>A permanent read or write error occurred, and the tape unit determined the tape cartridge is defective.</p> <p>Do the following:</p> <ul style="list-style-type: none"> • Clean the tape drive. • Attempt the operation again. • If this does not correct the problem, exchange the failing items. 	MH1TMED FI00870
9351	<p>Tape with excessive error rate was mounted in tape device.</p> <p>The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.</p>	MH1TMED FI00870
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape device does not give support to the data format on the tape cartridge. Format the tape cartridge again or use a different tape cartridge.</p>	MH1TMED FI00870
9500	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information call your next level of support or see the service functions manual.</p>	FI00130
9800 to 9803	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p>	
9810	<p>Problem analysis has determined a part should be replaced.</p> <p>This reference code is use for ending Online Problem Analysis with a list of failing items. (Information only)</p>	
9899	<p>Problem analysis completed, the problem has been corrected.</p> <p>This reference code is used for ending Online Problem Analysis when there is no problem found or the problem has been fixed.</p>	UH1FIXD
9900	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed.</p> <p>The tape unit will continue to operate with the previous LIC. You may do either of the following:</p> <ul style="list-style-type: none"> • Wait for next IPL when the system will attempt to load the LIC for the tape unit again. • Perform "TU-PIP4" on page 664 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC. 	
FFF6	Tape volume statistics logged (no action required)	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.

3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
MH1TMED	Defective removable media	Magnetic tape subsystem service information
UH1CNFG	Tape configuration detected by I/O processor; not valid	Installation
UH1FIXD	Problem no longer exists	Repair and Parts; removal and installation procedures

(6390) Tape Unit Reference Codes

An 8-mm tape unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes No

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

No Yes

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:

- In Canada, the United States, and all other countries use part 16G8467.

4. Attempt the failing operation again.

Does the operation complete successfully?

No Yes

↓ The original data cartridge is defective. The problem has been corrected.

This ends the procedure.

5. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
6. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	<p>Tape unit failure</p> <p>The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.</p> <p>Perform “TU-PIP2” on page 659.</p>	FI00870 MFCTMED
030B	<p>Tape unit detected a read error on the tape medium</p> <p>Read (or write) errors may be caused by:</p> <ul style="list-style-type: none"> • Poor or damaged tape • Dirty read/write heads • Damaged data cartridges • Using a data cartridge previously recorded in a format or density that is not correct • Using the wrong data cartridge (for example, one in a different format or density from another set of data cartridges) <p>If the data on the tape was not written by an AS/400 system, the format or the density may not be correct. Get or make a new copy of the data cartridge.</p> <p>If you are performing a write or a save operation, initialize the tape. See the note below.</p> <p>If you are performing a read or a restore operation, the tape may be worn or the device that wrote the tape may be the cause of the problem.</p> <p>Perform “TU-PIP2” on page 659.</p> <p>When the system is available, verify the operation of the tape drive. Use the VFYTAP system command.</p> <p>Note: When a tape is initialized, a new label is recorded at the beginning of the tape, and any data recorded previously is erased and overwritten. To initialize used tapes, use the INZTAP system command with a “Check for active files” option of *NO.</p> <p>Use of the INZTAP “Clear” (security erase) option is not recommended. The 6390 Tape Drive performs a write operation to erase all of the tape; writing (erasing) a full-size tape takes up to 3.5 hours.</p>	MFCTMED FI00870
0311, 0316	<p>Tape unit detected a read error on the tape medium</p> <p>Perform the action for reference code 030B.</p>	MFCTMED FI00870
031C, 0336	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system.</p> <p>Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system. For more information, see the <i>System Operation</i> information.</p>	MFCTMED FI00870
0337 to 0338, 033D	<p>Tape unit detected a read error on the tape medium</p> <p>Perform the action for reference code 030B.</p>	MFCTMED FI00870

6390

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0395 to 0397, 039D to 039F	Tape unit detected a write error on tape medium Perform the action for reference code 030B.	MFCTMED FI00870
03AE, 03B0	Tape unit detected a read or write error on tape medium Perform the action for reference code 030B.	MFCTMED FI00870
03B3 to 03B4	Tape unit detected a write error on tape medium Perform the action for reference code 030B.	MFCTMED FI00870
03B5	Tape unit detected a read error on the tape medium Perform the action for reference code 030B.	MFCTMED FI00870
0417 to 0418	Tape unit failure The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking. Perform "TU-PIP2" on page 659.	FI00870 MFCTMED
0419	Tape unit failure The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking. Perform "TU-PIP2" on page 659.	FI00870 MFCTMED FI01141
0458, 045A, 0467 to 0468, 046D, 0498 to 049A, 049C, 04A1 to 04A8, 04AB to 04AD, 04FA, 04FC to 04FD	Tape unit failure The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking. Perform "TU-PIP2" on page 659.	FI00870 MFCTMED
3002	I/O processor addressed the tape unit; no response The tape drive did not respond to commands from the IOP. Perform the following: 1. "TU-PIP1" on page 656 2. "TU-PIP3" on page 661	FI00870 FI01112 FI01106 FI01140 FI01119 FI01141 DEVTERM
3004	Tape unit failed after Licensed Internal Code was loaded The tape drive does not respond to IOP commands after new Licensed Internal Code was transferred to the tape drive. Perform "TU-PIP4" on page 664.	FI00870 FI01112 FI01106 FI01140 FI01119 FI01141 DEVTERM
3005	Blank tape or BOT encountered The tape drive has found a blank tape or BOT. When using a new data cartridge, the tape must first be initialized. This error can also occur when reading a tape if that tape was removed from the tape drive before writing was complete. Also see the action for reference code 030B.	MFCTMED FI00870 FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3010	<p>Illegal or unsupported tape unit response</p> <p>The tape drive returned a response to the IOP that is illegal or is not given support.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. "TU-PIP1" on page 656 2. "TU-PIP3" on page 661 	FI00870 FI00130
3100	<p>Interface error detected by I/O processor or by tape unit</p> <p>The IOP or the device detected a permanent error on the interface to the system.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. "TU-PIP1" on page 656 2. "TU-PIP3" on page 661 	FI00870 FI01112 FI01106 FI01140 FI01119 FI01141 FI00130 DEVTERM
3110	<p>Tape unit command timeout</p> <p>The tape drive did not complete a command sent by the IOP in the time allowed.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. "TU-PIP1" on page 656 2. "TU-PIP2" on page 659 	FI00870 FI01112 FI01106 MFCTMED FI01140 FI01119 FI01141 FI00130 DEVTERM
4016 to 4017	Licensed Internal Code for the tape unit is not correct	AJEDA00
9020	I/O processor detected a SCSI bus configuration error	UFCCNFG FI00870 FI00130
9100	Interface error detected by I/O processor or by tape unit	FI00870 FI01112 FI01106 DEVTERM FI01140 FI01141
9200	I/O processor addressed the tape unit; no response	FI00870 FI01112 FI01106 DEVTERM FI01140 FI01141
9201	Tape unit command timeout	FI00870 MFCTMED FI00130 FI01106 FI01112 DEVTERM FI01141 FI01140
9202	<p>Tape unit failed after Licensed Internal Code was loaded</p> <p>The tape device does not respond to IOP commands after new Licensed Internal Code was transferred to the tape device.</p> <p>Perform "TU-PIP4" on page 664.</p>	FI00870 FI01112 FI01106 FI01141 DEVTERM FI01140

6390

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9210	Illegal or unsupported tape unit response	FI00870 FI01112 FI00130
9300	Tape unit failure	FI00870 MFCTMED
9301	Tape device failure, redundancy lost The tape unit detected a hardware failure that does not prevent the tape unit from completing the present operation. See the Tape Unit service information to determine the failing item.	FI00870 MFCTMED
9302	Tape device failure or media error	FI00870 MFCTMED
9310	Licensed Internal Code for the tape unit is not correct	FI00870 FI00130
9320	Tape device Licensed Internal Code failure	FI00130 FI00870
9350	Tape unit detected a read or write error on tape medium	MFCTMED FI00870
9351	Tape with excessive error rate was mounted in tape device. The tape unit detected that the installed tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.	MFCTMED FI00870
9355	The data format is incorrect; the tape cannot be read The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system. Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system. For more information, see the <i>System Operation</i> information.	MFCTMED FI00870
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)	
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UFCEFIXD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9900, FF09	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed.</p> <p>The tape drive will continue to operate with the previous LIC. You may do either of the following:</p> <ul style="list-style-type: none"> • Wait for next IPL when the system will attempt to load the LIC for the tape drive again. • Perform "TU-PIP4" on page 664 to reset the IOP and the tape drive. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC. 	UFCWAIT
FF4D	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p> <p>When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.</p>	FI00870 FI01112 FI01106 FI01140 DEVTERM FI01141 FI01119 FI00130
FF5D	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p> <p>When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.</p>	FI00870 FI01112 FI01106 FI01140 FI01141 DEVTERM FI01119
FFF6	<p>Tape volume statistics logged (no action required)</p> <p>No action required. This reference code is logged for information only.</p>	
FFF8	<p>Asynchronous device attached; synchronous device expected</p> <p>The attached device is operational and working in the asynchronous mode of data transfer.</p> <p>The IBM tape unit uses the synchronous mode of data transfer; if the attached device is an IBM tape unit, exchange the tape unit.</p>	FI00870
FFFE	<p>Tape unit detected a read error on the tape medium</p> <p>Perform the action for reference code 030B.</p>	MFCTMED FI00870 FI01141
FFFF	<p>Tape unit detected a write error on tape medium</p> <p>Perform the action for reference code 030B.</p>	MFCTMED FI00870

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
AJEDA00	Licensed Internal Code for the programmable tape unit	Service Functions; APAR or LICTR
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
MFCTMED	Defective removable media	System operation information
UFCCNFG	Tape configuration detected by I/O processor; not valid	Installation
UFCFIXD	Problem no longer exists	Magnetic tape subsystem service information
UFCWAIT	Wait to next IPL or perform TU-PIP4	Problem Analysis

(63A0) Tape Unit Reference Codes

A tape unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes No

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

No Yes

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Clean the recording head in the tape unit.
4. Attempt the failing operation again.

Does the operation complete successfully?

No Yes

↓ The original data cartridge is defective. The problem has been corrected.

This ends the procedure.

5. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
6. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	I/O processor detected a SCSI bus configuration error Before exchanging any parts, verify that the following condition is not present: <ul style="list-style-type: none"> • Tape and DASD devices attached to an I/O Processor that does not support Tape and Dasd devices at the same time. 	UH7CNFG FI00871 FI00130
9100	Interface error detected by I/O processor or by tape unit If the attached device is an external device, do the following before exchanging any parts: <ol style="list-style-type: none"> 1. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable. 2. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	FI00871 FI01112 FI00872 DEVTERM
9200	I/O processor addressed the tape unit; no response If the attached device is an external device, do the following before exchanging any parts: <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	FI00871 FI01112 FI00872 DEVTERM
9201	Tape unit command timeout If the attached device is an external device, do the following before exchanging any parts: <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	FI00871 FI01112 FI00872 DEVTERM
9202	Tape unit failed after Licensed Internal Code was loaded If the attached device is an external device, do the following before exchanging any parts: <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable. 	FI00871 FI01112 FI00872 DEVTERM
9210	Illegal or unsupported tape unit response	FI00871 FI01112 FI00130
9300	Tape unit failure	FI00871

63A0

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9301	Tape device failure, redundancy lost The tape unit detected a hardware failure that does not prevent the tape unit from completing the current operation.	FI00871
9302	Tape device failure or media error The tape unit detected a failure that may be caused by a hardware failure or a media error. Refer to the tape unit service information for possible information on diagnostic tests that can be run to isolate between hardware and media failures.	MH7TMED FI00871
9310	Licensed Internal Code for the tape unit is not correct	FI00130 FI00871
9320	Tape device Licensed Internal Code failure	FI00130 FI00871
9350	Tape unit detected a read or write error on tape medium A permanent read or write error occurred. Clean the tape unit and retry the operation. If cleaning the tape unit does not correct the problem, exchange the tape media.	MH7TMED UH7CLN FI00871
9351	Tape with excessive error rate was mounted in tape device. The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.	MH7TMED UH7CLN FI00871
9355	The data format is incorrect; the tape cannot be read The tape unit has detected that the data format on the tape media is not supported. Clean the tape unit and retry the operation. If the operation continues to fail, use a different tape cartridge.	UH7USER MH7TMED UH7CLN FI00871
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)	
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UH7FIXD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9900	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed.</p> <p>The tape unit will continue to operate with the previous LIC. You may do either of the following:</p> <ul style="list-style-type: none"> • Wait for next IPL when the system will attempt to load the LIC for the tape drive again. • Perform "TU-PIP4" on page 664 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC. 	UH7USER
FFF6	Tape volume statistics logged (no action required)	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
MH7TMED	Defective removable media	Magnetic tape subsystem service information
UH7CLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UH7CNFG	Tape configuration detected by I/O processor; not valid	Installation
UH7USER	Operator action required	System operation information

(6500) Magnetic Storage I/O Processor Reference Codes

The magnetic storage I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

6500

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A1	I/O processor detected a buffer allocation error	AJEDA00 6500
09A2	I/O processor detected a recoverable system bus error No action required. This reference code is logged for information only.	AJEDA00 6500
0A17	A permanent I/O processor failure occurred	6500 AJEDA00
0A18	I/O processor detected a random interrupt Perform "MSIOP-PIP14" on page 555.	6500 FI00844
0A20	I/O processor resource not available Perform "MSIOP-PIP14" on page 555.	FI00844 6500 AJEDA00
0A21	I/O processor detected a storage transfer error Perform "MSIOP-PIP14" on page 555.	6500 FI00844
0A22	I/O processor detected a storage transfer error	6500 AJEDA00
0A41	I/O processor parity error	6500
0AC9	I/O processor detected a buffer allocation error	AJEDA00 6500 ANYBUS
0AD0	I/O processor detected a storage sequence error	AJEDA00 6500 ANYBUS
0AD1	A permanent I/O processor failure occurred	6500
1070	I/O processor memory error	6500 AJEDA00
1072	I/O processor Licensed Internal Code error	AJEDA00 6500
1073	I/O processor memory error No action required. This reference code is logged for information only.	6500
1075	I/O processor detected a buffer allocation error See the service information for the specific tape device.	AJEDA00
1076, 107F	I/O processor Licensed Internal Code error	AJEDA00
1A03	I/O processor resource not available	AJEDA00 AJDG301
1A10	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	6500 FI00844 DEVTERM EXTSCSI AJEDA00 BACKPLN
3000	A permanent I/O processor failure occurred	6500
3002	Disk device returned wrong response to IOP Perform "MSIOP-PIP14" on page 555.	FI00844 FI00581 6500 EXTSCSI

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3006	A permanent I/O processor failure occurred	6500 ANYBUS
300D	Disk device problem Perform "MSIOP-PIP14" on page 555.	FI00844 6500
3020	I/O processor detected a SCSI bus configuration error	UDRUSER 6500
3030	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 555.	FI00844 6500
3100	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 555.	6500 FI00844 DEVTERM EXTSCSI
3110	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 555.	FI00844 6500 EXTSCSI DEVTERM
3200	Disk device problem Perform "MSIOP-PIP14" on page 555.	FI00844 FI00581
3400	Failure in initialization of a device task Perform "MSIOP-PIP14" on page 555.	FI00844 6500
3500	I/O processor Licensed Internal Code error	AJEDA00 6500
3501	I/O processor Licensed Internal Code error	AJEDA00
4002	I/O processor Licensed Internal Code error	AJEDA00 6500
B300 to B301	A permanent I/O processor failure occurred	6500
B701	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	6500
B711	Control storage failed, I/O processor is operational No action required. This reference code is logged for information only.	6500
B720	A permanent I/O processor failure occurred	6500
B740	Reset of the I/O processor header failed	6500
B780	A permanent I/O processor failure occurred	6500 EXTSCSI
B787	I/O processor detected an internal error	6500
B790	A permanent I/O processor failure occurred	6500
B791	I/O processor detected a recoverable device error No action required. This reference code is logged for information only.	
B7A2	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	

6500

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B980	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 555.	6500 EXTSCSI FI00844 DEVTERM
B981	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 555.	EXTSCSI FI00844 6500 DEVTERM
B982	I/O processor detected a storage device failure Perform "MSIOP-PIP14" on page 555.	FI00844 FI00581 6500 EXTSCSI DEVTERM
B986	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 555.	FI00844 EXTSCSI 6500 DEVTERM
BB00	System bus error	6500 ANYBUS BACKPLN
BE01	I/O processor was not ready for interrupt that occurred	AJEDA00 6500
BE04	I/O processor Licensed Internal Code error	AJEDA00 6500
BE18	I/O processor detected a random interrupt	6500
BE1A	I/O processor was not ready for interrupt that occurred	6500 AJEDA00
BE1B	I/O processor was not ready for interrupt that occurred Perform "MSIOP-PIP14" on page 555.	AJEDA00 6500 EXTSCSI FI00844 DEVTERM
BE1C to BE1E	I/O processor was not ready for interrupt that occurred	AJEDA00 6500
BE40, BE48	A permanent I/O processor failure occurred	6500 AJEDA00
BE50	I/O processor detected a random interrupt	6500
BE51	I/O processor memory error	6500
BE52 to BE54	I/O processor Licensed Internal Code error	AJEDA00 6500
BE55	I/O processor memory error	6500
BE57	A permanent I/O processor failure occurred	6500
BE58	I/O processor detected a random interrupt	6500 AJEDA00
BE60	I/O processor detected a random interrupt	6500
FF3D	I/O processor detected an internal error	6500
FF6D	I/O processor detected a recoverable system bus error	6500 ANYBUS

Magnetic Storage I/O Processor Failing Items

Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 341.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 362.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 374.

Failing Item	Description	Document Description
6500	I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
EXTSCSI	Cable assembly	Problem Analysis; Symbolic FRU Isolation
UDRUSER	Operator/User Error	System operation information

(6501) Magnetic Storage I/O Processor Reference Codes

The magnetic storage I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Note: To determine the I/O bus (SCSI bus) number, see “System Unit Locations and Addresses” on page 695.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0A17	A permanent I/O processor failure occurred	6501
0A22	I/O processor detected a storage transfer error	AJEQU00 6501
1207	I/O processor resource not available	AJEQU00 AJDG301

6501

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1210	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	6501 FI00584 AJEQU00 EXTSCSI DEVTERM ANYBUS
2200	I/O processor Licensed Internal Code error	AJEQU00
2201	Removable media error during IPL	UQUUSER FI00882
2202	Removable media error during IPL	FI00022 FI00882
3000	A permanent I/O processor failure occurred	6501
3002	Addressed device failed to respond to selection Perform "MSIOP-PIP15" on page 556.	FI00581 EXTSCSI 6501 DEVTERM
3006	System bus error	6501 ANYBUS
3020	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 0.	FI00584 UQUUSER 6501
3021	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 1.	FI00584 UQUUSER 6501
3030	I/O processor card detected device error Perform "MSIOP-PIP16" on page 558.	FI00581
3080	I/O processor Licensed Internal Code error	AJEQU00 6501
3084	A permanent I/O processor failure occurred	6501 AJEQU00
3100	I/O processor card detected interface error Error occurred on SCSI bus 0. Perform "MSIOP-PIP15" on page 556.	FI00844 6501 EXTSCSI DEVTERM
3101	I/O processor card detected interface error Error occurred on SCSI bus 1. Perform "MSIOP-PIP15" on page 556.	FI00844 6501 EXTSCSI DEVTERM
3109, 3110	I/O processor card detected interface error Perform "MSIOP-PIP15" on page 556.	FI00844 6501 EXTSCSI DEVTERM
3136	The removable media device is assigned elsewhere	UQUUSER FI00882 6501
3200	I/O processor card detected device error Perform "MSIOP-PIP16" on page 558.	FI00581

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3300	I/O processor card detected media error Perform "MSIOP-PIP16" on page 558.	MQUMEDA FI00581
3400	I/O processor card detected device error Perform "MSIOP-PIP16" on page 558.	FI00581 6501 EXTSCSI DEVTERM
3500	I/O processor Licensed Internal Code error	AJ EQU00 6501
3501	I/O processor Licensed Internal Code error	AJ EQU00
4002	I/O processor Licensed Internal Code error	AJ EQU00 6501
5000	I/O processor card error; logged only	
5100	I/O processor card detected interface error Perform "MSIOP-PIP15" on page 556.	
5500	I/O processor Licensed Internal Code error	
6070	A permanent I/O processor failure occurred	6501
6071 to 6072	I/O processor Licensed Internal Code error	AJ EQU00
6073	I/O processor card detected device error	FI00581 UQUUSER
6075	I/O processor resource not available	AJ EQU00
6076	I/O processor card detected media error	MQUMEDA FI00581
6081 to 6085	I/O processor Licensed Internal Code error	AJ EQU00
B410, B414, B420, B424, B428, B430	A permanent I/O processor failure occurred	6501
B434	I/O processor card detected interface error	6501 FI00844 EXTSCSI DEVTERM
B440	A permanent I/O processor failure occurred	6501
B444	I/O processor card detected interface error	6501 FI00844 EXTSCSI DEVTERM
B450, B460	A permanent I/O processor failure occurred	6501
BE00	I/O processor was not ready for interrupt that occurred	6501 AJ EQU00
BE10	I/O processor detected a random interrupt	6501 AJ EQU00
BE40, BE70	A permanent I/O processor failure occurred	6501 AJ EQU00
FF3D	I/O processor card	6501
FF6D	I/O processor detected a recoverable system bus error	6501 ANYBUS

Magnetic Storage I/O Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
6501	I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEU00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
EXTSCSI	Cable assembly	Problem Analysis; Symbolic FRU Isolation
MQUMEDA	Defective media	Refer to I/O device service information
UQUUSER	Operator/User Error	System operation information

(6502, 6512) Magnetic Storage I/O Processor Reference Codes

The magnetic storage I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Note: To determine the I/O bus (SCSI bus) number, see "System Unit Locations and Addresses" on page 695.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0A17	A permanent I/O processor failure occurred	65X2
0A22	I/O processor detected a storage transfer error	AJEU00 65X2
1207	I/O processor resource not available	AJEU00 AJDG301

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1210	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	65X2 FI01107 AJEQU00 FI01140 ANYBUS BACKPLN CACHE
3000	A permanent I/O processor failure occurred	65X2
3002	Addressed device failed to respond to selection Perform "SDIOP-PIP16" on page 585.	FI01105 65X2 FI01140 FI01141 FI01106
3006	System bus error	65X2 ANYBUS
3020	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 0. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 589. Use the failing item (FI) codes to find failing devices.	UAJUSER FI01107 65X2
3021	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 1. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 589. Use the failing item (FI) codes to find failing devices.	UAJUSER FI01107 65X2
3022	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 2. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 589. Use the failing item (FI) codes to find failing devices.	UAJUSER FI01107 65X2
3030	I/O processor card detected device error	FI01105
3080	I/O processor Licensed Internal Code error	AJEQU00 65X2
3084	A permanent I/O processor failure occurred	65X2 AJEQU00
3100	I/O processor card detected interface error Error occurred on SCSI bus 0. Perform "SDIOP-PIP13" on page 582.	65X2 FI01107 FI01140 BACKPLN
3101	I/O processor card detected interface error Error occurred on SCSI bus 1. Perform "SDIOP-PIP13" on page 582.	65X2 FI01107 FI01140 BACKPLN
3102	I/O processor card detected interface error Error occurred on SCSI bus 2. Perform "SDIOP-PIP13" on page 582.	65X2 FI01107 FI01140 BACKPLN
3109	IOP timed out a disk command Perform "SDIOP-PIP16" on page 585.	FI01105 65X2 FI01140 BACKPLN FI01106

6502, 6512

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3110	I/O processor card detected interface error Perform "SDIOP-PIP16" on page 585.	FI01105 65X2 FI01140 BACKPLN FI01106
3200	I/O processor card detected device error	FI01105
3300	I/O processor Licensed Internal Code error	AJ EQU00 FI01105
3400	I/O processor card detected device error	FI02112 65X2
3500 to 3502	I/O processor Licensed Internal Code error	AJ EQU00 65X2
3600	System log entry only, no service action required	
4002	I/O processor Licensed Internal Code error	AJ EQU00 65X2
5000, 5100, 5500	I/O processor card error; logged only No action required. This reference code is logged for information only.	
6070	A permanent I/O processor failure occurred	65X2
6071	I/O processor Licensed Internal Code error	AJ EQU00
6072	I/O processor Licensed Internal Code error	AJ EQU00 65X2
6073	I/O processor Licensed Internal Code error	AJ EQU00 FI01105
6075	I/O processor resource not available	AJ EQU00
6076	I/O processor Licensed Internal Code error	AJ EQU00 FI01105
6081 to 6085	I/O processor Licensed Internal Code error	AJ EQU00 65X2
8000	A permanent IOP or cache adaptor card failure occurred. Note: DO NOT replace the IOP and the cache adaptor card at the same time. Exchange the FRUs one at a time in the order shown.	65X2 CACHE
8001	A permanent I/O processor failure occurred	65X2
8002	A permanent cache adaptor card failure occurred. Note: DO NOT replace the IOP and the cache adaptor card at the same time. Exchange the FRUs one at a time in the order shown.	CACHE 65X2
8003	I/O processor Licensed Internal Code error	AJ EQU00
8004	Voltage drop detected on I/O processor 5 volt power supply.	FI01141 65X2
8005	A recoverable IOP or cache adaptor card error occurred. Note: DO NOT replace the IOP and the cache adaptor card at the same time. Exchange the FRUs one at a time in the order shown.	65X2 CACHE
8006	A recoverable I/O processor error occurred.	65X2
8007	A recoverable cache adaptor card error occurred. Note: DO NOT replace the IOP and the cache adaptor card at the same time. Exchange the FRUs one at a time in the order shown.	CACHE 65X2

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
8010 to 8011	A permanent cache adaptor card failure occurred. The cache adaptor card may be missing, broken or incompatible. Note: DO NOT replace the IOP and the cache adaptor card at the same time. Exchange the FRUs one at a time in the order shown.	CACHE 65X2
9000 to 9001	I/O processor card detected device error	FI01105 65X2
9002	I/O processor card detected device error Perform "SDIOP-PIP16" on page 585.	FI01105 65X2 FI01140 BACKPLN FI01106
9008	Disk unit requires initialization before use. Perform "SDIOP-PIP25" on page 603.	UAJUSER
9010 to 9011	The IOP and attached cache adaptor card are not compatible. Perform "SDIOP-PIP19" on page 594.	SVCDOS
9012	IOP requires a cache adaptor card but cannot find it. The cache adapter card is missing or broken. Perform "SDIOP-PIP29" on page 610.	CACHE
9013	The IOP and attached cache adaptor card are not compatible. Perform "SDIOP-PIP19" on page 594.	SVCDOS
9020 to 9021	Array not functional due to present hardware configuration. Perform "SDIOP-PIP20" on page 596.	SVCDOS
9022 to 9024	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 600.	SVCDOS
9025	Disk unit is not supported at its physical location. Perform "SDIOP-PIP21" on page 598.	SVCDOS
9026 to 9027	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 600.	SVCDOS
9028	Incorrect hardware configuration change has been detected. Reduce the number of arrays on IOP. Either move all devices in an array to another IOP that supports arrays, or stop an array on this IOP.	SVCDOS
9030	Array no longer protected due to missing or failed disk unit Perform "SDIOP-PIP21" on page 598.	SVCDOS
9031, 9040	Array protection temporarily suspended No action required. Protection will be automatically restarted.	
9041	Array protection temporarily suspended Protection will be automatically restarted. Call your next level of support to report the problem.	AJEU00
9050	Required cache data cannot be located for a disk unit. Perform "SDIOP-PIP23" on page 600.	SVCDOS

6502, 6512

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9051	IOP cache data exists for a missing or failed device. If all configured units are missing, a 9054 reference code may appear in the product activity log. If so, perform the action indicated for the 9054 reference code. Otherwise, perform "SDIOP-PIP27" on page 608.	SVCDPCS
9052	Cache data exists for device that has been modified. Perform "SDIOP-PIP28" on page 610.	SVCDPCS
9053	IOP resources not available due to previous problems. Take action on other IOP reference codes which have surfaced.	SVCDPCS
9054	IOP resources not available due to previous problems. Power off the system and remove all new or replacement disk units. IPL the system to DST. Take action on other IOP reference codes which have surfaced.	SVCDPCS
9060	A permanent I/O processor failure occurred	65X2
9081	I/O processor card detected device error	FI01105 65X2
9082	I/O processor card detected device error Perform "SDIOP-PIP16" on page 585.	FI01105 65X2 FI01140 BACKPLN FI01106
9090	Disk unit has been modified after the last known status. Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem. If you cannot resolve the problem, contact your next level of support.	SVCDPCS
9091	Incorrect hardware configuration change has been detected. Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem. If you cannot resolve the problem, contact your next level of support.	SVCDPCS
9092	Disk unit requires initialization before use. Perform "SDIOP-PIP26" on page 606.	SVCDPCS
9500	I/O processor Licensed Internal Code error	AJ EQU00 65X2
B410, B414, B420, B424, B428, B430	A permanent I/O processor failure occurred	65X2
B434	I/O processor card detected interface error	65X2 FI01105 FI01140
B440	A permanent I/O processor failure occurred	65X2
B444	I/O processor card detected interface error	65X2 FI01105 FI01140

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B450, B460, B470	A permanent I/O processor failure occurred	65X2
B474	I/O processor card detected interface error	65X2 FI01105 FI01140
B480, B484	A permanent I/O processor failure occurred	65X2
B490, B494, B498	A permanent cache adaptor card failure occurred.	CACHE
BE00	I/O processor detected a fault condition.	65X2 AJEQU00
BE10	I/O processor was not ready for interrupt that occurred	65X2 AJEQU00
BE40	A permanent I/O processor failure occurred	65X2 AJEQU00
BE70	A permanent I/O processor failure occurred	AJEQU00 65X2
FF3D	I/O processor card	65X2
FF6D	I/O processor detected a recoverable system bus error	65X2 ANYBUS

Magnetic Storage I/O Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
65X2	Magnetic storage device IOP card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEQU00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
CACHE	Cache adaptor card	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
UAJUSER	Operator/User Error	System operation information

(6513, 6530) Tape I/O Processor and MSIOP Reference Codes

The tape I/O processor or the MSIOP detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Note: To determine the I/O bus (SCSI bus) number, see “System Unit Locations and Addresses” on page 695.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0A17	A permanent I/O processor failure occurred	65XX
0A22	I/O processor detected a storage transfer error	AJ EQU00 65XX
1207	I/O processor resource not available	AJ EQU00 AJ DG301
1210	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	65XX FI01107 AJ EQU00 FI01140 ANYBUS BACKPLN
2200	I/O processor Licensed Internal Code error	AJ EQU00
2201	Removable media error during IPL	UATUSER FI01105
2202	Removable media error during IPL	FI00022 FI01105
3000	A permanent I/O processor failure occurred	65XX
3002	Addressed device failed to respond to selection Perform “SDIOP-PIP16” on page 585.	FI01105 65XX FI01140 FI01141 FI01106
3006	System bus error	65XX ANYBUS
3020	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 0. To correct or isolate a possible user error or configuration error, perform “SDIOP-PIP17” on page 589. Use the failing item (FI) codes to find failing devices.	UATUSER FI01107 65XX
3021	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 1. To correct or isolate a possible user error or configuration error, perform “SDIOP-PIP17” on page 589. Use the failing item (FI) codes to find failing devices.	UATUSER FI01107 65XX

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3022	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 2. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 589. Use the failing item (FI) codes to find failing devices.	UATUSER FI01107 65XX
3030	I/O processor card detected device error	FI01105
3080	I/O processor Licensed Internal Code error	AJ EQU00 65XX
3084	A permanent I/O processor failure occurred	65XX AJ EQU00
3100	I/O processor card detected interface error Error occurred on SCSI bus 0. Perform "SDIOP-PIP13" on page 582.	65XX FI01107 FI01140 BACKPLN
3101	I/O processor card detected interface error Error occurred on SCSI bus 1. Perform "SDIOP-PIP13" on page 582.	65XX FI01107 FI01140 BACKPLN
3102	I/O processor card detected interface error Error occurred on SCSI bus 2. Perform "SDIOP-PIP13" on page 582.	65XX FI01107 FI01140 BACKPLN
3109, 3110	I/O processor card detected interface error Perform "SDIOP-PIP16" on page 585.	FI01105 65XX FI01140 BACKPLN FI01106
3136	The removable media device is assigned elsewhere	UATUSER FI01105 65XX
3200	I/O processor card detected device error	FI01105
3300	I/O processor card detected media error	MATMEDA FI01105
3400	I/O processor card detected device error	FI02112 65XX
3500 to 3502	I/O processor Licensed Internal Code error	AJ EQU00 65XX
3600	System log entry only, no service action required	
4002	I/O processor Licensed Internal Code error	AJ EQU00 65XX
5000, 5100, 5500	I/O processor card error; logged only No action required. This reference code is logged for information only.	
6070	A permanent I/O processor failure occurred	65XX
6071	I/O processor Licensed Internal Code error	AJ EQU00
6072	I/O processor Licensed Internal Code error	AJ EQU00 65XX

6513, 6530

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6073	I/O processor card detected device error	FI01105 UATUSER
6075	I/O processor resource not available	AJ EQU00
6076	I/O processor card detected media error	MATMEDA FI01105
6081 to 6085	I/O processor Licensed Internal Code error	AJ EQU00 65XX
8000 to 8007, 8010 to 8011	I/O processor Licensed Internal Code error	AJ EQU00
9000 to 9001	I/O processor card detected device error	FI01105 65XX
9002	I/O processor card detected device error Perform "SDIOP-PIP16" on page 585.	FI01105 65XX FI01140 BACKPLN FI01106
9008	Disk unit requires initialization before use. Perform "SDIOP-PIP25" on page 603.	UATUSER
9010 to 9012, 9020 to 9028, 9030, 9040, 9050 to 9054	I/O processor Licensed Internal Code error	AJ EQU00
9060	A permanent I/O processor failure occurred	65XX
9081	I/O processor card detected device error	FI01105 65XX
9082	I/O processor card detected device error Perform "SDIOP-PIP16" on page 585.	FI01105 65XX FI01140 BACKPLN FI01106
9090	Disk unit has been modified after the last known status. Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem. If you cannot resolve the problem, contact your next level of support.	SV CDOCS
9091	Incorrect hardware configuration change has been detected. Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem. If you cannot resolve the problem, contact your next level of support.	SV CDOCS
9092	Disk unit requires initialization before use. Perform "SDIOP-PIP26" on page 606.	SV CDOCS
9500	I/O processor Licensed Internal Code error	AJ EQU00
B410, B414, B420, B424, B428, B430	A permanent I/O processor failure occurred	65XX

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B434	I/O processor card detected interface error	65XX FI01105 FI01140
B440	A permanent I/O processor failure occurred	65XX
B444	I/O processor card detected interface error	65XX FI01105 FI01140
B450, B460, B470	A permanent I/O processor failure occurred	65XX
B474	I/O processor card detected interface error	65XX FI01105 FI01140
BE00	I/O processor detected a fault condition.	65XX AJEQU00
BE10	I/O processor was not ready for interrupt that occurred	65XX AJEQU00
BE40	A permanent I/O processor failure occurred	65XX AJEQU00
BE70	A permanent I/O processor failure occurred	AJEQU00 65XX
FF3D	I/O processor card	65XX
FF6D	I/O processor detected a recoverable system bus error	65XX ANYBUS

Tape I/O Processor and MSIOP Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
65XX	I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEQU00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	System bus	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
MATMEDA	Defective media	System operation information
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis
UATUSER	Operator/User Error	

(660x, 671x, 673x) Disk Unit Reference Codes

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.
If the failing item is a disk unit, go to Start Disk Service Here in "Chapter 7. Recovery Procedures" on page 879.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.
4. The 673x is a read cache. Perform all actions required for 673x as a disk drive and logic card except where separate 673x cache instructions are provided.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
102E	Out of alternate sectors for disk storage	DISKDRV
3002	Addressed device failed to respond to selection	DISKDRV FI01112 DISKTRY FI01106 FI01141 FI01140 BACKPLN DEVTERM
3010	Disk device returned wrong response to IOP	DISKDRV DISKTRY BACKPLN FI01112 FI01141 FI01140 DEVTERM
3020	Storage subsystem configuration error If an MES is being installed, verify the configuration.	DISKDRV DISKTRY FI01106 FI01112 BACKPLN FI01141 FI01140 DEVTERM
3029	A device replacement has occurred No action required. This reference code is logged for information only.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3100	Tape/CD or disk bus interface error occurred Perform "DU-PIP3" on page 495.	FI01112 DISKDRV FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM
3109	IOP timed out a disk command	DISKDRV FI01112 FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM
3110	Disk bus interface error occurred Perform "DU-PIP3" on page 495.	FI01112 DISKDRV FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM
3130	Device Licensed Internal Code The device is not supported with the level of code currently on the system. Contact your next level of support.	SVCDOCS
7000	Disk sector read error No action required. This reference code is logged for information only.	DISKDRV
7001	Temporary disk data error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV
7003	Device format error If the disk has not been formatted by the system, initialize and format the disk. See "Work with disk unit recovery" in the <i>AS/400 Service Functions</i> .	
7004	System log entry only, no service action required	
7050	Data compression failure Contact your next level of support.	SVCDOCS
7051	Compressed device and compression IOA are not compatible The customer should perform the "Recovering From 6xxx7051 SRC" procedure in the <i>Backup and Recovery</i> , SC41-5304-04.	COMPRES1
7052	Data compression warning The customer should perform the "Recovering From 6xxx7052 SRC" procedure in the <i>Backup and Recovery</i> , SC41-5304-04.	SVCDOCS
FFF2	Disk motor problem	DISKDRV
FFF3	Disk media format bad	DISKDRV

660x, 671x, 673x

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFF4	Disk device problem	DISKDRV FI01112
FFF5	Disk sector read error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV
FFF6	Disk device detected recoverable error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV
FFF7	Temporary disk data error No action required. This reference code is logged for information only.	DISKDRV
FFF8 to FFF9	Temporary disk data error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV
FFFA	Temporary disk bus error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV FI01112 BACKPLN FI01141 FI01140 DEVTERM
FFFE	Temporary disk bus error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV FI01112 FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM

Disk Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
CMPRES1	Compressed device and compression IOA are not compatible	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Device terminator	Problem Analysis; Symbolic FRU Isolation

Failing Item	Description	Document Description
DISKDRV	Disk drive and logic card	Problem Analysis; Symbolic FRU Isolation
STORIOA	Active I/O processor	Problem Analysis; Symbolic FRU Isolation
SVCDPCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation

(6A58) Workstation Adapter Console Reference Codes

The workstation adapter console detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0AD2 to 0AD3	Communications adapter card test failed	FI00718
0B25	Communications adapter card test failed	FI00719 FI00718 FI00727
0BA0, 0BAB, 0BB0, 0BD0 to 0BD1	Communications adapter card test failed	FI00719 FI00718
0BEE	I/O card Licensed Internal Code ended abnormally	FI00719 FI00718
0C10	Communications adapter card test failed	FI00719 FI00718 FI00727
0C20	Communications adapter card test failed	FI00719 FI00718
0C30	Adapter card failed modem interface test	FI00719 FI00718
0C40, 0C43	Synchronous-data-link-control send-receive test failed	FI00719 FI00718
0C50, 0C53	Binary synchronous control send-receive test failed	FI00719 FI00718
0C60, 0C63	Asynchronous send-receive test failed	FI00719 FI00718
0C70, 0C80	Communications adapter card test failed	FI00719 FI00718
0C90	Communications adapter card X.21 test failed	FI00719 FI00718

6A58

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0CA1, 0CC0	Communications adapter card test failed	FI00719 FI00718
5007	Diagnostic wrap test completed; no errors detected	
5008	Diagnostic wrap test completed; error was detected	FI00719 FI00718
FFFF	User suspected communications problem.	UNAUPPR

Workstation Adapter Console Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
DPAC	Communications two-port adapter cable	Problem Analysis; Symbolic FRU Isolation
UNAUPPR	User suspected communications problem.	

(6A58,6A59) Workstation Adapter Console Reference Codes

The workstation adapter console detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0AD2 to 0AD3	Communications adapter card test failed	FI00718
0B25	Communications adapter card test failed	FI00719 FI00718 FI00727
0BA0, 0BAB, 0BB0, 0BD0 to 0BD1	Communications adapter card test failed	FI00719 FI00718
0BEE	I/O card Licensed Internal Code ended abnormally	FI00719 FI00718

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0C10	Communications adapter card test failed	FI00719 FI00718 FI00727
0C20	Communications adapter card test failed	FI00719 FI00718
0C30	Adapter card failed modem interface test	FI00719 FI00718
0C40, 0C43	Synchronous-data-link-control send-receive test failed	FI00719 FI00718
0C50, 0C53	Binary synchronous control send-receive test failed	FI00719 FI00718
0C60, 0C63	Asynchronous send-receive test failed	FI00719 FI00718
0C70, 0C80	Communications adapter card test failed	FI00719 FI00718
0C90	Communications adapter card X.21 test failed	FI00719 FI00718
0CA1, 0CC0	Communications adapter card test failed	FI00719 FI00718
5007	Diagnostic wrap test completed; no errors detected	
5008	Diagnostic wrap test completed; error was detected	FI00719 DPAC FI00718
FFFF	User suspected communications problem.	UNAUPPR

Workstation Adapter Console Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
DPAC	Communications two-port adapter cable	Problem Analysis; Symbolic FRU Isolation
UNAUPPR	User suspected communications problem.	

(7208) Tape Drive Reference Codes

An 8-mm tape drive failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Is the operating system available and can you enter commands from the command line?

Yes **No**

↓ Go to step 5 of this procedure.

2. Is OS/400 available on the system (see “Determining the Dominant Operating System” in the *AS/400 Service Functions*)?

No **Yes**

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:

- In Canada, the United States, and all other countries use part 16G8467.

4. Attempt the failing operation again.

Does the operation complete successfully?

No **Yes**

↓ The original data cartridge is defective. The problem has been corrected.

This ends the procedure.

5. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.

6. Is the failing tape unit located in a type 9427 Tape Library device?

Yes **No**

↓ Go to step 8.

7. Go to “(9427) Tape Unit Reference Codes” on page 269.

8. Does the label on the front of the 7208 Tape Drive show 7208-002?

No **Yes**

↓ See “(7208) Model 002 Tape Drive Reference Codes” and find the unit reference code.

9. The label shows 7208-012. See “(7208) Model 012 Tape Drive Reference Codes” on page 260 and find the unit reference code.

(7208) Model 002 Tape Drive Reference Codes

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	<p>Tape unit failure</p> <ol style="list-style-type: none"> 1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition. 2. Switch off power to the tape unit. 3. Switch on power to the tape unit. 4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 5. Use a new data cartridge if saving data. <p>Also see the procedure for reference code FFFF.</p>	MLVTMED 91F0914
0002	<p>Tape unit formatter failure</p> <ol style="list-style-type: none"> 1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition. 2. Switch off power to the tape unit. 3. Switch on power to the tape unit. 4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 5. Use a new data cartridge if saving data. <p>Also see the procedure for reference code FFFF.</p>	91F0914 MLVTMED
0003	<p>Tape unit servo failure</p> <ol style="list-style-type: none"> 1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition. 2. Switch off power to the tape unit. 3. Switch on power to the tape unit. 4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 5. Use a new data cartridge if saving data. <p>Also see the procedure for reference code FFFF.</p>	91F0914 MLVTMED
0004	<p>Tape unit motion failure</p> <ol style="list-style-type: none"> 1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition. 2. Switch off power to the tape unit. 3. Switch on power to the tape unit. 4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 5. Use a new data cartridge if saving data. <p>Also see the procedure for reference code FFFF.</p>	MLVTMED 91F0914
3002	<p>I/O processor addressed the tape unit; no response</p> <p>The tape unit did not respond to a command sent by the IOP.</p> <ol style="list-style-type: none"> 1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, refer to the "Maintenance Analysis Procedures" in the <i>7208 Model 2 8 mm Tape Drive Service Guide, SA23-2640</i>, to analyze the problem. 2. Switch off power to the tape unit. 3. Reseat the signal cable to the tape unit. 4. Reseat the signal cable to the IOP. 5. Switch on power to the tape unit. 	91F0914 81F9128 FI00830 FI00141 91F0721 53F3861 42F7300

7208

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3005	<p>Blank tape or BOT encountered</p> <p>The tape unit has found blank tape or BOT.</p> <p>When using a new data cartridge, the tape must first be initialized.</p> <p>This error can also occur when reading a tape if the tape was removed from the tape unit before writing was complete.</p> <p>Also see the procedure for reference code FFFF.</p>	MLVTMED 91F0914 AJEDA00
3010	<p>Illegal or unsupported tape unit response</p> <ol style="list-style-type: none"> 1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition. 2. Switch off power to the tape unit. 3. Switch on power to the tape unit. 4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 5. Use a new data cartridge if saving data. <p>Also see the procedure for reference code FFFF.</p>	91F0914 AJEDA00
3100	<p>IOP to tape unit interface error</p> <ol style="list-style-type: none"> 1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, refer to the "Maintenance Analysis Procedures" in the <i>7208 Model 2 8 mm Tape Drive Service Guide, SA23-2640</i>, to analyze the problem. 2. Switch off power to the tape unit. 3. Reseat the signal cable to the tape unit. 4. Reseat the signal cable to the IOP. 5. Switch on power to the tape unit. 	91F0914 FI00141 FI00830 91F0721 42F7300 53F3861 81F9128 AJEDA00
3110	<p>Tape unit command timeout</p> <p>The tape unit did not complete a command sent by the IOP in the time allowed.</p> <ol style="list-style-type: none"> 1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, refer to the "Maintenance Analysis Procedures" in the <i>7208 Model 2 8 mm Tape Drive Service Guide, SA23-2640</i>, to analyze the problem. 2. Switch off power to the tape unit. 3. Reseat the signal cable to the tape unit. 4. Reseat the signal cable to the IOP. 5. Switch on power to the tape unit. 	91F0914 FI00141 FI00830 91F0721 42F7300 53F3861 81F9128 AJEDA00
FF4D	<p>IOP to tape unit interface error; logged only</p> <p>No action required. This reference code is logged for information only.</p>	
FF5D	<p>Tape unit response error; logged only</p> <p>No action required. This reference code is logged for information only.</p>	
FFF6	<p>Volume statistics; logged only</p> <p>No action required. This reference code is logged for information only.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFFE	<p>Read data error: tape path dirty</p> <p>This error may be caused by a dirty recording head, poor or damaged tapes, worn or damaged data cartridges, or using a format that is not correct.</p> <ol style="list-style-type: none"> 1. Switch off power to the tape unit. 2. Switch on power to the tape unit. 3. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 4. Visually inspect the data cartridge. If it is damaged, discard it. 5. Check the lifetime statistics on the system for this tape volume ID (see the <i>System Operation</i> information). If the cartridge has a history of tape errors, discard it. <p>If the data on the tape was not written by an AS/400 system, the format may not be correct.</p> <p>Do not use the cleaning cartridge more than 12 times.</p> <p>Each data cartridge must have a unique volume ID label. The user must assign a volume ID when the tape is initialized (INZTAP).</p>	MLVTMED 91F0914
FFFF	<p>Write data error: tape path dirty</p> <p>This error may be caused by a dirty recording head, poor or damaged tapes, worn or damaged data cartridges, or using a format that is not correct.</p> <ol style="list-style-type: none"> 1. Switch off power to the tape unit. 2. Switch on power to the tape unit. 3. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 4. Visually inspect the data cartridge. If it is damaged, discard it. 5. Check the lifetime statistics on the system for this tape volume ID (see the <i>System Operation</i> information). If the cartridge has a history of tape errors, discard it. <p>If the data on the tape was not written by an AS/400 system, the format may not be correct.</p> <p>Do not use the cleaning cartridge more than 12 times.</p> <p>Each data cartridge must have a unique volume ID label. The user must assign a volume ID when the tape is initialized (INZTAP).</p>	MLVTMED 91F0914

Model 002 Tape Drive Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
42F7300	Fan	7208 8mm Tape Drive service information

7208

Failing Item	Description	Document Description
53F3861	Internal signal cable	7208 8mm Tape Drive service information
81F9128	Power supply	7208 8mm Tape Drive service information
91F0721	Terminating plug	7208 8mm Tape Drive service information
91F0914	Tape drive	7208 8mm Tape Drive service information
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
MLVTMED	Defective removable media	7208 8mm Tape Drive service information

(7208) Model 012 Tape Drive Reference Codes

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	<p>Tape unit failure</p> <p>The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.</p> <p>Perform "TU-PIP2" on page 659.</p>	<p>46G2227</p> <p>ML2TMED</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
030B	<p>Tape unit detected a read error on the tape medium</p> <p>Read (or write) errors may be caused by:</p> <ul style="list-style-type: none"> • Poor or damaged tape • Dirty read/write heads • Damaged data cartridges • Using a data cartridge previously recorded in a format or density that is not correct • Using the wrong data cartridge (for example, one in a different format or density from another set of data cartridges) <p>If the data on the tape was not written by an AS/400 system, the format or the density may not be correct. Get or make a new copy of the data cartridge.</p> <p>If you are performing a write or a save operation, initialize the tape. See the note below.</p> <p>If you are performing a read or a restore operation, the tape may be worn or the device that wrote the tape may be the cause of the problem.</p> <p>Perform "TU-PIP2" on page 659.</p> <p>When the system is available, perform the following:</p> <ul style="list-style-type: none"> • Verify the operation of the tape drive. Use the VFYTAP system command. <p>Note: When a tape is initialized, a new label is recorded at the beginning of the tape, and any data recorded previously is erased and overwritten. To initialize used tapes, use the INZTAP system command with "Check for active files" option of *NO.</p> <p>Use of the INZTAP "Clear" (security erase) option is not recommended. The 7208 Tape Drive performs a write operation to erase all of the tape; writing (erasing) a full-size tape takes up to 3.5 hours.</p>	ML2TMED 46G2227 46G3934 42F7300
0311, 0316	<p>Tape unit detected a read error on the tape medium</p> <p>Perform the Action for reference code 030B.</p>	ML2TMED 46G2227 46G3934 42F7300
031C	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system.</p> <p>Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system (see the <i>System Operation</i> information).</p>	ML2TMED 46G2227
0336	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system.</p> <p>Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system (see the <i>System Operation</i> information).</p>	ML2TMED 46G2227 46G3934 42F7300
0337 to 0338, 033D	<p>Tape unit detected a read error on the tape medium</p> <p>Perform the Action for reference code 030B.</p>	ML2TMED 46G2227 46G3934 42F7300

7208

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0395 to 0397, 039D to 039F	Tape unit detected a write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
03AE, 03B0	Tape unit detected a read or write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
03B3 to 03B4	Tape unit detected a write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
03B5	Tape unit detected a read error on the tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
0417 to 0419, 0458, 045A, 0467 to 0468, 046D, 0498 to 049A, 049C, 04A1 to 04A8, 04AB to 04AD, 04FA, 04FC to 04FD	Tape unit failure The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking. Perform "TU-PIP2" on page 659.	46G2227 ML2TMED 46G3934 42F7300
3002	I/O processor addressed the tape unit; no response The tape drive did not respond to commands from the IOP. Perform the following: 1. Ensure that the system interface cable is connected. 2. Ensure that power is on. If the above items are correct, perform the following: 1. "TU-PIP1" on page 656. 2. "TU-PIP3" on page 661.	46G2227 46G3934 FI00830 FI00141 46G2599 17G1500 42F7300
3004	Tape unit failed after Licensed Internal Code was loaded The tape drive does not respond to IOP commands after new Licensed Internal Code was transferred to the tape drive. Perform "TU-PIP4" on page 664.	46G2227
3005	Blank tape or BOT encountered The tape drive has found a blank tape or BOT. When using a new data cartridge, the tape must first be initialized. This error can also occur when reading a tape if that tape was removed from the tape drive before writing was complete. Also see the Action for reference code 030B.	ML2TMED 46G2227 AJEDA00
3010	Illegal or unsupported tape unit response The tape drive returned a response to the IOP that is illegal or is not given support. Perform the following: 1. "TU-PIP1" on page 656. 2. TU-PIP3 in "Tape Unit Problem Isolation Procedures" on page 656	46G2227 AJEDA00

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3100	<p>Interface error detected by I/O processor or by tape unit</p> <p>The IOP or the device detected a permanent error on the interface to the system.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. "TU-PIP1" on page 656. 2. "TU-PIP3" on page 661. 	46G2227 FI00141 FI00830 46G2599 42F7300 17G1500 46G3934 AJEDA00
3110	<p>Tape unit command timeout</p> <p>The tape drive did not complete a command sent by the IOP in the time allowed.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. "TU-PIP1" on page 656. 2. TU-PIP2 in "Tape Unit Problem Isolation Procedures" on page 656 	46G2227 FI00141 FI00830 46G2599 42F7300 17G1500 46G3934 AJEDA00
4016 to 4017	Licensed Internal Code for the tape unit is not correct	AJEDA00
9020	<p>I/O processor detected a SCSI bus configuration error</p> <p>Before exchanging any parts, verify that the following conditions are not present:</p> <ul style="list-style-type: none"> • Tape and DASD devices attached to an I/O Processor that does not support attachment of both tape and DASD devices at the same time. • A device type or model that is not given support. 	UL2CNFG 46G2227 FI00130
9100	<p>Interface error detected by I/O processor or by tape unit</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device. 	46G2227 FI00131 46G3934 FI00830 46G2599 17G1500
9200	<p>I/O processor addressed the tape unit; no response</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device. 	46G2227 46G3934 FI00830 FI00131 46G2599 17G1500 42F7300
9201	<p>Tape unit command timeout</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device. 	46G2227 46G3934 FI00830 FI00131 46G2599 17G1500 42F7300

7208

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9202	<p>Tape unit failed after Licensed Internal Code was loaded</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device. 	<p>46G2227 46G3934 FI00830 FI00131 46G2599 17G1500 42F7300</p>
9210	Illegal or unsupported tape unit response	<p>46G2227 FI00130 FI00131</p>
9300	<p>Tape unit failure</p> <p>The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.</p> <p>Perform "TU-PIP2" on page 659.</p>	<p>46G2227 ML2TMED 46G3934 42F7300</p>
9301	<p>Tape device failure, redundancy lost</p> <p>The tape device detected a hardware failure that does not prevent the tape unit from completed the current operation.</p> <p>Refer to the Tape unit service information to determine the failing item.</p>	<p>46G2227 ML2TMED 46G3934 42F7300</p>
9302	<p>Tape device failure or media error</p> <p>The tape unit detected a failure that may be caused by a hardware failure or a media error.</p> <p>Refer to the tape unit service information for possible information on diagnostic tests that can be run to isolate between hardware and media failures.</p>	<p>ML2TMED 46G2227 46G3934 42F7300</p>
9310	Licensed Internal Code for the tape unit is not correct	<p>46G2227 FI00130</p>
9320	Tape device Licensed Internal Code failure	<p>FI00130 46G2227</p>
9350	<p>Tape unit detected a read or write error on tape medium</p> <p>A permanent read or write error occurred. Clean the tape unit and retry the operation.</p> <p>If cleaning the tape unit does not correct the problem, exchange the tape media.</p>	<p>ML2TMED 46G2227 46G3934 42F7300</p>
9351	<p>Tape with excessive error rate was mounted in tape device.</p> <p>The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.</p>	<p>ML2TMED UL2CLN 46G2227</p>
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape unit has detected that the data format on the tape media is not supported.</p> <p>Clean the tape unit and retry the operation.</p> <p>If the operation continues to fail, use a different tape cartridge.</p>	<p>UL2USR1 ML2TMED UL2CLN 46G2227</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information only)	
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UL2FIXD
9900, FF09	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed. The tape drive will continue to operate with the previous LIC. You may do either of the following: <ul style="list-style-type: none"> • Wait for next IPL when the system will attempt to load the LIC for the tape drive again. • Perform "TU-PIP4" on page 664 to reset the IOP and the tape drive. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC. 	UL2WAIT
FF4D	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only. When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.	46G2227 FI00141 FI00830 46G2599 46G3934 17G1500 42F7300 AJEDA00
FF5D	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only. When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.	46G2227 46G3934 FI00830 FI00141 46G2599 17G1500 42F7300
FFF6	Tape volume statistics logged (no action required) No action required. This reference code is logged for information only.	
FFF8	Asynchronous device attached; synchronous device expected The attached device is operational and working in the asynchronous mode of data transfer. The IBM tape unit uses the synchronous mode of data transfer; if the attached device is an IBM tape unit, exchange the tape unit.	46G2227

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFFE	Tape unit detected a read error on the tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227 46G3934 42F7300
FFFF	Tape unit detected a write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227

Model 012 Tape Drive Failing Items

Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 341.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 362.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 374.

Failing Item	Description	Document Description
17G1500	Internal signal cable	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
42F7300	Fan	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
46G2227	Tape drive	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
46G2599	Terminating plug	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
46G3934	Power supply	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
ML2TMED	Defective removable media	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
UL2CLN	Tape unit needs cleaning	Magnetic tape subsystem operator’s information
UL2CNFG	Tape configuration detected by I/O processor; not valid	Magnetic tape subsystem operator’s information
UL2USR1	Operator action required	Magnetic tape subsystem operator’s information
UL2WAIT	Wait to next IPL or perform TU-PIP4	Problem Analysis

(9331) Diskette Unit Reference Codes

A 9331 Diskette Unit failure occurred.

1. Power off the unit, then power on the unit.

Note: If the unit does not have a Power switch, power off, then power on the system.

2. Verify that the 9331 is powered on.
3. Verify that the interface cable connections are correct for each 9331.

4. If this does not correct the problem, look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
5. See the *9331 Diskette Unit Service Information: Service Guide and Reference Code Guide* and find the unit reference code.

(9337) Disk Unit Reference Codes

A 9337 Disk Unit failure occurred.

Before exchanging a FRU containing a disk drive, go to “Start Disk Service Here” in the “Recovery Procedures” chapter of the *FC 504x Problem Analysis and Repair and Parts* to save customer data.

1. Verify that the 9337 is powered on.
2. Verify that the interface cable connections are correct for each 9337.
3. If the problem is displayed on the control panel or is filled out on the problem summary form, the 4 rightmost characters of the Data display for function 11-3 is the unit reference code. If the problem is displayed using WRKPRB, the four rightmost characters of the “System reference code” field is the unit reference code.
4. If these 4 characters are 0000, no unit reference code is available. This condition occurs when a 9337 error is detected, but the 9337 is not responding. See the *9337 Disk Array Service Information* for problem analysis.
5. If these 4 characters are **not** 0000, see the *9337 Disk Array Service Information* for the specific reference code.
 - If the “9337 Problem Recovery Procedures” in the “9337 Unit Reference Code” section of the *9337 Disk Array Service Information* need system support functions to perform a problem recovery procedure, see the “Recovery Procedures” chapter of the *FC 504x Problem Analysis and Repair and Parts* for the correct procedure.
 - The 4 rightmost characters in the Data display for function 15-3 consist of a 1-character level code and a 3-character model number.
 - The Data display for function 18-3 is the serial number of the 9337.
 - The Data display for function 16-3 is the controller.
 - The Data display for function 13-3 is the direct select address.

Note: See “System Addressing Schemes” in the “Service Reference”

Note: “Procedures and Information” chapter of the *FC 504x Problem Analysis and Repair and Parts* to help find the failing disk unit.

- The fourth character of the Data display for function 14-3 is the 9337 actuator address.
- If the problem is displayed using WRKPRB, the following fields are useful:
 - “Model” field
 - “Serial number” field
 - Address information (see SRC Address Formats in “Chapter 5. Locations, Addresses, and Service Reference Information” on page 693 for more information about addresses).

Note: For 9337, the “actuator address” is equivalent to the “device address”.

(9347) Tape Unit Reference Codes

A tape or a 9347 Tape Unit failure occurred.

Note: If the system is available, use the online diagnostic tests when possible. Use WRKPRB (the Work with Problem command) to determine if a recent problem has been entered in the problem log, or use VFYTAP (the Verify Tape command). Other helpful commands are WRKHDWRSC *STG (Work with Hardware Resources) and WRKCFGSTS *DEV *TAP (Work with Configuration Status). For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Verify that the 9347 Tape Unit is powered on.
2. Verify that the address switch setting and the interface cable connections are correct for each 9347 Tape Unit.
3. Clean the tape path as described in the *9347 Tape Unit Service Guide*
4. Load the first tape.
5. Start a type D IPL from the system unit control panel.
6. Does the IPL complete successfully?

No **Yes**

↓ The problem has been corrected.

This ends the procedure.

7. Obtain another copy of the tape. Repeat steps 4 and 5 using the new tape. If this does not correct the problem, continue with step 8.
8. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
9. If the tape unit indicator panel shows an error condition, see the *9347 Tape Unit Service Guide* for more information.
10. See the *9347 Tape Unit Service Guide* and find the unit reference code.

(9348) Tape Unit Reference Codes

A tape or a 9348 Tape Unit failure occurred.

Note: If the system is available, use the online diagnostic tests when possible. Use WRKPRB (the Work with Problem command) to determine if a recent problem has been entered in the problem log, or use VFYTAP (the Verify Tape command). Other helpful commands are WRKHDWRSC *STG (Work with Hardware Resources) and WRKCFGSTS *DEV *TAP (Work with Configuration Status). For tape device and IOP reset procedures, see "TU-PIP4" on page 664.

1. Verify that the 9348 Tape Unit is powered on.
 2. Verify that the interface cable connections are correct for each 9348 Tape Unit.
 3. Clean the tape path as described in the *9348 Tape Unit Service Information*
 4. Load the first tape.
 5. Start a type D IPL from the system unit control panel.
- Does the IPL complete successfully?

No **Yes**

↓ The problem has been corrected.

This ends the procedure.

6. Obtain another copy of the tape. Repeat steps 4 and 5 using the new tape. If this does not correct the problem, continue with step 7.
7. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.

8. If the tape unit indicator panel shows an error condition, see the *9348 Tape Unit Service Information* and find the unit reference code.

(9427) Tape Unit Reference Codes

The tape library detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	Tape unit failure Refer to the 9427 8mm Tape Cartridge Library Service Guide.	
03xx	Tape unit detected a read error on the tape medium Read (or write) errors may be caused by: <ul style="list-style-type: none"> • Poor or damaged tape • Dirty read/write heads • Damaged data cartridges • Using a data cartridge previously recorded in a format or density that is not correct • Using the wrong data cartridge (for example, one in a different format or density from another set of data cartridges) Do the following: <ol style="list-style-type: none"> 1. Clean the tape unit and retry the operation. 2. If cleaning the tape unit does not correct the problem, exchange the tape media. Refer to the 9427 8mm Tape Cartridge Library Service Guide for additional information.	
04xx	Tape unit failure The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking. Refer to the 9427 8mm Tape Cartridge Library Service Guide.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3xxx	Device or interface error. Refer to the 9427 8mm Tape Cartridge Library Service Guide.	
4016 to 4017	Licensed Internal Code for the tape unit is not correct	AJEDA00
9020	I/O processor detected a SCSI bus configuration error Before exchanging any parts, verify that the following conditions are not present: <ul style="list-style-type: none"> • Tape and DASD devices attached to an I/O Processor that does not support attachment of both tape and DASD devices at the same time. • A device type or model that is not given support. 	ULYCNFG 86G9251 FI00130 86G9254
9100	Interface error detected by I/O processor or by tape unit Before exchanging any parts, do the following: <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device. 	86G9251 FI00131 86G9254 EXTSCSI 86G9255 86G9274 17G1934 FI00130
9200	I/O processor addressed the tape unit; no response Before exchanging any parts, do the following: <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device. 	86G9251 86G9274 86G9254 FI00131 EXTSCSI 17G1934 87G1531 86G9255
9201	Tape unit command timeout Before exchanging any parts, do the following: <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device. 	86G9251 FI00131 86G9254 EXTSCSI 17G1934 86G9255 86G9274 FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9202	<p>Tape unit failed after Licensed Internal Code was loaded</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device. 	86G9251 86G9274 86G9254
9210	Illegal or unsupported tape unit response	86G9251 FI00130 FI00131
9300	<p>Tape unit failure</p> <p>The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.</p> <p>Perform "TU-PIP2" on page 659.</p>	86G9251 LIBDEV MLYTMED 86G9274 86G9255
9301	<p>Tape device failure, redundancy lost</p> <p>The tape device detected a hardware failure that does not prevent the tape unit from completed the current operation.</p> <p>Refer to the Tape unit service information to determine the failing item.</p>	86G9251 LIBDEV MLYTMED 86G9274 86G9255
9302	<p>Tape device failure or media error</p> <p>The tape unit detected a failure that may be caused by a hardware failure or a media error.</p> <p>Refer to the tape unit service information for possible information on diagnostic tests that can be run to isolate between hardware and media failures.</p>	MLYTMED 86G9251
9310	Licensed Internal Code for the tape unit is not correct	86G9251 FI00130
9320	Tape device Licensed Internal Code failure	FI00130 86G9251
9350	<p>Tape unit detected a read or write error on tape medium</p> <p>A permanent read or write error occurred. Clean the tape unit and retry the operation.</p> <p>If cleaning the tape unit does not correct the problem, exchange the tape media.</p>	MLYTMED 86G9251
9351	<p>Tape with excessive error rate was mounted in tape device.</p> <p>The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.</p>	MLYTMED ULYCLN 86G9251

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape unit has detected that the data format on the tape media is not supported.</p> <p>Clean the tape unit and retry the operation.</p> <p>If the operation continues to fail, use a different tape cartridge.</p>	ULYUSR1 MLYTMED ULYCLN 86G9251
9500	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.</p>	FI00130
9600	<p>Equipment Check Failure on Library Device.</p> <p>See library device service information to resolve the error.</p>	LIBDEV
9800 to 9803	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p>	
9810	<p>Problem analysis has determined a part should be replaced.</p> <p>This reference code is used for ending Online Problem Analysis with a list of failing items. (Information only)</p>	
9899	<p>Problem analysis completed, the problem has been corrected.</p> <p>This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.</p>	ULYFIXD
9900	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed.</p> <p>The tape drive will continue to operate with the previous LIC. You may do either of the following:</p> <ul style="list-style-type: none"> • Wait for next IPL when the system will attempt to load the LIC for the tape drive again. • Perform "TU-PIP4" on page 664 to reset the IOP and the tape drive. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC. 	ULYWAIT

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FF09	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed.</p> <p>The tape drive will continue to operate with the previous LIC. You may do either of the following:</p> <ul style="list-style-type: none"> • Wait for next IPL when the system will attempt to load the LIC for the tape drive again. • See the system service documentation to reset the IOP and the tape drive. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC. 	ULYWAIT
FF4D	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p> <p>When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.</p>	86G9251 FI00141 EXTSCSI 17G1934 86G9274 86G9255 AJSLC01
FF5D	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p> <p>When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.</p>	86G9251 86G9274 EXTSCSI FI00141 17G1934 86G9255
FFF6	<p>Tape volume statistics logged (no action required)</p> <p>No action required. This reference code is logged for information only.</p>	
FFF8	<p>Asynchronous device attached; synchronous device expected</p> <p>The attached device is operational and working in the asynchronous mode of data transfer. The IBM tape unit uses the synchronous mode of data transfer; if the attached device is an IBM tape unit, exchange the tape unit.</p>	86G9251
FFFE	<p>Tape unit detected a read error on the tape medium</p> <p>Perform the Action for reference code 030B.</p>	MlyTMED 86G9251 86G9274
FFFF	<p>Tape unit detected a write error on tape medium</p> <p>Perform the Action for reference code 030B.</p>	MlyTMED 86G9251

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.

2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 362.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 374.

Failing Item	Description	Document Description
17G1934	Terminating plug	Magnetic tape subsystem service information
86G9251	Tape drive	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
86G9251	Tape drive	Magnetic tape subsystem service information
86G9254	Controller logic card	Magnetic tape subsystem service information
86G9255	Internal signal cable	Magnetic tape subsystem service information
86G9274	Power supply	Magnetic tape subsystem service information
87G1531	Operator Panel/LCD Assembly	Magnetic tape subsystem service information
AJSLC01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
EXTSCSI	Cable assembly	Problem Analysis; Symbolic FRU isolation
LIBDEV	Media Library Device	Magnetic tape subsystem service information
MLYTMED	Defective removable media	System operation information
ULYCLN	Tape unit needs cleaning	Magnetic tape subsystem operator’s information
ULYCNFG	Tape configuration detected by I/O processor; not valid	Magnetic tape subsystem operator’s information
ULYUSR1	Operator action required	Magnetic tape subsystem operator’s information
ULYWAIT	Wait to next IPL or perform TU-PIP4	Problem Analysis

(A1xx, B1xx) Service Processor Reference Codes

If the SRC is A1xx 3xxx, see *Working with Storage Dumps* in the *AS/400 Service Functions* information.

If the SRC is A1xx 8xxx, go to “Powering Off the System” on page 761.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the

address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1933	IPL command rejected; bus 1 load-source unit not ready Make the load source device ready. If load source device is ready and error still exists, replace the failing item. If the load source device is a tape or CD storage unit use FI02092.	FI00098 FI00096
4500	Problem detected with MFIOP	FI00020
4501	System processor card failure	PROCARD
4502	Any device attached to Bus 1 Follow bus isolation procedures to diagnose the problem.	FI00050
4503	Any device attached to Bus 1 or the Load Source IOP	FI00050 FI00096
4504	IPL command rejected; load-source device failed or not found	FI00098 FI00096 STORIOA FI00071 FI00121
4505	Problem with load source device media Note: If the system has undergone a recent hardware upgrade, please check the installation procedures for required corresponding software upgrades. If the failing system is going through an IMPI to PowerPC AS upgrade and the original IMPI load source disk unit is still associated with the MFIOP, do the following: Change the address of the original IMPI load source disk unit so that 1) the DSA is different than used on IMPI and 2) the PowerPC AS load source has a lower DSA than the original IMPI load source.	FI00072
4506	Problem detected with control panel	FI00124
4507	Tape or CD storage unit failure Before replacing any FRU verify the load source device is ready and the correct IPL media is loaded properly. To determine the alternate load source device (see “Determining the Load-Source Disk and Alternate IPL Device” on page 759)	FI00092 FI00072 FI00050
4509	Service Processor Problem Isolation Procedure Please refer to and follow the procedures defined in SP-PIP40.	UCAPIP
4511	Multiple function IOP or system processor failure	FI00020 PROCARD
4512	Clock card This reference code will only appear on models 530 and 53S.	CLKCARD
4998	Operator/User Error	UCAUSER
4999	Service processor LIC problem	FI00099
6010	Any device attached to Bus 1	FI00050

A1xx, B1xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
8FF0	<p>Information only, no service action required</p> <p>Service processor error log entry.</p> <p>If the secondary refcode is 806A, a successful download of control panel code has occurred.</p> <p>If the secondary refcode is 8EEE, one of the following conditions may have occurred.</p> <p>Operation was successful but current keylock position was not in Auto or normal.</p> <p>The Time-of-Day (TOD) chip had to be reset due to an invalid power-up state. TOD requests will not work successfully until a write TOD is done (CHGSYSVAL QDATE).</p> <p>Timed-Power-On request has been acknowledged. Power on sequences must be set for valid months, days, hours, minutes, and seconds, for future times, and for times when the system will be powered off.</p>	
8FF1	System down, condition reported	

Service Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
CLKCARD	Clock card	Problem Analysis; Symbolic FRU Isolation
PROCARD	System processor card	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
UCAPIP	Service Processor Problem Isolation Procedure	
UCAUSER	Option not valid at this time	Service Functions; Working with Storage Dumps

(A6xx, B6xx) LIC Reference Codes

Perform the following:

1. Find the SRC in the SRC column of the following table.
2. Perform the actions in the *What You Should Do* column.

SRC	What You Should Do
11-3 A6xx xxxx	<p>Licensed Internal Code intervention is needed.</p> <ol style="list-style-type: none"> 1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code. 2. See “Licensed Internal Code (LIC) Reference Codes” and find the unit reference code.
11-3 B6xx xxxx	<p>The Licensed Internal Code detected a failure.</p> <ol style="list-style-type: none"> 1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code. 2. See “Licensed Internal Code (LIC) Reference Codes” and find the unit reference code. 3. When working with the Product Activity Log, system LIC entries often occur as a secondary effect of other hardware related entries. The following list is a suggested method of isolating these kinds of problems. <ol style="list-style-type: none"> a. Examine the date and time of the informational reference codes. b. Determine if any other reference codes were logged at or before the same date and time. c. Start the service approach based on these other logged errors.

Licensed Internal Code (LIC) Reference Codes

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

A6xx, B6xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0000	<p>Operating system status code</p> <p>This reference code is for information only. It is shown in the Product activity log as a side effect of a condition that was detected by LIC.</p> <p>Normally, no action should be taken as a result of information reference codes. However, to isolate the root cause, use these suggestions:</p> <ol style="list-style-type: none"> 1. Examine the date and time of the informational reference code. 2. Determine if any other reference codes have been logged at or before the same date and time. 3. Begin the service approach based on these other logged errors. 		
0102	<p>A machine check occurred during IPL</p> <p>Words 2 to 9 of this SRC contain additional diagnostic information. Record SRC words 1 through 9 before attempting to IPL again and report the problem to your Software Service Provider.</p>		
0103	<p>Main storage dump must be copied for service.</p> <p>Perform "LIC-PIP1" on page 509.</p>		
0104	<p>Terminate Immediate reference code is bad</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0105	<p>More than one request to terminate the system was issued</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0106	<p>Terminate Immediate data is not valid</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0202	<p>Unrecoverable read error</p> <p>Restore the Licensed Internal Code using "Licensed Internal Code Install and Restore" in the <i>AS/400 Service Functions</i> information.</p>		
0244, 0255, 0266	<p>Contact was lost with the device indicated</p> <p>Do not power off the system.</p> <p>Perform "LIC-PIP13" on page 529.</p>	FI00580 FI00500 FI00302 FI00301 AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0277	<p>A compression disk unit cannot complete an operation.</p> <p>Note: Do not power off the system when performing this procedure.</p> <p>Look at the 4 leftmost characters of the Data display for word 7. These four characters indicate the type of problem that exists and the recovery action to perform.</p> <p>If these characters are 8402 or 2002, the compression disk unit is temporarily full of data. The command to the compression disk is being held. When the storage subsystem controller has created sufficient space on the compression disk unit to contain the data, the command which is being held will be released and the system will resume normal processing. If the system does not resume normal processing within 20 minutes, contact your next level of support.</p> <p>If these characters are 8400 or 2000, the compression disk unit is full of data. The command to the compression disk is being held. Ask the customer to perform the recovery actions in the "Disk Unit Full Considerations" section of the Backup and Recovery Guide, SC41-5304.</p>		
0302	<p>Recursion in exception handler</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0304	<p>Component specific exception handler return code not valid</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0305	<p>Exception while storage management lock is held</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0308	<p>LIC exception code detected a problem</p> <p>Component Specific Exception Handler recursion is detected in an OS/400 process.</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0317	<p>Traceback for code not found</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0323 to 0329	<p>LIC exception code detected a problem</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0333	<p>A branch to a bad address was attempted</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0334	<p>Exception Handler could not be removed</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0335	<p>Code resumed to not valid address following exception</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
0401	<p>A machine check occurred during IPL</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	

A6xx, B6xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0402	A machine check occurred during authority initialization Perform "LIC-PIP8" on page 516.	AJDG301	
0403	Unhandled exception during IPL or install Perform "LIC-PIP8" on page 516.	AJDG301	
0405	Unhandled exception in authority recovery Perform "LIC-PIP8" on page 516.	AJDG301	
0406	Unhandled exception in data base recovery Perform "LIC-PIP8" on page 516.	AJDG301	
0407	Unhandled exception in data base initialization Perform "LIC-PIP8" on page 516.	AJDG301	
0408	Unhandled exception in journal recovery Perform "LIC-PIP8" on page 516.	AJDG301	
0409	Unhandled exception in journal synchronization Perform "LIC-PIP8" on page 516.	AJDG301	
0410	Unhandled exception in journal clean up Perform "LIC-PIP8" on page 516.	AJDG301	
0411	Unhandled exception in commit recovery Perform "LIC-PIP8" on page 516.	AJDG301	
0412	Unhandled exception in commit initialization Perform "LIC-PIP8" on page 516.	AJDG301	
0413	Rebuild of recovery object index failed Perform "LIC-PIP8" on page 516.	AJDG301	
0414	Install of operating system failed on read from media Perform "LIC-PIP8" on page 516.	FI00300	
0415	Create user profile failed Perform "LIC-PIP8" on page 516.	AJDG301	
0417	Initiating the initial process failed Perform "LIC-PIP8" on page 516.	AJDG301	
0418 to 0419, 0420	The information loaded from the install media is not valid Perform "LIC-PIP8" on page 516.	AJDG301	
0421	Bad return code creating a queue or message Perform "LIC-PIP8" on page 516.	AJDG301	
0422	The Load/Dump command failed Perform "LIC-PIP8" on page 516.	AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0439	Opening the IPCF connection failed Perform "LIC-PIP8" on page 516.	AJDG301	
0440	Termination code is not valid Perform "LIC-PIP8" on page 516.	AJDG301	
0441	Power off system command failed Perform "LIC-PIP8" on page 516.	AJDG301	
0443	Programmed IPL command failure Perform "LIC-PIP8" on page 516.	AJDG301	
0446	Error during machine termination Perform "LIC-PIP8" on page 516.	AJDG301	
0447	Failure to reach MI boundary Perform "LIC-PIP8" on page 516.	AJDG301	
0449	Exception in MI boundary manager Perform "LIC-PIP8" on page 516.	AJDG301	
0506	Attempt to destroy a task with critical flag on Perform "LIC-PIP8" on page 516.	AJDG301	
0607	Maximum stack size exceeded in process or task Perform "LIC-PIP8" on page 516.	AJDG301	
0620	Event management index is not usable Perform "LIC-PIP8" on page 516.	AJDG301	
0650	Resource management segment could not be created or extended A main store dump was initiated. Words 2 to 9 of this SRC contain additional diagnostic information. Record SRC words 1 through 9. Perform a system IPL and collect the Product activity log and mainstore dump and provide them along with the recorded SRC information to IBM Service Support. The problem may also be that there is not enough auxiliary storage.	AJDG301	
0801	Invalid LID directory detected During system IPL, the LIDMgr detected an I/O failure or media failure while trying to read the LID directory. Perform "LIC-PIP8" on page 516.	FI00070 FI00300 AJDG301	

A6xx, B6xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0802	<p>LID directory unusable</p> <p>During system IPL, the LIDMgr detected that the LID directory and associated load source is not usable.</p> <p>Reinstall the Licensed Internal Code using "Licensed Internal Code Install and Restore" in the <i>AS/400 Service Functions</i> information.</p> <p>For more information, contact IBM Service Support.</p>	AJDG301	
0901	<p>The LinkLoader has found its bad flag ON</p> <p>This reference code is usually the result of a system termination while the LinkLoader is performing its work.</p> <p>Reinstall the Licensed Internal Code using "Licensed Internal Code Install and Restore" in the <i>AS/400 Service Functions</i> information.</p>		
0902	<p>Unable to perform programmed IPL</p> <p>The LinkLoader was not successful in performing a programmed IPL.</p> <p>Perform a system IPL. If the problem persists, examine the main storage dump and determine the reason for the failure of the programmed IPL.</p>		
1001	<p>Enqueueing a task to the TDQ which is already enqueued on TDQ</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
1103	<p>MISR not readable; must be readable for Normal Mode install</p> <p>MISR is not readable. Perform a manual install to reinitialize the system.</p>		
1104	<p>Failure reading media or not install media</p> <p>Determine that correct install media is loaded. If correct install media is installed, media could be corrupt. Obtain another copy of the install media and reattempt the install. If the install still fails, contact your service representative.</p>		
1201	<p>Critical database segment could not be created</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
1204	<p>Error in constraint enforcement</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
1210	<p>Object not found in the in-use table</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
1215	<p>Error in critical code sequence</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
1219	<p>A back leveled driver has been detected</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
1604	<p>Not able to create APPN task</p> <p>An error occurred during task creation which requires a power off of the system.</p> <p>Perform "LIC-PIP8" on page 516.</p>	AJDG301	
1724	<p>An attempt to create a segment failed</p> <p>The create could fail for two reasons:</p> <ul style="list-style-type: none"> • A code problem Perform "LIC-PIP8" on page 516. • No free auxiliary storage on the system Add additional DASD if the create failed because no auxiliary storage was available. 	AJDG301	
1730	<p>An IPL is needed to restore system performance</p> <p>Licensed Internal Code has detected a condition that is impacting system performance. System operation can continue, but system performance may be noticeably reduced until the next IPL.</p> <p>For more information, contact IBM Service Support.</p>	GG3PL01	
3000	<p>Logical partition service function Main Storage Dump.</p> <p>Copy the current main storage dump to media. For more information on how to copy a Main Storage Dump, refer to the AS/400 Service Functions Information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").</p>	AJDG301	
4402	<p>Missing DASD units.</p> <p>Copy the current main storage dump to media. Then exit the Main Storage Dump Manager.</p> <p>For more information on how to perform a Main Storage Dump, refer to AS/400 Service Functions information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").</p>		
4403	<p>Storage Management failed to reach full paging.</p> <p>Copy the current main storage dump to media.</p> <p>For more information on how to perform a Main Storage Dump, refer to AS/400 Service Functions information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").</p>		
4404	<p>Auto copy failed or not attempted.</p> <p>Copy the current main storage dump. If copying to system ASP, existing copies may need to be deleted or renamed. Then exit the Main Storage Dump Manager.</p> <p>For more information on how to perform a Main Storage Dump, refer to AS/400 Service Functions information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").</p>		

A6xx, B6xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4405	System ASP threshold exceeded after auto copy done. Delete other system ASP copies or exit the Main Storage Dump Manager and then from DST copy the Auto Copy to media and then delete the Auto Copy in system ASP.		
5001	DST received no response from a work station controller The workstation I/O processor for the system console did not respond. Perform the following: 1. Power off the system from the operator panel. 2. Exchange the first workstation I/O processor card on bus 1 (see "Cards" on page 848 and "Chapter 6. Removal and Installation Procedures" on page 793. 3. Power on the system from the control panel to start the initial program load.	FI00380 AJDG301	
5002	DST problem attempting to use the system console A code problem occurred during an attempt to use the system console. Perform "LIC-PIP3" on page 510.	AJDG301 FI00380	
5003	Service program failed The ASCII system console failed to respond. Perform "ASCII-PIP1" on page 435.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5004	DST console failed to respond The system console failed to respond. Perform "TWSC-PIP1" on page 677.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5005	Service program failed The workstation adapter system console failed to respond. Perform "WSAC-PIP1" on page 689.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5007	Service program failed The workstation adapter console failed to respond. Perform "WSAC-PIP1" on page 689.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5010	IPL service function ended abnormally Perform "LIC-PIP4" on page 511.	AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5082	<p>DST lost contact with the console</p> <p>A service program lost contact with the system console.</p> <p>Do you have an ASCII terminal for the console?</p> <p>No Yes</p> <p>↓ Perform "ASCII-PIP1" on page 435.</p> <p>Do you have a twinaxial terminal for the console?</p> <p>No Yes</p> <p>↓ Perform "TWSC-PIP1" on page 677.</p> <p>Do you have a console on a 6054 or 917C adapter?</p> <p>No Yes</p> <p>↓ Perform "WS-PIP1" on page 685.</p> <p>Perform "WSAC-PIP1" on page 689.</p>	AJDG301 UG3USR1	
5083	<p>IPL service function ended abnormally</p> <p>A service program lost contact with the system console.</p> <p>Perform "TWSC-PIP1" on page 677.</p>	AJDG301 UG3USR1	
5090	<p>System startup failed in unattended IPL mode</p> <p>Perform the following:</p> <ul style="list-style-type: none"> • If reference code A6005090 is displayed on the control panel for more than 10 minutes, perform "LIC-PIP11" on page 517. • For reference code B6005090, perform "LIC-PIP11" on page 517. 	FI00580 FI00500 FI00301 FI00021 FI00065 AJDG301	
5092	<p>System is in DASD migration mode</p> <p>"Install Licensed Internal Code" and "Upgrade Load Source" was specified but the key is not in the manual position. Change the key position to manual and perform a system IPL.</p>		
50FF	<p>DST unrecoverable program error</p> <p>Perform "LIC-PIP3" on page 510.</p>	AJDG301 FI00380	
5120	<p>System LIC detected a program exception</p> <p>System LIC detected a programming problem. If performance or other system degradation is occurring, the system may be operating with reduced resources.</p> <p>Check the Product activity log for related entries. If this reference code is logged with a <i>Class</i> of Informational, then no action is required.</p> <p>Otherwise, perform "LIC-PIP1" on page 509 in "Licensed Internal Code (LIC) Problem Isolation Procedures" on page 508.</p>	AJDG301 FI00130	

A6xx, B6xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5121	System LIC program exception occurred System LIC detected a programming problem for which a main storage dump may have been initiated. A problem log entry may be generated for this ref code. Perform "LIC-PIP1" on page 509.	AJDG301	
5122	System LIC program exception occurred System LIC detected an IOP programming problem for which an IOP dump may have been initiated. Perform "LIC-PIP1" on page 509.	FI00130 AJDG301 FI00131	
5123	System LIC program exception occurred System LIC detected an interface problem with the IOP or an IOP programming problem for which an IOP and main storage dump may have been initiated. Perform "LIC-PIP1" on page 509.	FI00130 AJDG301 FI00131	
5126	Addressed device failed to respond to selection	DISKDRV STORIOA DISKTRY FI01106 FI01140 FI01141 DEVTERM BACKPLN	
5127	IOP timed out a disk command	DISKDRV STORIOA FI01106 DISKTRY FI01140 FI01141 DEVTERM BACKPLN	
5128	I/O processor failure	FI01112 FI01107	
512D	An IOP dump was initiated Copy the IOP dump entry and any related entries from the Product Activity Log to suitable media, and give to an IBM service representative.		
512E	System LIC program exception occurred The system was in a D IPL mode when the problem was detected. A main storage dump was not taken. Perform "LIC-PIP1" on page 509.	AJDG301 FI00130	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5206	<p>System LIC detected a missing IOP LIC code load</p> <p>System LIC detected a missing IOP LIC code load during IPL of the IOP. This indicates that either the IOP code load is not installed on the system load source device or that system LIC was unable to successfully read that load from the load source device.</p> <p>Perform "LIC-PIP1" on page 509.</p>	UG3USR1	
5209	<p>System LIC detected an IOP timeout during IOP IPL</p> <p>Verify that all IOP cable connections are secure, and check tape and other non-disk devices and media to verify that they are in a ready state.</p> <p>Perform "LIC-PIP1" on page 509.</p>	UG3USR1 FI00130 AJDG301	
5219	<p>System LIC program exception occurred</p> <p>An IOP signalled to system LIC that it had entered a critical internal state. LIC automatically attempted to restart the IOP.</p> <p>This reference code is logged for information only. No action is required.</p>	FI00310 FI00318 FI00065 FI00130 AJDG301	
5275	<p>The system issued a reset/reload to the IOP.</p> <p>System Licensed Internal Code detected that an IOP Reset/Reload has occurred, and that the IOP successfully recovered.</p> <p>Users who were signed on to a Workstation device under the IOP will need to sign back on. Any LAN/WAN communications lines under the IOP will need to be restarted. Tape/Optical devices under the IOP may need to be varied back on.</p> <p>To determine the cause of the IOP Reset/Reload, check the Product Activity Log for additional entries logged with the same System Log ID, and perform any actions indicated for those errors.</p>		
5276	<p>IOP Reset was issued</p> <p>LIC has detected a problem with the Service Processor IOP and has reset it but has not initiated reload of the Service Processor.</p> <p>If the load source is mirrored, some system operations may be able to continue normally. However, some system service operations have been suspended and the system should be scheduled for power down as soon as possible.</p> <p>Perform a system IPL. If the IPL is successful, then perform "LIC-PIP1" on page 509 to determine the cause of the problem.</p> <p>If the system IPL is not successful, perform the action described in the new SRC.</p>	AJGLD01 AJDG301 FI00021	

A6xx, B6xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5310	<p>System LIC program exception occurred</p> <p>System LIC detected a logical partition configuration data consistency error. Copy the Product Activity Log data for this error and any related entries and contact your next level of hardware service support.</p>	LPARSUP	
5311	<p>System LIC program exception occurred</p> <p>LPAR configuration data does not match current system configuration. The system will not IPL past DST until the problem is corrected.</p> <p>Following is a list of problems which may have caused this SRC to be reported:</p> <ul style="list-style-type: none"> • Non-configured disk unit which was previously a load source on a partitioned system. • Load source configuration data does not match partition for which it is being used. • Load source configuration data does not match system serial number for which it is being used. • Load source configuration data is newer than primary partition configuration data. <p>Perform "LPAR-PIP01" on page 536.</p>	LPARSUP	
5312	<p>System LIC program exception occurred</p> <p>LPAR configuration data informational error.</p> <p>The LPAR configuration data was found to be or inconsistent on a secondary partition's load source. The data was automatically updated to the current system level.</p>		
5313	<p>System LIC program exception occurred</p> <p>LPAR configuration data informational error.</p> <p>The LPAR configuration data was found to be inconsistent on a primary partition and could only be corrected with an older copy of the data.</p>	LPARCFG	
5340	<p>Secondary partition not running at optimum.</p> <p>Check the Primary partition's Product Activity Log for system processor entries from approximately the same time. Perform the actions indicated for those entries. For more information on Logical Partitioning, see the Logical Partitioning Information in the <i>AS/400 Service Functions</i>.</p>		
5341	<p>Secondary partition not running at optimum.</p> <p>Check the primary partition Product Activity Log for system memory entries from approximately the same time. Perform the actions indicated for those entries. For more information on Logical Partitioning, see the Logical Partitioning Information in the <i>AS/400 Service Functions</i>.</p>		

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5342	<p>Secondary partition not running at optimum.</p> <p>Check the Primary partition's Product Activity Log for system processor entries from approximately the same time. Perform the actions indicated for those entries. For more information on Logical Partitioning, see the Logical Partitioning Information in the <i>AS/400 Service Functions</i>.</p>		
5343	<p>Secondary partition not running at optimum.</p> <p>Check the Primary partition's Product Activity Log for system memory errors from approximately the same time. Perform the actions indicated for those entries.</p> <p>For more information on Logical Partitioning see the Logical Partitioning Information in the <i>AS/400 Service Functions</i>.</p>		
5344	<p>Secondary partition not running at optimum.</p> <p>The interactive performance specified in the configuration data for this partition could not be met.</p> <p>Contact your next level of support.</p>	LPARSUP	
5350	<p>Secondary partition software release not supported.</p> <p>The logical partition software version is outside the supported release delta. Check the Release Delta from the Primary partition "Display Partition Release Level" screen.</p> <p>Check the LPAR documentation for the release level of the Primary partition and determine what the supported Release Delta is.</p>		
5380	<p>System LIC program exception occurred</p> <p>Record the Product Activity Log (PAL) hex data for this SRC or print the PAL entry.</p> <p>Contact your next level of support.</p>	LPARSUP	
5390	<p>System LIC program exception occurred</p> <p>Record the Product Activity Log (PAL) hex data for this SRC or print the PAL entry.</p> <p>Contact your next level of support.</p>	LPARSUP	
5555	SLIC I/O DASD subsystem error recovery in progress.		
6900	<p>System bus error</p> <p>The copper bus, bus 1 in the system unit, is inoperative due to a stuck line or a parity error. Any system bus-related hardware may have failed.</p> <p>Perform "BUS-PIP1" on page 443.</p>	FI00065 AJDG301	

A6xx, B6xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6901	<p>Bus Expansion Adapter card failed</p> <p>The copper bus, the first SPD bus in the system unit or migrated tower, has failed due to an internal chip error on the local bus adapter.</p> <p>Perform "BUS-PIP1" on page 443.</p> <p>For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed.</p> <p>If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code.</p> <p>If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.</p>	LBUSADP AJDG301	
6902	<p>Bus Expansion Adapter card failed</p> <p>An optical bus has failed due to an internal chip error on one of the remote bus adapters.</p> <p>Perform "BUS-PIP1" on page 443.</p>	FI00203 AJDG301	
6905	<p>Optical bus failed</p> <p>An optical bus is inoperative due to a stuck line or an invalid bus command. Any bus-related hardware may have failed.</p> <p>Perform "BUS-PIP1" on page 443.</p> <p>For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed.</p> <p>If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code.</p> <p>If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.</p>	FI00065 LBUSADP AJDG301	
6910	<p>I/O processor failure</p> <p>An I/O processor timed out, returned bad status, or is not following the system bus protocol.</p> <p>Perform "LIC-PIP7" on page 512.</p>	FI00310 FI00318 FI00065 FI00130 AJDG301	
6938	<p>Not valid system configuration detected</p> <p>This system model does not allow a configuration of more than three (non-OptiConnect) I/O Processors.</p> <p>Power down the system and remove the extra (non-OptiConnect) I/O Processor(s) so that there are three or less. Restart the system.</p>		

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6944	Missing or failed I/O processor cards A system bus appears to be empty. If the bus is not empty, two I/O processors in consecutive slots may be missing or broken. If there are broken I/O processors, then another more serious SRC has occurred. Otherwise find the bus number for this failure from the Product activity log and use the system configuration list to verify the configuration of the I/O processors on that bus.	FI00317 FI00316 AJDG301	
699C	Wrap plug is installed on Bus Expansion Adapter card This reference code is for information only. It indicates the presence of a wrap plug on the local optical link card.		
69A8	Informational bus reference code This reference code is for information only and might include the following: <ul style="list-style-type: none"> • Optical speed encode • Broken optical links now operational • Other information 		
69B8	Bus hardware configuration problem The optical bus cabling is not connected correctly. Perform "BUS-PIP1" on page 443.	FI00187 AJDG301	
69C1	A failure occurred on another system Perform "BUS-PIP1" on page 443.	FI01040 FI00206 FI00182 AJDG301	
69C5	I/O processor failure The OptiConnect/400 card which connects this system to another system has failed. The failing card is located in an I/O processor card slot. Perform "BUS-PIP1" on page 443.	FI00206 FI01040 AJDG301	
69D0	Bus Expansion Adapter card failed An internal error was detected on a local optical link card. Perform "BUS-PIP1" on page 443.	FI00182 FI00055 AJDG301	

A6xx, B6xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
69D8	<p>Bus Expansion Adapter failed</p> <p>A primary optical link had a failure. Contact with the bus may still be possible through this link or through a redundant link.</p> <p>Perform "BUS-PIP1" on page 443.</p> <p>For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed.</p> <p>If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code.</p> <p>If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.</p>	FI00182 FI00203 FI00055 LBUSADP AJDG301	
69E0	<p>Bus Expansion Adapter card failed</p> <p>An internal error was detected on a remote bus adapter card.</p> <p>Perform "BUS-PIP1" on page 443.</p>	FI00203 AJDG301	
69E8	<p>Bus Expansion Adapter failed</p> <p>Redundancy has been lost due to a secondary optical link failure. Contact with the bus may still be possible through the primary optical link.</p> <p>Perform "BUS-PIP1" on page 443.</p>	FI00203 FI00205 FI00057 AJDG301	
69F0	<p>Bus Expansion Adapter failed</p> <p>Contact has been lost to the bus.</p> <p>Perform "BUS-PIP1" on page 443.</p>	FI00180 FI00182 FI00203 FI00056 FI00205 LBUSADP AJDG301	
69F8	<p>Bus Expansion Adapter failed</p> <p>An optical link initialization failure occurred. The number and configuration of the system buses can not be determined.</p> <p>Perform "BUS-PIP1" on page 443.</p>	FI00180 FI00203 FI00182 FI00186 FI00057 AJDG301	
7001	ISDN call in rejected	GG3COMM	
7002	Lines not selected	GG3COMM	
7003	Network interfaces not selected	GG3COMM	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
7004	<p>TCP/IP informational error</p> <p>This reference code is logged when the TCP/IP Attribute “Log Protocol Errors” is set, and the TCP/IP System LIC “silently discards” an inbound datagram. “Silently discard” is defined to mean discard the received datagram without reporting an error to the originating host device. Examples of such datagrams are those with checksums or destination addresses which are not valid.</p> <p>This reference code is for information only. Normally no action should be taken as a result of this reference code. It is generated in order to assist with remote device or TCP/IP network problem determination.</p>		
7055	<p>Statistics were logged, no service action required</p> <p>This reference code is logged for information only.</p>		
7100	<p>APPN session initiation attempt has timed out</p> <p>This reference code is used to indicate that LIC timed out on a request to initiate a session.</p> <p>The user must run problem analysis for this reference code. If this indicates a software problem, the user should dial IBM Software Support for assistance.</p> <p>The Problem Determination Procedure (PDP) will indicate whether the original timeout condition still exists and what the corrective actions should be.</p>	<p>AJDG301 GG3PL03 GG3PL01 GG3PL02</p>	
7101	<p>APPN session initiation attempt has failed</p> <p>This reference code is used to indicate that LIC attempted to satisfy a session initiation request, but some failure condition was detected by LIC. The failure condition could be a configuration or operational problem in the network.</p> <p>The user must run problem analysis for this reference code. If this indicates a software problem, the user should dial IBM Software Support for assistance.</p> <p>The Problem Determination Procedure (PDP) will indicate whether the original timeout condition still exists and what the corrective actions should be.</p>	<p>GG3PL04 GG3PL05 GG3PL06 AJDG301</p>	
7102	APPN CP-CP session ended.		
7201	<p>A utility failure occurred.</p> <p>This reference code is for information only. The Uninterruptible Power System (UPS) is reporting a utility failure.</p>		
7202	<p>Utility power restored.</p> <p>This reference code is for information only. The Uninterruptible Power System (UPS) is reporting that utility power has been restored.</p>		
7203	<p>A battery low condition was detected.</p> <p>This reference code is for information only. The Uninterruptible Power System (UPS) is reporting a battery low condition.</p>		

A6xx, B6xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
7204	Uninterruptible Power System reported a bypass active This reference code is for information only. The Uninterruptible Power System (UPS) is reporting a bypass is active.		
7205	Battery low condition was reset. This reference code is for information only. The Uninterruptible Power System (UPS) is no longer reporting a battery low condition.		
7206	UPS reported bypass no longer active This reference code is for information only. The Uninterruptible Power System (UPS) is no longer reporting a bypass active condition.		
7207	Battery Power Unit needs service The replacement period for BPU 1, installed in the System Unit, has been exceeded.	FI00315	
7208	Battery Power Unit needs service The replacement period for BPU 2, installed in the System Unit, has been exceeded.	FI00315	
7209	Battery Power Unit needs service The replacement period for BPU 1, installed in the Expansion Unit, has been exceeded.	FI00315	
720A	Battery Power Unit replacement dates do not match The replacement dates for one of the Battery Power Units do not match. Run "Display Hardware Configuration" and verify that the dates match the labels on the batteries.		
7701	SCSI jumper card was not detected.	21H7625 BACKPLN	
7702	Incorrect SCSI jumper card detected	21H7625	
7703	System LIC detected a program exception Storage Management detected a DASD datacheck condition and the defective sector was reallocated. Perform a system IPL to restart the system.		
7704	General failure detected by HRI component.	AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
7777	<p>Hardware configuration change detected</p> <p>A hardware resource is missing. The resource reported in to the system on a previous IPL, but has not reported in on the current IPL. This could occur for several different reasons.</p> <ol style="list-style-type: none"> 1. It could be a normal situation where the resource is currently powered off. In this case, when the resource is powered back on, it will no longer be missing. 2. The hardware resource could also be missing if it has been removed from the system, for example, a tape drive that was replaced with a different tape drive. The service representative should use the Hardware service manager to remove the entry for this resource. 3. The resource may not have reported in on this IPL because it is failing. Perform problem analysis to determine why the resource is failing. 		
CFFC	<p>Optical library device condition not expected</p> <p>The optical disk drive addressing within the optical library is incorrect. This error is likely to be the result of faulty cabling or switch setting following service to an optical library.</p> <p>Contact your hardware service provider.</p>	OPTLCBL DRVSWCH	
CFFD	Optical drive failure	OPTLDRV	
CFFF	Media determined to be bad in Optical library		
F103	<p>Main storage dump must be copied for service.</p> <p>Perform "LIC-PIP1" on page 509.</p>		
FDC0	<p>LIC program reported informational error</p> <p>This reference code is logged for information only. No action required.</p>		
FDC3	<p>Error detected in LIC and data was captured</p> <p>This reference code indicates first failure data capture (FFDC) data was collected for a problem reported by licensed internal code program #C3TSSIO.</p> <p>The user should dial IBM Software Support for assistance.</p>	GG3FFDC FI00330 AJGLD01	
FDC5	<p>LIC program failed and data was captured</p> <p>This reference code indicates first failure data capture (FFDC) data was collected for a problem reported by licensed internal code.</p> <p>The user should dial IBM Software Support for assistance.</p>	GG3FFDC	

Licensed Internal Code (LIC) Failing Items

Failing Item	Description	Document Description
21H7625	Incorrect, defective or missing SCSI jumper card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR

A6xx, B6xx

Failing Item	Description	Document Description
AJDGP01	Service processor Licensed Internal Code	Repair and Parts; removal and installation procedures
AJGLD01	I/O card Licensed Internal Code	Service Functions; APAR or LICTR
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
BSTWRPL	I/O tower card	Problem Analysis; Symbolic FRU Isolation
CBLALL	Cable Unit Part	Problem Analysis; Symbolic FRU Isolation
CVTCARD	System Interconnect SPD migration card	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
DISKDRV	Disk drive and logic card	Problem Analysis; Symbolic FRU Isolation
DISKTRY	Disk unit tray	Problem Analysis; Symbolic FRU Isolation
DRVSWCH	Drive address switch	Problem Analysis; Symbolic FRU Isolation
GG3COMM	Communications failure	
GG3FFDC	LIC program failed and data was captured	
GG3PL01	System performance problem	
GG3PL02	Network performance problem	
GG3PL03	Switched link activation failure message not answered	
GG3PL04	Transmission groups in the network must be activated	
GG3PL05	Class-of-service specified does not provide a route	
GG3PL06	COS acceptable TGs and nodes do not exist for the route	
LBUSADP	System bus adapter failed	Problem Analysis; Symbolic FRU Isolation
LPARCFG	Configuration error	Problem Analysis; Symbolic FRU Isolation
LPARSUP	Call your next level of support for assistance	Problem Analysis; Symbolic FRU Isolation
MABRCFG	Multi-adapter bridge configuration change or error	Problem Analysis; Symbolic FRU Isolation
MASBUS	Multi-adapter bridge card slot or card bus	Problem Analysis; Symbolic FRU Isolation
MA_BRDG	Multi-adapter bridge	Problem Analysis; Symbolic FRU Isolation
OPTDRIV	Optical Disk Drive	Problem Analysis; Symbolic FRU Isolation
OPTLCBL	Optical Library drive cabling	Problem Analysis; Symbolic FRU Isolation
OPTLDRV	Optical Library optical drive	Problem Analysis; Symbolic FRU Isolation
PIOCARD	PCI I/O processor or adapter card	Problem Analysis; Symbolic FRU Isolation
PPCIMIN	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
PPCISYS	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
PPCITWR	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
PRI_PCI	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
SIADPCD	System Interconnect I/O adapter	Problem Analysis; Symbolic FRU Isolation
SICNTRL	System Interconnect controller	Problem Analysis; Symbolic FRU Isolation
SIIOADP	System Interconnect I/O adapter	Problem Analysis; Symbolic FRU Isolation
SIRGCBL	System Interconnect cable, connection or interposer card	Problem Analysis; Symbolic FRU Isolation

Failing Item	Description	Document Description
SIRGCFG	Configuration error	Problem Analysis; Symbolic FRU Isolation
SIRSTAT	System Interconnect cable, connection or interposer card	Problem Analysis; Symbolic FRU Isolation
SI_CARD	System Interconnect controller	Problem Analysis; Symbolic FRU Isolation
SI_PHB	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
SLOTERR	Multi-adapter bridge card slot error, do not use card slot	Problem Analysis; Symbolic FRU Isolation
STORIOA	Active I/O processor	Problem Analysis; Symbolic FRU Isolation
SVCPROC	Service Processor Card	Problem Analysis; Symbolic FRU Isolation
SYSBKPL	System unit backplane	Problem Analysis; Symbolic FRU Isolation
TWRBKPL	I/O tower card	Problem Analysis; Symbolic FRU Isolation
TWRCARD	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
TWRPLNR	I/O tower card	Problem Analysis; Symbolic FRU Isolation
UG3USR1	Operator response required	

(A9xx, B9xx) Reference Codes

This section informs service representatives that all A9xx and B9xxx SRCs and their associated unit reference codes give information about the user (customer) program.

1. The service representative should have the user see “Problem Handling Tables and Procedures” in the *Basic System Operation, Administration, and Problem Handling* information for the descriptions and actions indicated by these reference codes. For additional help, the user should contact their next level of support.

Note: A brief description of some of the C9xx codes can be found in the *AS/400 Service Functions* information (see “IPL Status SRC Sequence” under “Initial Program Load Information”).

A complete description and definition of these codes are found in the *OS/400 Diagnostic Aids* information under Unit Reference Codes. This information is used by the support representatives.

2. If a Licensed Internal Code error is suspected and the recovery action recommends an IPL, take a main storage dump to save the error conditions (see “Working with Storage Dumps” in the *AS/400 Service Functions* information) **before** the customer does an IPL. Support may need the information saved in this dump.
3. Have the customer continue with the recommended recovery action.

(B003) Asynchronous Communications Reference Codes

The Asynchronous Communications detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

B003**Notes:**

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2321	Procedure error in Licensed Internal Code	CNGTEMP
2322	Data-set-ready error on modem interface	CNGTEMP
2340	Data-set-ready changed to not active; for information only	FI00704 CNGTHRS FI00701 FI00719
3200	Clear-to-send state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3201	Data-set-ready state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3202	Clear-to-send state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3203	Carrier-detect state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3204	Call not completed; error limit per 256 reached	CNGTEL GNGLINK FI00705 FI00703
3205	Call completed with error; error limit per 256 reached	CNGTHRS
3206	Data-line-occupied error; error limit per 256 reached	FI00703 CNGTHRS GNGLINK FI00702
3207	Abandon-call-retry error; error limit per 256 reached	FI00703 CNGTHRS GNGLINK FI00702 CNGTEL
3208	Present-next-digit error; error limit per 256 reached	FI00703 CNGTHRS FI00702 FI00719

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3209	Distant-station-connected error; error limit per 256 reached	FI00703 CNGTHRS GNGLINK FI00702 CNGTEL
320B	Data-set-ready state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
320C	Incorrect number dialed; error limit per 256 reached	CNGTEL CNGTHRS
4200	Break character received; error limit per 256 reached	GNGLINK CNGTHRS
4202	Received storage overrun; error limit per 256 reached	FI00730 CNGTHRS
4203	Incorrect stop bit; error limit per 256 reached	GNGLINK CNGLBPS CNGTHRS
4204	Receive-time-out error; error limit per 256 reached	CNGTHRS GNGLINK
4205	Number of characters discarded; error limit per 256 reached	GNGLINK CNGLBPS CNGLOAD CNGTHRS
4206	Procedure error in Licensed Internal Code	FI00730 AJDG301
4209	Wrong data received; error limit per 256 reached	GNGLINK CNGTHRS
4220	Port already in use	AJDG301 FI00719 CNGSLPT
4240	Port not installed	AJDG301 FI00719 CNGSLPT
4340	Automatic call unit port is not installed	AJDG301 CNGASPT FI00719 FI00702
4376	Automatic call unit already in use	AJDG301 GNGRESC CNGASPT
4502	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
4503	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGDTRT
4504	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGASPT CNGSLPT

B003

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4505 to 4506	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGASPT FI00730 CNGSLPT
4507	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGSTOP
4508	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
4509	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGTMOD FI00730
450A	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGCTYP
450B to 450C	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
450D	Wrong configuration value sent by Licensed Internal Code	CNGPRTY CNGBCHR FI00730 AJDG301
450E	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGMCFL
4549	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
4590	Wrong number specified in controller description	CNGTEL FI00703 FI00701 CNGCLBR FI00719
4592	No number specified in controller description	AJDG301 CNGTEL
4594	Wrong number specified in controller description	CNGTEL FI00730 AJDG301 CNGCLBR
5410	Switched line already in use	FI00704 CNGCMOD FI00701 FI00719
5472	Data-line-occupied error at time of starting	FI00703 GNGRESC FI00719 FI00702
5474	Automatic call unit line connection error	FI00702 FI00703 FI00719 GNGLINK
5476	Present-next-digit error	FI00702 FI00703 FI00719

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5501	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
5502	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGTMOD FI00730
5503	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGCMOD FI00730
5510	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGECHO FI00730
5511 to 5512	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
5513	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGEORT FI00730
5514	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
5515	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGFLOC FI00730
5549	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
5590	Wrong length for number dialed	AJDG301
5630	Automatic call unit distant-station-connected time out	FI00700 GNLINK CNGRMTA FI00701 FI00719
5632	Automatic call unit had data-set-ready time out	FI00700 CNGTEL FI00703 CNGDRTY CNGRMTA FI00701 FI00719 GNLINK
5684	Time-out on call-clear-request	FI00704 FI00701 AJDG301 FI00719
5886	Automatic call unit line connection error	FI00704 FI00719 FI00701
5A18	Clear-to-send signal failed to drop on modem interface	FI00704 FI00701 FI00719
5A1C	Clear-to-send signal dropped on modem interface	GNLINK CNGCTSV FI00704 FI00701 FI00719

B003

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5A20	Clear-to-send not active on modem interface	GNGLINK CNGCTSV FI00704 FI00701 FI00719
5A24	Carrier-detect dropped on modem interface	FI00701 FI00704 GNGLINK FI00719
5A54	Time-out; data-set-ready did not drop	FI00704 CNGDSRT FI00701 FI00719
5A58	Time-out; data-set-ready not received	FI00701 FI00704 FI00719 AJDG301
5C68	Procedure error in Licensed Internal Code	AJDG301 FI00730
5E00	Wrong or no external communications cable installed	FI00701 CNGASPT CNGSLPT FI00719
5E01	Call received during dialing procedure	GNGRESC FI00704 FI00701 FI00719
6210	Resource or storage not available	CNGMAXI FI00730
6212, 6214	Communications controller error	FI00730 FI00718
6288	Port not operational	FI00719 AJDG301 CNGSLPT
6320	Abandon-call-retry	FI00700 CNGTEL FI00703 FI00719 FI00702
6322	Abandon-call-retry; not all numbers dialed	CNGTEL FI00703 FI00702 FI00719 FI00730
6870	Automatic call unit power turned off	FI00703 FI00702 FI00719
6890	Data-set-ready dropped on modem interface No action is required if Operations Console is attached.	GNGLINK FI00701 FI00704 FI00719

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C05	I/O card Licensed Internal Code error	FI00730 AJDG301
6C0A	Hardware detected failure	FI00719 FI00718
7200	Communications Configuration	CNGSLPT
7210	Resource or storage not available	CNGMAXI FI00730
7212	Procedure error in Licensed Internal Code	AJDG301 FI00730
7C00	Asynchronous server program ended abnormally	FI00730
7C02	Wrong command sent by Licensed Internal Code	FI00730
7C03	Resource or storage not available	CNGLOAD FI00730 CNGDTRT CNGECHO CNGEORT CNGPRTY
7C04	Wrong internal routing information	FI00730
7C05, 7C09	Error in I/O card Licensed Internal Code	FI00730
8011	IOP activation failed. Modem Country ID parameter in Network Attributes is not set. Use the CHGNETA command to set MDMCNTRYID value to your country ID.	CNGCONF
8013	IOP activation failed. Modem Country ID parameter in Network Attributes is not valid for this adapter. Use the CHGNETA command to change the MDMCNTRYID value to your country ID.	CNGCONF
8020	System log entry only, no service action required	
FFFF	User suspected communications problem.	UNGUPPR

Asynchronous Communications Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
CNGASPT	ACRSRCNAME value in CRTLINASC command	Communications Configuration
CNGBCHR	BITSCHAR value in CRTLINASC command	Communications Configuration
CNGCLBR	CALLNBR value in CRTLINASC command	Communications Configuration
CNGCMOD	CNN value in CRTLINASC command	Communications Configuration
CNGCTSV	CTSTMR value in CRTLINASC command	Communications Configuration

B003

Failing Item	Description	Document Description
CNGCTYP	AUTOANS, AUTODIAL, DIALCMD, SWTCNN, CNN in CRTLINASC	Communications Configuration
CNGDRTY	DIALRTY value in CRTCTLASC command	Communications Configuration
CNGDSRT	DSRDRPTMR value in the CRTLINASC command	Communications Configuration
CNGDTRT	LINESPEED value in CRTLINASC command	Communications Configuration
CNGECHO	ECHO value in CRTLINASC command	Communications Configuration
CNGEORT	EORTBL value in CRTLINASC command	Communications Configuration
CNGFLOC	FLOWCNTL value in CRTLINASC command	Communications Configuration
CNGLBPS	LINESPEED, BITSCHAR, PARITY, STOPBITS values in CRTLINASC	Communications Configuration
CNGLOAD	System processor workload heavy	Communications Configuration
CNGMAXI	MAXBUFFER value in CRTLINASC command	Communications Configuration
CNGMCFL	DUPLEX, CNN, MODEMRATE values in CRTLINASC command	Communications Configuration
CNGPRTY	PARITY value in CRTLINASC command	Communications Configuration
CNGRMTA	RMTANSTMR value in CRTLINASC command	Communications Configuration
CNGSLPT	RSRCNAME value in CRTLINASC command	Communications Configuration
CNGSTOP	STOPBITS value in CRTLINASC command	Communications Configuration
CNGTEL	CNNNBR value in CRTCTLASC command	Communications Configuration
CNGTEMP	No failure found	Communications Configuration
CNGTHRS	THRESHOLD value in CRTLINASC command	Communications Configuration
CNGTMOD	DUPLEX, ECHO, FLOWCNTL value in CRTLINASC command	Communications Configuration
GNGLINK	External devices or network	
GNGRESC	Line or automatic call unit already in use	
UNGUPPR	User suspected communications problem.	

(B006) Common Licensed Internal Code Reference Codes

The common Licensed Internal Code detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1201	I/O processor resource not available A deactivation failed to get a resource controlled by Licensed Internal Code.	AJ EQU00 AJ DG301
1202	Not valid condition in I/O Processor Licensed Internal Code An error in an activation or deactivation occurred.	AJ EQU00 AJ DG301 FI00131
1203	I/O processor resource not available A resource needed to perform a requested function is not available in the Licensed Internal Code.	AJ EQU00 AJ DG301
1204	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code has recovered from a condition that was not expected.	AJ EQU00 AJ DG301 FI00131
1205 to 1206	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	AJ EQU00 FI00131 FI00132
1207	I/O processor resource not available The Licensed Internal Code could not allocate memory resources on the I/O processor card.	AJ EQU00 AJ DG301
1208	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code found a condition that should not have occurred.	AJ EQU00 AJ DG301 FI00131
1209	I/O processor was not ready for interrupt that occurred	AJ EQU00 FI00131
1210	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	
1211	System bus error	FI00131 ANYBUS AJ EQU00 AJ DG301
1212	A permanent I/O processor failure occurred	FI00131 AJ EQU00
1213	System bus error	AJ DG301 AJ EQU00 FI00131
1214 to 1215	I/O processor card or Licensed Internal Code error	FI00131 AJ EQU00
1301	I/O processor resource not available An activation or deactivation failed to get a resource controlled by Licensed Internal Code.	CD AWKLD AJ DGP01 AJ DG301
1302	Not valid condition in I/O Processor Licensed Internal Code An error in an activation or deactivation occurred.	AJ DGP01 AJ DG301 FI00131 FI00132

B006

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1303	I/O processor resource not available A resource needed to perform a requested function is not available in the Licensed Internal Code.	CDAWKLD AJDGP01 AJDG301
1304	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code has recovered from a condition that was not expected.	AJDGP01 AJDG301 FI00131 FI00132
1305 to 1306	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	AJDGP01 FI00131 FI00132
1307	I/O processor resource not available The Licensed Internal Code could not allocate memory resources on the I/O processor card.	AJDGP01 AJDG301 CDAWKLD FI00132
1308	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code found a condition that should not have occurred.	AJDGP01 AJDG301 FI00131
1309	I/O processor was not ready for interrupt that occurred	AJDGP01 FI00131 FI00132 FI01117
1310	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	
1311	System bus error	FI00131 ANYBUS AJDGP01 AJDG301
1312	A permanent I/O processor failure occurred	FI00131 AJDGP01
1313	System bus error	AJDG301 AJDGP01 FI00131
1316	I/O processor card or Licensed Internal Code error	AJDGP01 FI00132 FI00131
1A01	I/O processor resource not available A deactivation failed to get a resource controlled by Licensed Internal Code.	CDAWKLD FI00130 AJDG301
1A02	Not valid condition in I/O Processor Licensed Internal Code An error in an activation or deactivation occurred.	FI00130 FI00131 FI00132
1A03	I/O processor resource not available A resource that is needed to perform a requested function is not available in the Licensed Internal Code.	FI00130 AJDG301 CDAWKLD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1A04	Recovered from condition in Licensed Internal Code. The Licensed Internal Code has recovered from a condition that was not expected.	FI00130 AJDG301 FI00131 FI00132
1A05 to 1A06	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	FI00130 FI00131 FI00132
1A07	I/O processor resource not available The Licensed Internal Code could not allocate memory resources on the I/O processor card.	CDAWKLD FI00132 FI00130 AJDG301
1A08	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code found a condition that should not have occurred.	FI00130 FI00131 FI00132
1A09	Threshold overflow The I/O processor card has detected a threshold of recoverable error conditions. The errors are either wrong interruptions or memory error corrections. If in communications, the line is still running. Note: If a large number of these errors occur during a short time, they may be caused by an electrically noisy environment, a defective communications I/O processor card or modem, or a communications I/O processor code problem.	FI00131 FI00132 FI01117 FI00130
1A10	Error reported to system The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	

Common Licensed Internal Code Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJDGP01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJEQU00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	System bus	Problem Analysis; Symbolic FRU Isolation
CDAWKLD	Too many communications lines in use	

(B070) Reference Codes**Notes:**

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0000	Device no response time-out; temporary error	FI00601 FI00602 FI00610
0001	WS IOP detected error when transmitting data Is the problem intermittent? No Yes ↓ Perform the following procedures: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GAU7777 GAU8888 FI00610 FI00615
0003	WS IOP detected parity error from device Is the problem intermittent? No Yes ↓ Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 498: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GAU7777 FI00610
0004	Device detected parity error from WS IOP Is the problem intermittent? No Yes ↓ Perform the following procedures: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GAU7777 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0005	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00602 FI00601 GAU8888 FI00610 FI00615</p>
0006	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 FI00602 GAU8888 FI00610</p>
0007	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 GAU8888 GAU7777 FI00610</p>
0008	<p>WS IOP detected device power turned off, and then on</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>GAUEEEE FI00601</p>
0009	<p>WS IOP detected wrong device response to start command</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 FI00610</p>
0020	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0021	<p>Device detected not valid value from WS IOP</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0022	<p>Device detected storage or data overrun</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0023	<p>Device detected null or attribute exception error</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 FI00610</p>
0024	<p>Device detected wrong start command from WS IOP</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0025	<p>WS IOP detected wrong exception response from device</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 FI00610</p>

B070

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0026	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 677.	GAU9999 FI00610
0049	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0082	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 677.	FI00601
0090	WS IOP detected no status change from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0091	WS IOP detected busy time-out from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0100	Device no response time-out; temporary error	FI00601 FI00602 FI00610
0101	WS IOP detected error when transmitting data Is the problem intermittent? No Yes ↓ Perform the following procedures: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GAU7777 GAU8888 FI00610 FI00615
0103	WS IOP detected parity error from device Is the problem intermittent? No Yes ↓ Perform the following procedures: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GAU7777 FI00610
0104	Device detected parity error from WS IOP Is the problem intermittent? No Yes ↓ Perform the following procedures: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 GAU7777 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0105	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00602 FI00601 GAU8888 FI00610 FI00615</p>
0106	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 FI00602 GAU8888 FI00610</p>
0107	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 GAU8888 GAU7777 FI00610</p>
0108	<p>WS IOP detected device power turned off, and then on</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>GAUEEEE FI00601</p>
0109	<p>WS IOP detected wrong device response to start command</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 FI00610</p>
0111	<p>WS IOP detected wrong keyboard scan code from display</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0120	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0121	<p>Device detected not valid value from WS IOP</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0122	<p>Device detected storage or data overrun</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>
0123	<p>Device detected null or attribute exception error</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 FI00610</p>
0124	<p>Device detected wrong start command from WS IOP</p> <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00601 AJLYD01 FI00610</p>

B070

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0125	WS IOP detected wrong exception response from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0126	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 677.	GAU9999 FI00610
0149	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 677.	FI00601 FI00610
0170	WS IOP detected error downloading printer definition table	AJDG301 FI00601
0171	WS IOP detected error downloading printer definition table	FI00601 AJLYD01
0172	WS IOP detected error downloading printer definition table	CAUPDT AJDG301 FI00601
0173	WS IOP detected error downloading printer definition table	CAUPDT FI00601
0174	WS IOP detected error unloading printer definition table	FI00601 AJLYD01
0175	WS IOP detected device configuration error	FI00601 AJLYD01
0176 to 0177	WS IOP detected error downloading LIC to device	GAUDMCC FI00601
0181	Wrong magnetic stripe reader response Perform "TWSC-PIP1" on page 677.	FI00605 MAUFFFF FI00601 FI00610
0182	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 677.	FI00601
0183	WS IOP detected wrong display size value Perform "TWSC-PIP1" on page 677.	FI00601
0184	WS IOP detected wrong keyboard identification Verify that the correct keyboard is attached correctly to the workstation. If the correct keyboard is attached correctly to the workstation, perform "TWSC-PIP1" on page 677.	FI00601
0189	Wrong magnetic stripe reader or light pen status Perform "TWSC-PIP1" on page 677.	FI00601 FI00605 FI00607 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0190	<p>WS IOP detected no status change from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	FI00601 FI00610 GAU7777
0191	<p>WS IOP detected busy time-out from device</p> <p>Perform "TWSC-PIP1" on page 677.</p>	FI00601 FI00610
0200	<p>Device no response time-out; temporary error</p>	FI00604 FI00602 FI00610
0201	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	FI00602 FI00604 GAU7777 GAU8888 FI00610 FI00615
0203	<p>WS IOP detected parity error from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	FI00602 FI00604 GAU7777 FI00610
0204	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	FI00602 FI00604 GAU7777 FI00610

B070

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0205	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00602 FI00604 GAU7777 FI00610 FI00615</p>
0206	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00604 FI00602 GAU8888 FI00610</p>
0207	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p>No Yes</p> <p>↓ Perform the following procedures:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 500 2. "INT-PIP14 Station Protectors" on page 506 <p>Perform "TWSC-PIP1" on page 677.</p>	<p>FI00604 GAU8888 GAU7777 FI00610</p>
0208	<p>WS IOP detected device power turned off, and then on</p>	<p>GAUEEEE FI00604</p>
0209	<p>WS IOP detected wrong device response to start command</p>	<p>FI00604 FI00610</p>
0210	<p>Printer detected equipment error</p>	<p>FI00604</p>
0211	<p>Printer detected equipment error</p>	<p>FI00604 AJLYD01 FI00610</p>
0212	<p>Printer detected equipment error</p>	<p>FI00604</p>
0220	<p>Device detected wrong command or device ID from WS IOP</p>	<p>FI00604 AJLYD01 FI00610</p>
0221	<p>Device detected not valid value from WS IOP</p>	<p>FI00604 AJLYD01 FI00610</p>
0222	<p>Device detected storage or data overrun</p>	<p>FI00604 AJLYD01 FI00610</p>
0223	<p>WS IOP detected start command to printer was lost</p>	<p>FI00604 FI00602 FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0224	Device detected wrong start command from WS IOP	FI00604 AJLYD01 FI00610
0225	WS IOP detected wrong exception response from device	FI00604 FI00610
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 FI00610
0290	WS IOP detected no status change from device	FI00604 FI00610
0291	WS IOP detected busy time-out from device	FI00604 FI00610
A000	Too many devices active on the workstation IOP This error occurs if you attempted to activate more workstations than allowed. Switch off power to (or remove) one or more of the display stations (except for the console) that are attached to this workstation I/O processor. Perform an initial program load (IPL) from the control panel to correct the problem. Refer to the local workstation diagrams for the location of workstations if necessary.	GAUBBBB
B000	WS IOP fails to report part, model and serial number Perform "TWSC-PIP1" on page 677.	FI00610
C000	WS IOP error not known	AJLYD01 FI00610
D000	Work Station IOA start-up test error	FI00610
D010	WS IOP storage failure corrected Perform "TWSC-PIP1" on page 677.	FI00610
D011	WS IOP card storage failure	FI00610
D021	WS IOP detected errors on all cables	FI00602 FI00601 FI00610 FI00615
D022	WS IOP parity errors detected on all cables	FI00602 FI00601 FI00610 FI00615
D023	WS IOP detected errors on some, but not all cables Perform "TWSC-PIP1" on page 677.	FI00602 FI00601 FI00610
E000	WS IOP or IOA error during working operation	AJLYD01 FI00610
F000	WS IOP or IOA operating system program error	AJLYD01

Failing Items

Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 341.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 362.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 374.

Failing Item	Description	Document Description
AJDG301	Licensed program	Service Functions; APAR or LICTR
AJDGP01	Licensed Internal Code	Service Functions; APAR or LICTR
AJLYD01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
CAUPDT	Printer definition table	Communications Configuration
GAU7777	Electrical interference	
GAU8888	Other work station on port is failing	
GAU9999	Error occurred with pass-through command	
GAUBBBB	Too many work stations are active on the workstation IOP	
GAUDMCC	Device Licensed Internal Code change	
GAUEEEE	Active device turned off	
MAUFFFF	Magnetic stripe	Refer to I/O device service information
UAUFF00	User believes there is a problem	

(B075) Workstation Adapter Console Reference Codes

The workstation adapter console detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 374 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0101	WS IOP detected error when transmitting data Perform “WSAC-PIP1” on page 689.	FI00601 GXC7777 FI00631 FI00730

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0103	WS IOP detected parity error from device Perform "WSAC-PIP1" on page 689.	FI00601 GXC7777 FI00631 FI00730
0104	Device detected parity error from WS IOP Perform "WSAC-PIP1" on page 689.	FI00601 GXC7777 FI00631 FI00730
0105	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 689.	FI00601 GXC7777 FI00631 FI00730
0106	WS IOP detected wrong data from device Perform "WSAC-PIP1" on page 689.	FI00601 FI00631 GXC7777 FI00730
0107	WS IOP detected wrong address from device Perform "WSAC-PIP1" on page 689.	FI00601 GXC7777 FI00730
0108	WS IOP detected device power turned off, and then on Perform "WSAC-PIP1" on page 689.	GXCEEEE FI00601
0109	WS IOP detected wrong device response to start command Perform "WSAC-PIP1" on page 689.	FI00601 FI00615
0111	WS IOP detected wrong keyboard scan code from display Perform "WSAC-PIP1" on page 689.	FI00601 FI00730
0120	Device detected wrong command or device ID from WS IOP Perform "WSAC-PIP1" on page 689.	FI00601 FI00730
0121	Device detected not valid value from WS IOP Perform "WSAC-PIP1" on page 689.	FI00601 FI00730
0122	Device detected storage or data overrun Perform "WSAC-PIP1" on page 689.	FI00601 FI00730
0123	Device detected null or attribute exception error Perform "WSAC-PIP1" on page 689.	FI00601 FI00730
0124	Device detected wrong start command from WS IOP Perform "WSAC-PIP1" on page 689.	FI00601 FI00730
0125	WS IOP detected wrong exception response from device Perform "WSAC-PIP1" on page 689.	FI00601 FI00730
0126	WS IOP detected not valid pass-through command Perform "WSAC-PIP1" on page 689.	GXC9999 FI00730
0149	WS IOP detected wrong request or response from device Perform "WSAC-PIP1" on page 689.	FI00601 FI00730

B075

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0190	WS IOP detected no status change from device Perform "WSAC-PIP1" on page 689.	FI00601 GXC7777 FI00730
0191	WS IOP detected busy time-out from device Perform "WSAC-PIP1" on page 689.	FI00601 FI00730
0201	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 689.	FI00604 GXC7777 FI00631 FI00730
0203	WS IOP detected parity error from device Perform "WSAC-PIP1" on page 689.	FI00604 GXC7777 FI00631 FI00730
0204	Device detected parity error from WS IOP Perform "WSAC-PIP1" on page 689.	FI00604 GXC7777 FI00631 FI00730
0205	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 689.	FI00604 GXC7777 FI00631 FI00730
0206	WS IOP detected wrong data from device Perform "WSAC-PIP1" on page 689.	FI00604 FI00631 FI00730
0207	WS IOP detected wrong address from device Perform "WSAC-PIP1" on page 689.	FI00604 GXC7777 FI00730
0208	WS IOP detected device power turned off, and then on	GXC7777 FI00604
0209	WS IOP detected wrong device response to start command	FI00604 FI00730
0211	Printer detected equipment error	FI00604 FI00730
0221	Device detected not valid value from WS IOP	FI00604 FI00730
0224	Device detected wrong start command from WS IOP	FI00604 FI00730
0225	WS IOP detected wrong exception response from device	FI00604 FI00730
0290	WS IOP detected no status change from device	FI00604 FI00730
0291	WS IOP detected busy time-out from device	FI00604 FI00730
5000	Wrong command sent by Licensed Internal Code	AJDG301
5001	Procedure error in Licensed Internal Code	AJDG301
5002	Procedure error in Licensed Internal Code Procedure error in machine instructions	CXCTEMP AJDG301
5006	Procedure error in Licensed Internal Code	AJDG301

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5007	Procedure error in Licensed Internal Code	AJDG301 CXCMTA
5009	Incorrect command value sent by Licensed Internal Code	AJDG301
500A	Procedure error in Licensed Internal Code	AJDG301
500D	Incorrect command value sent by Licensed Internal Code	AJDG301 CXCMAI
5022	Procedure error in Licensed Internal Code	AJDG301
5206	Communications controller storage not available	CXCBUSY
56EA	Clear-to-send signal dropped on modem interface	GXCLINK FI00704 CXCCTSV FI00719 FI00701
56ED	Data-set-ready turn-on time-out on modem interface	FI00701 FI00704 FI00719 AJLAG01
56F1	Data-set-ready dropped on modem interface	FI00704 FI00701 GXCLINK FI00719
5710	Nonproductive receive time-out while receiving from remote	CXCNPRT FI00700 FI00705 FI00704 GXCLINK FI00701 FI00719
5712	No data received from remote equipment; time-out	AJLAG01 CXCENCD CXCINAT GXCLINK FI00704 FI00705 FI00700 CXCSTAD FI00701 CXCDTAR FI00719 CXCMTY
5715	Remote equipment did not respond causing an idle-time-out	GXCLINK CXCRPTO FI00701 FI00704 CXCMTY FI00705 CXCENCD FI00700 CXCDTAR FI00719

B075

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5718	Retry limit reached for sending frames to remote equipment	GXCLINK FI00705 FI00704 FI00700 CXCMRTY FI00719 FI00701
5719	Retry limit reached for sending frames to remote equipment	FI00700
5720	Retry limit reached for sending poll frame to remote	FI00700 CXCMODU
5721	Could not send frame to remote equipment; local problem	FI00704 CXCDTAR FI00701 FI00719 FI00730
5722	Wrong command value sent by OS/400 licensed program	AJLAG01 CXCSTAD
A000	Too many devices active on the workstation IOP	GXCBBBB
B000	WS IOP fails to report part, model and serial number Perform "WSAC-PIP1" on page 689.	FI00615
C000, D000	WS IOP error not known	AJLAG01
D001	Wrong or no external communications cable installed	FI00631 AJLAG01
F003	WS IOA buffer utilization threshold exceeded temporarily	AJLAG01
FFFF	User believes there is a problem Reference code FFFF is assigned by the ANZPRB (Analyze Problems) for user-detected errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.	UXCFF00

Workstation Adapter Console Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJLAG01	I/O adapter Licensed Internal Code	Service Functions; APAR or LICTR
CXCBUSY	Too many communications lines in use	Communications Configuration
CXCCONF	Configuration or OS/400 licensed program	Communications Configuration
CXCCPTO	CNNPOLLTMR value in CRTLNSDLC command	Communications Configuration
CXCCTSV	CTSTMR value in CRTLNSDLC command	Communications Configuration
CXCDTAR	LINESPEED value in CRTLNSDLC command	Communications Configuration

Failing Item	Description	Document Description
CXCENCD	NRZI value in CRTLNSDLC command	Communications Configuration
CXCINAT	INACTTMR value in CRTLNSDLC command	Communications Configuration
CXCMAXI	MAXFRAME value in CRTLNSDLC command	Communications Configuration
CXCMODU	MODULUS value in CRTLNSDLC command	Communications Configuration
CXCMRTY	FRAMERTY value in CRTLNSDLC command	Communications Configuration
CXCMSTA	MAXCTL value in CRTLNSDLC command	Communications Configuration
CXCNPRT	NPRDRCVTMR value in CRTLNSDLC command	Communications Configuration
CXCRPTO	IDLTM value in CRTLNSDLC command	Communications Configuration
CXCSNDT	SHMNODE value in CRTLNSDLC command	Communications Configuration
CXCSTAD	STNADR value in CRTCTL____command	Communications Configuration
CXCTEMP	No failure found	Communications Configuration
GXC7777	Electrical interference	
GXC8888	Other work station on port is failing	
GXC9999	Error occurred with pass-through command	
GXCBBBB	Too many work stations are active on the workstation IOP	
GXCCEEEE	Active device turned off	
GXCCLINK	Communications network equipment	
UXCFF00	User believes there is a problem	

(B2xx) Logical Partition Reference Codes

The code that logically partitions the system detected an error in the logical partition. These reference codes are posted in the *Partition Status* screens under the SST/DST "Work with system partitions" option.

1. Characters 3 and 4 of word 1 are the partition ID of the logical partition with the problem.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

B2xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1210	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Look in the Primary partition's Service Action Log for a B6005090 during the secondary partition IPL. Use that SRC and go to "Chapter 2. Unit Reference Codes" on page 59.</p> <p>If you do not find a B6005090 in the Service Action Log of the Primary partition then look for any SRC which was logged during the IPL of the Primary partition. Search the Service Action Log first and if you do not find an SRC there then search the Product Activity Log. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.</p>	FI00580
1220	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Initiate a Primary partition main storage dump then contact your next level of support.</p>	FI00099
1230	<p>A problem occurred during the IPL of a secondary partition</p> <p>See the <i>AS/400 Service Functions</i> information.</p> <p>This is a partitioning configuration problem. The partition is lacking the necessary resources to IPL. Refer the customer to their software support.</p>	FI00099 LPARCFG
1250	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>The primary partition's IPL mode does not allow the secondary partition to IPL in the mode the secondary partition attempted to IPL in. If the primary partition is IPL'd in 'C' mode then secondary partitions can only IPL in 'C' mode. Other modes are not allowed.</p> <p>IPL the primary partition in either 'A' mode or 'B'. Then retry the IPL of the secondary partition.</p>	LPARCFG
1310	<p>A problem occurred during the IPL of a secondary partition</p> <p>No alternate (D-mode) IPL IOP selected. The IPL will attempt to continue, but there may not be enough information to find the correct D-mode loadsource.</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Have the customer configure an alternate IPL IOP for the secondary partition. Then retry the secondary partition IPL.</p>	LPARCFG

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1320	<p>A problem occurred during the IPL of a secondary partition</p> <p>No default load source IOP selected for an A/B-mode IPL. The IPL will attempt to continue, but there may not be enough information to find the correct load-source.</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Have the customer configure a loadsource IOP for the secondary partition. Then retry the secondary partition IPL.</p>	LPARCFG
3110	<p>A problem occurred during the IPL of a secondary partition</p> <p>Contact your next level of support.</p>	LPARSUP
3113	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Look in the Service Action Log of the Primary partition for B600xxxx SRCs that were logged when the secondary partition was IPLing. Correct the B600xxxx problem, then retry the secondary partition IPL.</p> <p>If there are no B600xxxx SRCs in the Service Action Log of the Primary partition from the secondary partition's IPL then contact your next level of support.</p>	LPARSUP
3114	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Look in the Service Action Log of the Primary partition for B600xxxx SRCs with the same bus/board/card numbers identified in the B2xx xxxx SRC words. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.</p> <p>The B2xx xxxx SRC Format is Word 1: B2xx3114, Word 3: Bus, Word 4: Board, Word 5: Card.</p>	FI00096
3120	<p>A problem occurred during the IPL of a secondary partition</p> <p>Retry count exceeded. Contact your next level of support.</p>	LPARSUP
3123	<p>A problem occurred during the IPL of a secondary partition</p> <p>Due to the multi-adapter bridge configuration the IOA with the load source device for the secondary partition does not belong to the IOP it was assigned to when the secondary partition was configured.</p> <p>Contact your next level of support.</p>	LPARSUP
3125	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information on logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Primary partition main store utilization problem. The Primary partition code could not obtain a segment of main storage within the Primary partition's main store to use for managing the creation of a secondary partition.</p>	LPARCFG

B2xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3128	<p>A problem occurred during the IPL of a secondary partition</p> <p>An unexpected failure return code was returned when attempting to query the IOA slots that are assigned to an IOP.</p>	FI00099
3130	<p>A problem occurred during the IPL of a secondary partition</p> <p>If word 3 is zero, then this SRC is informational and can be ignored.</p> <p>Otherwise there is a problem in the Primary partition. A non-zero bus number has no associated bus object.</p> <p>Contact your next level of support.</p>	LPARSUP
3135	<p>A problem occurred during the IPL of a secondary partition</p> <p>An unknown bus type was detected.</p>	FI00099
3140	<p>A problem occurred during the IPL of a secondary partition</p> <p>The load-source IOP is not owned by the secondary partition. This is a configuration problem in the secondary partition. Have the customer re-configure the partition to have the intended load-source IOP.</p> <p>If there is not a configuration problem then contact your next level of support.</p>	LPARSUP
3200	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Look for an SRC in the Service Action Log of the Primary partition logged at the time the secondary partition was IPLing. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.</p>	FI00098 FI00096
4310	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Initiate a Primary partition main storage dump and contact your next level of support.</p>	FI00099
4311	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Initiate a primary partition main storage dump and contact your next level of support.</p>	FI00099
4312	<p>A problem occurred during the IPL of a secondary partition</p> <p>Received an unexpected Direct Select Address.</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Initiate a Primary partition main storage dump and contact your next level of support.</p>	FI00099

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4320	<p>A problem occurred during the IPL of a secondary partition</p> <p>Configuration error. Expected a disk unit and got some other kind of adapter or device.</p> <p>See the <i>AS/400 Service Functions</i> information.</p>	LPARSUP
4321	<p>A problem occurred during the IPL of a secondary partition</p> <p>Configuration error. Expected a tape or optical unit and received some other kind of adapter or device.</p> <p>See the <i>AS/400 Service Functions</i> information.</p>	LPARSUP
5106	<p>Problem detected during main storage dump</p> <p>Not enough space in the Primary partition's ASP to contain the dump.</p> <p>Contact your next level of support.</p>	LPARSUP
5114	<p>Problem detected during main storage dump</p> <p>There is not enough space on the secondary partition's load-source to contain the dump.</p>	FI00099
5115	<p>Problem detected during main storage dump</p> <p>There was an error reading the secondary partition's main storage dump from the secondary partition's load-source into the Primary partition's main storage.</p>	LPARSUP
5117	<p>Problem detected during main storage dump</p> <p>A main storage dump has occurred but cannot be written to the load source device because a valid dump already exists.</p> <p>Contact your next level of support.</p>	LPARSUP
5121, 5135, 5145	<p>Problem detected during main storage dump</p> <p>There was an error writing the secondary partition's main storage dump to the secondary partition's load-source.</p>	LPARSUP
5148	<p>Problem detected during main storage dump</p> <p>An error occurred while doing a main storage dump that would have caused another main storage dump.</p> <p>Contact your next level of support.</p>	LPARSUP
6012	<p>A problem occurred during the IPL of a secondary partition</p> <p>The secondary partition's LID failed to completely load into the partition's mainstore area.</p> <p>Contact your next level of support.</p>	LPARSUP
6015	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>The load-source media is corrupted or invalid. A SLIP install of the secondary partition is required to recover.</p>	MEDIA FI00099

B2xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6025	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>This is a problem with the load-source media being corrupt or invalid. A SLIP install of the secondary partition is required to recover.</p>	MEDIA FI00099
6027	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>A failure occurred when allocating memory for an internal object used for LID load operations.</p>	LPARCFG
6110	<p>A problem occurred during the IPL of a secondary partition</p> <p>Error on load-source device.</p> <p>See the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Record the SRC. The Direct Select Address of the device IOP in the SRC. Word 3: Bus, Word 4: Board, Word 5: Card.</p>	FI00098
7111	<p>A problem occurred during the IPL of a secondary partition</p> <p>Load-source device driver does not point to an IOP hardware driver.</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Initiate a Primary partition main storage dump, and contact your next level of support.</p>	FI00099
7115	<p>A problem occurred during the IPL of a secondary partition</p> <p>The IOP identified in word 5 is not reporting to the secondary partition. Removing an IOP hardware driver (not the loadsource for the current IPL) from the Primary partition failed. The IPL will continue, but the secondary partition will not be able to establish connections to this IOP.</p> <p>Word 3: Bus, Word 4: Board, Word 5: Card.</p>	FI00099 LPARSUP
7117	<p>A problem occurred during the IPL of a secondary partition</p> <p>The IOP identified in word 5 is not reporting to the secondary partition. Removing the IOP hardware driver that is associated with the current load-source has failed. The IPL will fail.</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Record the SRC. The location of the IOP is in SRC words 3, 4 and 5. Word 3: Bus, Word 4: Board, Word 5: Card.</p>	FI00099 LPARSUP
8105	<p>A problem occurred during the IPL of a secondary partition</p> <p>There was a failure loading the VPD areas of the secondary partition. The load-source media has been corrupted. A SLIP install of the partition is required.</p>	MEDIA FI00099

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
8107	A problem occurred during the IPL of a secondary partition There was a problem getting a segment of main storage in the Primary partition's main store.	FI00099
8115	A problem occurred during the IPL of a secondary partition There was a low level partition to partition communication failure. A secondary partition re-IPL is necessary to recover. If this SRC appears again when the partition is re-IPLed contact your next level of support.	LPARSUP
F000	A problem occurred during the IPL of a secondary partition An operation has timed out. Look in the Service Action Log of the Primary partition for a failure during the last IPL of the secondary partition. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59. If you do not find a failure in the Service Action Log from the last IPL of the partition then record all words of this SRC and call your next level of support. See the <i>AS/400 Service Functions</i> information.	LPARSUP
F001	A problem occurred during the IPL of a secondary partition A bus time out occurred on a command to the loadsource IOP.	FI00098 FI00096
F002	A problem occurred during the IPL of a secondary partition Timeout waiting for the load source hardware driver. Initiate a main store dump of secondary partition.	LPARSUP
F003	A problem occurred during the IPL of a secondary partition Partition processors did not start LIC within the timeout window.	FI00099
F004 to F005	A problem occurred during power off of secondary partition. From the "Work with partition status screen" the primary partition issued a power down message to the secondary partition but the message response from the secondary timed out. Initiate a main store dump of the secondary partition.	FI00099
F006	A problem occurred during the IPL of a secondary partition The LID load operation for the secondary partition's IPL timed out.	FI00098 FI00096

(B2xx) Logical Partition Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 362.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 374.

Failing Item	Description	Document Description
LPARCFG	Configuration error	Problem Analysis; Symbolic FRU Isolation
LPARSUP	Call your next level of support for assistance	Problem Analysis; Symbolic FRU Isolation

B2xx

Failing Item	Description	Document Description
MEDIA	Attached storage device	Problem Analysis; Symbolic FRU Isolation

(B455, B460) System Processor Reference Codes

The system processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Look at functions 14-3 and 15-3 for more reference codes. Each is four characters in length. There may be from one to five unit reference codes contained in these words.

For example:

- Word 11 — B4xx rrrr
- Word 14 — rrrr rrrr
- Word 15 — rrrr rrrr

This example shows a total of five reference codes for this failure. The **rrrr** signifies a single reference code. Each reference code has only one FRU associated with it.

For a given reference code, the first character is indicative of the FRU's priority level. A "4" signifies a high priority while a "6" indicates a low priority. For example, a reference code of type 4xxx has a high probability of solving to the problem, whereas a reference code of type 6xxx has a lower probability of doing so.

3. Find the unit reference code in the following table.

If the unit reference code table shows a main storage card (FI0003x) or a system processor card (PROCARD) as a failing item and no replacement part is immediately available, performing an IPL may result in continued system operation with less performance.

See "System Unit Locations and Addresses" on page 695 for the physical mapping of the information in the *Location* column.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 341 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 362 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 374 to determine the part number.

If no slot number is given in the location column of the reference code table, perform an IPL and check for a new reference code. If there is a new reference code, continue the repair action using the new reference code. If the same reference code, with no location, appears, contact your next level of support.

Models 64x, 65x, 73x, 74x, S3x, S4x, and SBx System Processor Reference Codes

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4400	System processor card failure The failing item associated with this reference code has a high probability of resolving the problem.	PROCARD	M08
4401	System processor card failure The failing item associated with this reference code has a high probability of resolving the problem.	PROCARD	M09
4402	System processor card failure The failing item associated with this reference code has a high probability of resolving the problem.	PROCARD	M20
4403	System processor card failure The failing item associated with this reference code has a high probability of resolving the problem.	PROCARD	ANY
4410	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M01
4411	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02
4412	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03
4413	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04
4414	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05
4415	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M06
4416	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M10
4417	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M11
4418	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M12

B455, B460

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4419	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M13
441A	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M14
441B	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M15
441C	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M16
441D	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M17
441E	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M18
441F	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M19
4420	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M21
4421	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M22
4422	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M23
4423	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M24
4430	Wrong main storage configuration detected The failing item associated with this reference code has a high probability of resolving the problem.	MSCONFG	ANY
4435	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	ANY

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4440	Bus expansion card The failing item associated with this reference code has a high probability of resolving the problem.	FI00015	S06
4441	Bus expansion card The failing item associated with this reference code has a high probability of resolving the problem.	FI00015	S05
4442	Bus expansion card The failing item associated with this reference code has a high probability of resolving the problem.	FI00015	S04
4443	Bus expansion card The failing item associated with this reference code has a high probability of resolving the problem.	FI00015	S0X
4444	Bus expansion card The failing item associated with this reference code has a high probability of resolving the problem.	FI00015	S09
4445	Bus expansion card The failing item associated with this reference code has a high probability of resolving the problem.	FI00015	S07
4446	Bus expansion card The failing item associated with this reference code has a high probability of resolving the problem.	FI00015	S10
4450	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	6C
4451	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	6B
4452	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	6A
4453	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	6X
4454	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	5C
4455	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	5B

B455, B460

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4456	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	5A
4457	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	5X
4458	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	4C
4459	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	4B
445A	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	4A
445B	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	4X
4460	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	9C
4461	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	9B
4462	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	9A
4463	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	9X
4464	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	7C
4465	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	7B
4466	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	7A

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4467	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	7X
4468	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	10C
4469	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	10B
446A	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	10A
446B	Optical link on Bus Expansion Adapter card failed The failing item associated with the reference code has a high probability of resolving the problem.	FI00017	10X
4470 to 4473	Card enclosure or backplane The failing item associated with this reference code has a high probability of resolving the problem.	FI00045	
4480	Clock Card Failure The failing item associated with this reference code has a high probability of resolving the problem.	CLKCARD	M07
4490	Service processor Licensed Internal Code The failing item associated with this reference code has a high probability of resolving the problem.	AJDGP01	
4491	Licensed Internal Code error The failing item associated with this reference code has a high probability of resolving the problem.	AJDG301	
4492	Service processor Licensed Internal Code The failing item associated with this reference code has a high probability of resolving the problem.	AJDGP01	
44A0	Control panel The failing item associated with this reference code has a high probability of resolving the problem.	CTLPNL	
4A00	Call your next level of support for assistance Save all data for your next level of support.	0000000	ANY
4A0C	Not valid system configuration detected The failing item associated with this reference code has a high probability of resolving the problem.	PROCCFG	ANY

B455, B460

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6400	System processor card failure The failing item associated with this reference code has a low probability of resolving the problem.	PROCARD	M08
6401	System processor card failure The failing item associated with this reference code has a low probability of resolving the problem.	PROCARD	M09
6402	System processor card failure The failing item associated with this reference code has a low probability of resolving the problem.	PROCARD	M20
6403	System processor card failure The failing item associated with this reference code has a low probability of resolving the problem.	PROCARD	ANY
6410	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M01
6411	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02
6412	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03
6413	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04
6414	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05
6415	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M06
6416	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M10
6417	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M11
6418	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M12

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6419	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M13
641A	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M14
641B	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M15
641C	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M16
641D	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M17
641E	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M18
641F	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M19
6420	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M21
6421	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M22
6422	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M23
6423	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M24
6430	Wrong main storage configuration detected The failing item associated with this reference code has a low probability of resolving the problem.	MSCONFG	ANY
6435	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	ANY

B455, B460

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6440	Bus expansion card The failing item associated with this reference code has a low probability of resolving the problem.	FI00015	S06
6441	Bus expansion card The failing item associated with this reference code has a low probability of resolving the problem.	FI00015	S05
6442	Bus expansion card The failing item associated with this reference code has a low probability of resolving the problem.	FI00015	S04
6443	Bus expansion card The failing item associated with this reference code has a low probability of resolving the problem.	FI00015	S0X
6444	Bus expansion card The failing item associated with this reference code has a low probability of resolving the problem.	FI00015	S09
6445	Bus expansion card The failing item associated with this reference code has a low probability of resolving the problem.	FI00015	S07
6446	Bus expansion card The failing item associated with this reference code has a low probability of resolving the problem.	FI00015	S10
6450	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	6C
6451	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	6B
6452	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	6A
6453	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	6X
6454	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	5C
6455	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	5B

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6456	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	5A
6457	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	5X
6458	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	4C
6459	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	4B
645A	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	4A
645B	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	4X
6460	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	9C
6461	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	9B
6462	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	9A
6463	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	9X
6464	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	7C
6465	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	7B
6466	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	7A

B455, B460

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6467	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	7X
6468	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	10C
6469	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	10B
646A	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	10A
646B	Optical link on Bus Expansion Adapter card failed The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	10X
6470 to 6473	Card enclosure or backplane The failing item associated with this reference code has a low probability of resolving the problem.	FI00045	
6480	Clock Card Failure The failing item associated with this reference code has a low probability of resolving the problem.	CLKCARD	M07
6490	Service processor Licensed Internal Code The failing item associated with this reference code has a low probability of resolving the problem.	AJDGP01	
6491	Licensed Internal Code error The failing item associated with this reference code has a low probability of resolving the problem.	AJDG301	
6492	Service processor Licensed Internal Code The failing item associated with this reference code has a low probability of resolving the problem.	AJDGP01	
64A0	Control panel The failing item associated with this reference code has a low probability of resolving the problem.	CTLPNL	
6A00	Call your next level of support for assistance Save all data for your next level of support.	0000000	ANY

Models 64x, 65x, 73x, 74x, S3x, S4x, and SBx System Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 341.

2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 362.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 374.

Failing Item	Description	Document Description
0000000	Call your next level of support for assistance	Call your next level of support for assistance
AJDG301	Licensed Internal Code error	Repair and Parts; removal and installation procedures
AJDGP01	Licensed Internal Code error	Repair and Parts; removal and installation procedures
AJDGP01	Service processor Licensed Internal Code	Repair and Parts; removal and installation procedures
CLKCARD	Clock Card Failure	Problem Analysis; Symbolic FRU Isolation
CTLPNL	Control panel	Problem Analysis; Symbolic FRU Isolation
MSCONFG	Wrong main storage configuration detected	Problem Analysis; Symbolic FRU Isolation
PROCARD	System processor card	Problem Analysis; Symbolic FRU Isolation
PROCARD	System processor card	Problem Analysis; Symbolic FRU Isolation
PROCARD	System processor card	Problem Analysis; Symbolic FRU Isolation
PROCARD	System processor card	Problem Analysis; Symbolic FRU Isolation
PROCCFG	Not valid system configuration detected	Problem Analysis; Symbolic FRU Isolation

B455, B460

Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation

Failing Item (FI) Code Table

This table is used to find field replaceable unit (FRU) part numbers identified by a failing item code. If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00010	<p>FI00010 indicates that a system processor card is the failing item.</p> <p>See the symbolic fru "PROCARD" on page 407.</p>
FI00015	<p>FI00015 indicates that a bus expansion adapter card in the system unit is the failing item.</p> <p>See "System Unit Locations and Addresses" on page 695 for the bus expansion adapter card locations.</p> <p>For location and type of the failing item, use the system model and the following reference code information:</p> <ul style="list-style-type: none"> • For Models 640, 730 and S30: <ul style="list-style-type: none"> – Refcode 4440 – Location S06 • 2696 – Refcode 4441 – Location S05 • 2695 – Refcode 4442 – Location S04 • 2695 – Refcode 4443 – unknown • For Models 650, 740, S40, and SB1: <ul style="list-style-type: none"> – Refcode 4443 – unknown – Refcode 4444 – Location S09 • 2696 – Refcode 4445 – Location S07 • 2695 – Refcode 4446 – Location S10 • 2695
FI00017	<p>FI00017 indicates that the optical link card is the failing item.</p> <p>Read the slot number in the <i>Location</i> column of the reference code table. If no location is listed, the failing item may be any one of the optical link cards.</p> <p>Use the system configuration list printout or read the optical link card latch to determine the optical link card type.</p>
FI00020	See FI00120.
FI00021	<p>FI00021 indicates that the multiple function I/O processor (MFIOP) is the failing item.</p> <p>Use the MFIOP type to determine the part number.</p>
FI00022	<p>FI00022 indicates that the Licensed Internal Code for the service processor may be the failing item.</p> <p>Ask your next level of support for assistance.</p>

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00030, FI00037	<p>FI00030 and FI00037 indicate that a main storage card in any main storage card slot may be the failing item.</p> <p>Read the slot number in the <i>Location</i> column of the reference code table. If no location is listed, the failing item may be any one of the main storage cards.</p> <p>Use the system configuration list printout and the following 4-digit type numbers to identify the type of the failing main storage card.</p> <p>Read "Important Continuously Powered Main Storage (CPM) Information" on page 757 before removing or replacing any main storage card.</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. Main storage expansion is identified in the printout by 4-digit type numbers. 2. If a replacement main storage card is not immediately available, performing an IPL may result in continued system operation with less main storage and performance. <p>The failing item may be one of the following types: •3180• 3188 • 3189 • 3190 • 3191 • 3192 •3193• 3194</p>
FI00040	See the symbolic FRU "BACKPLN" on page 376.
FI00045	<p>FI00045 indicates the backplane is the failing item.</p> <p>Determine the system type and system processor feature code by performing one of the following:</p> <ul style="list-style-type: none"> • Select function 20 (System type, model, and feature code) on the control panel and look at the four rightmost characters. • Look at the system type and processor feature code printed on the system configuration list. <ul style="list-style-type: none"> – The failing backplane has type 2823 if function 20-3 is: <ul style="list-style-type: none"> - Model S30 with any of the following feature codes: 2260, 2321, or 2322. - Model 730 with any of the following feature codes: FC 2C6C, 2C6D, 2C6E, 2C6F, or 2D6A – The failing backplane has type 2828 if function 20-3 is: <ul style="list-style-type: none"> - Model S30 with any of the following feature codes: 2257, 2258, 2259, or 2320 - Model 640 with any of the following feature codes: 2237, 2238, or 2239 - Model 730 with any of the following feature codes: FC 2A6x, 2B6x, 2C6A, 2C6B – The failing backplane has type 2829 if function 20-3 is: <ul style="list-style-type: none"> - Model 650 with any of the following feature codes: 2188, 2189, 2240, or 2243 - Model 740 with any feature code - Model S40 with any of the following feature codes: 2207, 2208, 2256, 2261, 2340, or 2341 - Model SB1 with any of the following feature codes: 2310, 2311, 2312, or 2313 <p>See the symbolic FRU "BACKPLN" on page 376.</p>
FI00047	<p>FI00047 indicates the clock card is the failing item.</p> <p>See the symbolic FRU "CLKCARD" on page 386.</p>
FI00050	See FI00060
FI00055	<p>FI00055 indicates that a primary optical link cable is the failing item.</p> <p>This is either the optical bus cable for the bus you are working with or its paired bus cable on the optical link card.</p>

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00056	FI00056 indicates that any optical bus cable or a missing optical bus wrap connector is the failing item.
FI00057	<p>FI00057 indicates that the secondary optical link cable is the failing item.</p> <p>This is the optical cable that runs between the bus expansion adapter cards in two separate expansion units.</p>
FI00060, FI00062, FI00065	<p>FI00060, FI00062, and FI00065 indicate that any card, cable, or card enclosure connected to the failing bus may be the failing item.</p> <p>Perform "BUS-PIP1" on page 443 to determine the failing item. Use the following list to help in problem analysis. For details on the card type or part number, see "Type, Model, and Part Number List" on page 362.</p> <ul style="list-style-type: none"> • Any I/O adapter • Any I/O processor • Parts on bus 1 only: <ul style="list-style-type: none"> – MFIOP – Local bus expansion adapter or system processor—see FI00181 • Parts on the optically-connected unit only: <ul style="list-style-type: none"> – Remote bus expansion adapter—see FI00203 • System bus parts: <ul style="list-style-type: none"> – Card enclosure – Bus extension cables – Cable to expansion tower
FI00070	<p>FI00070 indicates that a storage device attached to the IPL device IOP is the failing item.</p> <p>Determine the IPL device that is failing by doing the following:</p> <ol style="list-style-type: none"> 1. For a failing logical partition, other than the Primary partition, on systems with multiple logical partitions, go to the "Work with partition status" screen and determine the active IPL type (source). 2. For a failing Primary partition or for systems with only one partition select function 01 (Select IPL) on the control panel to display the active IPL type. <p>If the IPL storage device is not the failing item, then any storage device attached to the IPL device IOP may be the failing item.</p>
FI00071	<p>FI00071 indicates that the cable from the magnetic storage IOP to the IPL device is the failing item.</p> <p>The following list shows the lengths and the part numbers of this cable: • 0.6 meter—part 6495253, • 0.75 meter—part 6495249, • 1.5 meters—part 6495254, • 2.5 meters—part 6495250, • 4.0 meters—part 6495252, • 6.0 meters—part 6495251, • 10.0 meters—part 6495255, • 20.0 meters—part 6495256, • 30.0 meters—part 6495257, • 40.0 meters—part 6495258, • 60.0 meters—part 6495264.</p>
FI00072	<p>FI00072 indicates that the load-source media is the failing item.</p> <p>If the load source is tape, exchange the tape in the alternate IPL tape unit.</p> <p>If the load source is an optical storage unit, exchange the compact disk.</p> <p>If the load source is a disk unit, exchange the disk unit.</p> <p>If replacing the media does not work, try replacing the drive.</p>

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00075	<p>FI00075 indicates that the system processor card is the failing item.</p> <p>After verifying that the main storage card indicated by the system message is not the failing item, exchange the system processor card to correct the problem (see FI00010).</p>
FI00090	<p>FI00090 indicates that the removable media device for an alternate IPL is the failing item.</p> <p>Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.</p> <p>Determine the device that is failing by doing the following:</p> <ol style="list-style-type: none"> 1. Select function 01 (Select IPL) on the control panel and press Enter to verify that the active IPL type is D. <p>Notes:</p> <ol style="list-style-type: none"> a. The removable media unit for an alternate IPL has an address of 7 (see "Determining the Load-Source Disk and Alternate IPL Device" on page 759). b. Use the system configuration list to identify the device (see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> information). <p>The possible failing devices are the following type numbers: • 2440 • 3422 • 3430 • 3480 • 3490 • 3490E • 632x • 6378 • 6379 • 6380 • 6381 • 6385 • 6390 • 63A0 • 7208 • 9347 • 9348 • 9427.</p> <ol style="list-style-type: none"> 2. Use the service information for the specific removable media unit for an alternate IPL to analyze the device failure.
FI00092	<p>FI00092 indicates that the load-source for an alternate IPL or the interface to the load-source is the failing item.</p> <p>Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.</p> <p>Note: If the load source is an optical unit, you may need to perform function 3 to IPL the system again. This will make the unit ready.</p> <p>To locate the alternate load-source for a system that does not have multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 759. To locate the alternate load-source for the Primary partition on a system that has multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 759. To locate the alternate IPL load-source for a secondary partition see "Locating a Secondary Partition's Load Source" on page 784.</p> <p>Use the device type to determine the part.</p>
FI00096	<p>FI00096 indicates that the IOP attached to the load-source device is the failing item.</p> <p>Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.</p> <ol style="list-style-type: none"> 1. Verify that the IPL type is correct: <ul style="list-style-type: none"> • For a failing logical partition, other than the Primary partition, on systems with multiple logical partitions, go to the "Work with partition status" screen and determine the active IPL type (source). • For a failing Primary partition or for systems with only one partition select function 01 (Select IPL) on the control panel to display the active IPL type. Select function 01 on the control panel and press the Enter key to display the present IPL mode. 2. The failing MFIOP or IOP may have a removable storage I/O adapter FRU. Replace the storage IOA first using the STORIOA symbolic FRU. To locate the load source for a system that does not have multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 759. To locate the load source for the Primary partition on a system that has multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 759. To locate the load-source for a secondary partition see "Locating a Secondary Partition's Load Source" on page 784.

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00098	<p>FI00098 indicates that the load-source disk device is the failing item. Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.</p> <p>Determine the disk unit 1 type number. It is printed on a label on the front of the system frame.</p> <p>If the system does not have a label that identifies the disk unit type, you can determine the part number of the disk unit by looking at a label located on the disk unit. You must remove the disk unit to see this label.</p> <p>Exchange the disk drive and logic card for the disk unit type you have (see "Type, Model, and Part Number List" on page 362).</p> <p>To locate the load source for a system that does not have multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 759. To locate the load source for the Primary partition on a system that has multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 759. To locate the load-source for a secondary partition see "Locating a Secondary Partition's Load Source" on page 784.</p>
FI00099	<p>FI00099 indicates that the Licensed Internal Code failed or responded in an unpredictable way.</p> <p>Ask your next level of support for assistance.</p>
FI00120	<p>FI00120 indicates that the multiple function I/O processor (MFIOP) is the failing item.</p> <p>Use the MFIOP type to determine the part number.</p>
FI00121	<p>FI00121 indicates that any tape or optical storage device attached to the I/O (SCSI) bus of this IOP may be the failing item.</p> <p>Use the device type to determine the part.</p>
FI00122	<p>FI00122 indicates that a reserved IOA port on the IOP is the failing item.</p> <p>If the IOP is type 2624, the failing item is type 6146 IOA.</p>
FI00123	<p>See the symbolic FRU "DEVTERM" on page 387</p>
FI00124	<p>FI00124 indicates that the control panel is the failing item.</p> <p>See the symbolic FRU "CTLPNL" on page 386.</p>
FI00125	<p>FI00125 indicates that a power source or a power connector is the failing item. The failing item may be in the FC 5032 Removable Storage Unit (see <i>FC 504x Problem Analysis and Repair and Parts</i>).</p> <p>The failing item may be one of the following parts in the FC 5032 Removable Storage Unit:</p> <ul style="list-style-type: none"> • DC bulk module—part 74F1760 or 21F9530 • AC module—part 21F5680 • Cable carrier—part 21F8872 • Control panel—part 21F8888

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00130	<p>FI00130 indicates that the Licensed Internal Code for one of the IOPs or IOAs is the failing item.</p> <p>Determine the IOP or IOA type and location (see "SRC Address Formats" on page 740).</p> <p>Get the type from the card at that address.</p> <p>Look for PTFs associated with the reference code and the identified hardware type and have the customer apply them.</p> <p>Note: If a disk unit is not attached to the IOP, using the VRYCFG RESET(*YES) command may correct the problem. If a disk unit is attached to the IOP, an IPL must be performed to restart the IOP.</p>
FI00131	<p>FI00131 indicates that one of the IOPs or IOAs, if active, is the failing item.</p> <p>Determine the IOP or IOA type and location (see "SRC Address Formats" on page 740).</p> <p>Get the type from the card at that address.</p> <p>Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read "Important Cryptographic I/O Processor Information" on page 757 before disconnecting or removing the cryptographic I/O processor.</p> <p>Use the IOP or IOA type to determine the part.</p>
FI00132	<p>FI00132 indicates that one of the IOAs, if attached, is the failing item.</p> <ol style="list-style-type: none"> 1. Determine the IOP address (see "SRC Address Formats" on page 740). 2. Identify the type of IOA cards installed in the IOP in the location you found in the preceding step. <p>Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read "Important Cryptographic I/O Processor Information" on page 757 before disconnecting or removing the cryptographic I/O processor.</p> <p>Use the IOA type to determine the part.</p> <p>You may need to use "BUS-PIP5" on page 459 to isolate the failing IOA.</p> <p>* Card type 6509, if attached to the type 6506 IOP, may also be the failing item.</p>
FI00140	<p>FI00140 indicates that the IOP for the type 636x Tape Unit is the failing item.</p> <p>The failing IOP is the type 2621 IOP.</p>
FI00141	<p>FI00141 indicates that the IOP for the 7208 Tape Drive is the failing item.</p> <p>The failing IOP is the type 2621 IOP.</p>
FI00142	<p>FI00142 indicates that the external cable for the diskette unit is the failing item.</p> <p>Use the IOP type to determine the cable part:</p> <ul style="list-style-type: none"> • 2624 with 6146 IOA—part 46G3658 <p>Note: When exchanging the external cable for the diskette unit, all subsystems attached to both sides of the cable must be made inactive. If not, all jobs will be stopped when the cable is disconnected.</p>

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00180	FI00180 indicates a loss of power to a secondary frame. The control panel of the secondary frame shows one of the following conditions: <ul style="list-style-type: none"> • A power SRC is displayed. • The Power light is not on. Perform "Cannot Power On Secondary Frame (No SRC)" on page 41 to correct the problem.
FI00182	FI00182 indicates that the local optical link card is the failing item. <ul style="list-style-type: none"> • If the fifth character of word 5 (xxxx <u>xxx</u>) is 1, 5, 9, or D—2686 (266Mb/s) • If the fifth character of word 5 (xxxx <u>xxx</u>) is 3, 7, B, or F—2688 (1062Mb/s)
FI00185	FI00185 indicates that the 12-port ASCII workstation attachment cable is the failing item.
FI00186	FI00186 indicates that the optical cable in the top position (even bus) of the optical link card is the failing item.
FI00187	FI00187 indicates that the optical cable configuration is the failing item. Perform "BUS-PIP1" on page 443 to correct the problem.
FI00189	FI00189 indicates that the bus extension card configuration is the failing item. Perform "BUS-PIP1" on page 443 to correct the problem.
FI00200	FI00200 indicates that the ac module or the removable power cable is the failing item. Attention: Read "Important Continuously Powered Main Storage (CPM) Information" on page 757. Perform "SPCN-PIP5" on page 623. Then return here and continue. The following list shows the possible failing ac modules: <ul style="list-style-type: none"> • System Unit Frame (BKSPCN)—part 21H6961 • System Unit Expansion (FC 5070, 5072), Storage Expansion Tower (FC 5080, 5082)—part 87G6300 • System Unit Expansion (FC 5071, 5073), Storage Expansion Tower (FC 5081, 5083)—part 21H7697 • System Unit Expansion FC 5065 or 5066 Expansion Tower Card—part 97H7532 See "Power Cord Part Numbers and Receptacle Descriptions" on page 992 to determine the power cable part number for systems in your country.
FI00201	FI00201 indicates that the I/O bus regulator in the bus expansion unit or the bus extension unit is the failing item.
FI00202	FI00202 indicates that the dc bulk module for the bus expansion unit or the bus extension unit is the failing item.
FI00203	FI00203 indicates that the remote bus expansion adapter card in the bus expansion unit is the failing item. Use the adapter card type in the bus expansion unit to determine the part.
FI00204	FI00204 indicates that the bus cable between the system unit and the bus expansion unit is the failing item.
FI00205	FI00205 indicates that the remote bus expansion adapter for the paired bus is the failing item. Use the adapter card type in the bus expansion unit to determine the part.
FI00206	FI00206 indicates that a type 2685 remote bus expansion adapter is the failing item. Perform "BUS-PIP1" on page 443.

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00230	<p>FI00230 indicates that the Licensed Internal Code for the failing node is the failing item and needs to be restored.</p> <p>Determine the type of node and select the Licensed Internal Code load.</p> <p>Primary node AJSFDJ04</p> <p>Secondary node AJSFDJ05</p>
FI00235	<p>FI00235 indicates that an SPCN cable that connects two frames or a frame to a node is the failing item.</p> <p>Perform "Cannot Power On Secondary Frame (No SRC)" on page 41.</p> <p>The following list shows the lengths and part numbers of the possible failing items:</p> <ul style="list-style-type: none"> • 6.0 meters—part 21F9469 • 15.0 meters—part 21F9358 • 30.0 meters—part 21F9359 • 60.0 meters—part 21F9360 • 100.0 meters (SPCN optical cable)—part 21F9415 • SPCN optical adapter—part 90H6287 • SPCN port cable (frame-to-node)—part 21F9362 • Frame-to-frame cable—part 87G6235 • SPCN optical adapter —part 90H6287
FI00236	<p>FI00236 indicates that the frame control panel or control panel cable is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> • System unit: <ul style="list-style-type: none"> – Control panel card with keystick — part 21H3727 – Keystick — 46G3507 – Control panel cable: <ul style="list-style-type: none"> - Model 640, 730, or S30, 14 position — part 21H6974 - Model 640, 730, or S30, 40 position — part 21H6975 - Model 650, 740, or S40, 14 position — part 21H6996 - Model 650, 740, or S40, 40 position — part 21H7760 - Model 650, 740, or S40, Ext. 5 meter — part 21H7374 • 9309 multi-purpose frame: <ul style="list-style-type: none"> – Control panel—part 89X2895
FI00237	<p>FI00237 indicates that one of the cards powered by I/O regulator 1 is the failing item.</p> <p>Perform SPCN-PIP2 on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information to determine the failing item.</p>
FI00238	<p>FI00238 indicates that one of the cards powered by I/O regulator 2 is the failing item.</p> <p>Perform SPCN-PIP2 on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information to determine the failing item.</p>

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00239	<p>FI00239 indicates that the support box tray is the failing item.</p> <p>One of the following parts may be installed:</p> <ul style="list-style-type: none"> • 74F1649 • 21F5861 • 17G2504
FI00240	<p>FI00240 indicates that an SPCN node is the failing item.</p> <p>The system cannot identify the type of node. Determine the failing node and exchange the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> • SPCN unit — part 21H6961 • Secondary ac module — part 87G6300 • For 9251 Base I/O — part 21H7697 • FC 5065 or 5066 expansion tower card (TWRCARD) — part 97H7532 • FC 5072 and 5082 frame ac module — part 87G6300 • FC 5073 and 5083 frame ac module — part 21H7697 • FC 9309 frame Power control compartment <ul style="list-style-type: none"> – part 21F9008 for 1 Phase Domestic – part 21F9009 for 1 Phase World Trade – part 21F9019 for 2 Phase World Trade – part 21F9020 for 2 Phase World Trade
FI00244	<p>FI00244 indicates that one of the loads on the +28 V dc line in the FC 5043 or FC 5044 System Unit Expansion is the failing item.</p> <p>The following load on the +28 V dc line from I/O regulator 1 is causing an overcurrent condition:</p> <ul style="list-style-type: none"> • A logic card in card slots 1 through 7
FI00245	<p>FI00245 indicates that the card enclosure for an unknown unit type is the failing item.</p> <p>System Units and System Expansion Units—see Symbolic FRU "BACKPLN" on page 376.</p>
FI00246	<p>FI00246 indicates that one of the loads on the +28 V dc line in the FC 5043 or 5044 System Unit Expansion is the failing item.</p> <p>The following load on the +28 V dc line from I/O regulator 2 is causing an overcurrent condition:</p> <ul style="list-style-type: none"> • A logic card in card slots 8 through 13
FI00247	<p>FI00247 indicates that battery power unit 2 is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> • System Unit and FC 5043 and 5044 System Unit Expansion—part 86G8040. • External Battery Power Unit—part 86G7714 <ul style="list-style-type: none"> – External Battery Power Unit charger—part 86G7750. – External Battery Power Unit cable—part 86G7712.
FI00248	<p>FI00248 indicates that the card enclosure in the FC 5043 or FC 5044 System Unit Expansion is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> • 5044 System Unit Expansion Box—part 74F1543 • 5043 Bus Extension Unit—part 74F1544

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00250	<p>FI00250 indicates that the user-supplied interface cable to the battery power unit is the failing item.</p> <p>One or more of the interface cable leads that connect to pins 1, 2, 3, or 4 of the J24 connector on the system unit could be short circuited to ground and be causing the problem. Pins 5, 6, 7, 8, and 9 of the J24 system unit connector are used for battery power unit signal lines.</p>
FI00251	<p>FI00251 indicates that a battery power unit is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> • System units, Storage Expansion Units, Base I/O Tower (FC 9251), and FC 5065 or 5066 Expansion Tower use the following: <ul style="list-style-type: none"> – Internal Battery Unit Pack assembly—part 21H7080 – Battery Power Unit Charger—part 21H7060 – External Battery Unit—part 90H6294 – External Battery Unit cable—part 21H7695 • Expansion Battery Power Unit 1 and 2 battery pack—part 87G8048 • Expansion Battery Power Unit 1 and 2 charger—part 86G8020 • 9309 General Purpose I/O Tower with SPCN (FC 9171)—part 21F9380 • FC 5065 or 5066 Expansion Tower Battery Power Unit—part 97H7320 • FC 5065 or 5066 Expansion Tower Battery Power Unit Charger—part 97H7316
FI00252	<p>FI00252 indicates that a battery power unit 2 battery pack is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> • Internal Battery Power Unit 1 or 2 battery pack—part 86G8040 • External Battery Power Unit—part 86G7714
FI00253	<p>FI00253 indicates that a battery power unit charger is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> • System Battery Power Unit Charger—part 21H7060 • Expansion Battery Power Unit 1 or 2 charger—part 86G8020 • 9309 general purpose I/O frame with SPCN (FC 9171)—part 21F9380 • 9251 Base I/O tower with SPCN—part 86G8020
FI00255	<p>FI00255 indicates that a regulator in the system unit is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> • System Unit Expansion (FC 507x)—part 87G6049 • Storage Expansion Tower (FC 508x)—part 17G1209
FI00256	<p>FI00256 indicates that a regulator in the FC 5032 Removable Storage Unit is the failing item.</p> <p>Exchange the following items, one at a time, until the problem is corrected: • 636x • 6378 • 6379 • 6380 • 6390 • D/SE module—part 21F8890.</p>
FI00258	<p>FI00258 indicates that one of the cards powered by the current share regulators is the failing item.</p> <p>See FI00060 for a list of failing items, but do not perform "BUS-PIP1" on page 443.</p> <p>Perform "SPCN-PIP10" on page 625 to determine the failing item.</p>
FI00280	<p>FI00280 indicates that the control panel battery is the failing item.</p> <p>Use part number 16G8095.</p>

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00300	FI00300 indicates that media is the failing item. If the load source is: <ul style="list-style-type: none"> • Tape, exchange the tape in the alternate IPL tape unit. • An optical storage unit, exchange the compact disk. • Disk unit, exchange the disk unit. If installing from: <ul style="list-style-type: none"> • Tape, exchange the tape in the alternate IPL tape unit. • An optical storage unit, exchange the compact disk.
FI00301	FI00301 indicates that the magnetic storage I/O processor (MSIOP) or the multiple function I/O processor (MFIOP) is the failing item. Use the IOP type to determine the part.
FI00302	FI00302 indicates that the Licensed Internal Code for the magnetic storage I/O processor (MSIOP) or the multiple function I/O processor (MFIOP) is the failing item. Ask your next level of support for assistance.
FI00310	FI00310 indicates that an I/O processor card or an I/O adapter card is the failing item. Perform "BUS-PIP1" on page 443.
FI00315	FI00315 indicates that the battery power unit install time life has been exceeded on a Model 6xx system.
FI00316	FI00316 indicates that no I/O processors were found on the bus. Verify the configuration information for the system. If a bus is configured to be empty, there is no problem.
FI00317	FI00317 indicates that the I/O processor cards at consecutive direct select addresses appear to be failing. The I/O processor cards or a damaged backplane could cause this problem.
FI00318	FI00318 indicates that an I/O adapter card attached to an I/O processor card on the failing bus is the failing item.
FI00319	FI00319 indicates that the Licensed Internal Code on an I/O processor is the failing item. Install a PTF to correct the problem. Ask your next level of support for assistance.
FI00320	FI00320 indicates that the display station used as the console is the failing item.
FI00330	FI00330 indicates that cryptographic hardware is the failing item. The following list shows the possible failing items: <ul style="list-style-type: none"> • Cryptographic I/O processor • Security Interface Unit • AS/400 system to Security Interface Unit cable
FI00350	FI00350 indicates that the alternate IPL device is the failing item. Use the device type to determine the part.
FI00360	FI00360 indicates that the IPL disk device is the failing item.

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00380	On the bus with the system console or the failing logical partition's console the failing item is the first workstation IOP card or the workstation IOA card. The bus with the system console is bus 0001. For systems with multiple logical partitions the Primary partition's console is on bus 0001 and the consoles for other logical partitions are determined by the LPAR configuration.
FI00500	<p>FI00500 indicates that the cable from the storage device IOP to the storage device is the failing item.</p> <p>The following list shows the lengths and part numbers of this cable: • 0.6 meter—part 6495253, • 0.75 meter—part 6495249, • 1.5 meters—part 6495254, • 2.5 meters—part 6495250, • 4.0 meters—part 6495252, • 6.0 meters—part 6495251, • 10.0 meters—part 6495255, • 20.0 meters—part 6495256, • 30.0 meters—part 6495257, • 40.0 meters—part 6495258, • 60.0 meters—part 6495264.</p>
FI00580	<p>FI00580 indicates that any storage device may be the failing item.</p> <p>The address of the failing storage device cannot be determined.</p>
FI00581	<p>FI00581 indicates that a storage device at the address identified by the problem isolation procedures for the reference code is the failing item.</p> <p>Use the service information of the I/O device to continue analyzing the problem.</p>
FI00584	<p>FI00584 indicates that any storage device may be the failing item.</p> <p>The address of the failing storage device cannot be determined.</p>
FI00601	<p>FI00601 indicates that the display station is the failing item.</p> <p>If a link protocol converter is used to connect the console to the system, the protocol converter is the failing item.</p>
FI00602	FI00602 indicates that the cable between the workstation attachment and the device is the failing item.
FI00603	FI00603 indicates that the 5299 Multiconnector is the failing item.
FI00604	<p>FI00604 indicates that a printer is the failing item.</p> <p>Use the printer device information to analyze the problem.</p>
FI00605	FI00605 indicates that a magnetic stripe reader on a display station is the failing item.
FI00606	FI00606 indicates that the storage media is the failing item.
FI00607	FI00607 indicates that a selector light pen attached to a display station is the failing item.
FI00608	FI00608 indicates that the link protocol converter is the failing item.
FI00610	<p>FI00610 indicates that the twinaxial workstation IOP or the twinaxial workstation IOA attached to a multiple function I/O processor (MFIOP), communications IOP or combined function IOP is the failing item.</p> <p>Use the workstation IOP or IOA type to determine the part.</p> <p>Note: * You may exchange a 2-connector card with a 1-connector card, but this needs an adapter cable (part 22F0097) to change from a 25-pin D-shell connector on the card end to two 9-pin D-shell connectors (4-port twinaxial workstation attachment ends).</p>
FI00611	<p>FI00611 indicates the following:</p> <p>For type 6141, either the ASCII workstation IOP (6141) or the 12-port attachment (part 59X3816) or both are the failing items.</p>
FI00612	FI00612 indicates that the cable between the 6-port attachment or the 12-port attachment and the device is the failing item.
FI00613	FI00613 indicates that the display station used as the console is the failing item.

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00614	<p>FI00614 indicates that a unit reference code of FFFF was indicated when the user entered the ANZPRB (Analyze Problem) command from a workstation.</p> <p>The failing items for this error can be identified by running the complete ANZPRB command. The failing items are also in the problem log when the WRKPRB command is entered.</p>
FI00615	<p>FI00615 indicates that the twinaxial workstation attachment cable is the failing item.</p> <p>Check the twinaxial workstation attachment cable for the part number.</p>
FI00616	<p>FI00616 indicates that the 5259 Migration Data Link is the failing item.</p> <p>Exchange the 5259 Migration Data Link.</p>
FI00626	<p>FI00626 indicates that the modem on the failing port is the failing item.</p> <p>Exchange the modem.</p>
FI00630	<p>FI00630 indicates that the multiline communications IOP is the failing item.</p> <p>Use the IOP type to determine the part.</p>
FI00631	<p>FI00631 indicates that a cable other than the cable from the workstation IOA to the first device is the failing item.</p>
FI00632	<p>FI00632 indicates that the cable from the workstation IOA to the first device is the failing item.</p>
FI00700	<p>FI00700 indicates that the remote data terminal equipment (DTE) or an attached device is the failing item.</p> <p>Report this problem to the operator of the remote equipment.</p>
FI00701	<p>FI00701 indicates that a local communications cable is the failing item.</p> <p>Use the cable to determine the part.</p>
FI00702	<p>FI00702 indicates that the local cable for the automatic call unit is the failing item.</p> <p>Check the automatic call unit interface cable for the part number.</p>
FI00703	<p>FI00703 indicates that the automatic call unit is the failing item.</p>
FI00704	<p>FI00704 indicates that the local data circuit-terminating equipment (DCE) is the failing item.</p>
FI00705	<p>FI00705 indicates that the remote data circuit-terminating equipment (DCE) is the failing item.</p> <p>Report this problem to the operator of the remote equipment.</p>
FI00708	<p>FI00708 indicates that the local communications cable (X.21 interface) is the failing item.</p> <p>Check the communications cable for the part number.</p>
FI00709	<p>FI00709 indicates that the local communications cable (V.35 interface) is the failing item.</p> <p>Check the communications cable for the part number.</p>
FI00710	<p>FI00710 indicates that the local communications cable (V.24 interface with remote power on) is the failing item.</p> <p>The remote power on feature is given support by using an available pin on the EIA-232/V.24 enhanced or EIA-232/V.24 non-enhanced cables. Check the communications cable for the part number.</p>

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00711	<p>FI00711 indicates that the local communications cable (token-ring interface cable) is the failing item.</p> <p>Note: An "IBM Cabling System Patch Cable" or a comparable cable may have been supplied by the user to increase the length of this cable. Any cable attached to the token-ring interface cable may also be the failing item.</p>
FI00712	<p>FI00712 indicates that the token-ring access unit is the failing item.</p>
FI00716	<p>FI00716 indicates that the EIA-232/V.24 enhanced cable is the failing item.</p> <p>Check the communications cable for the part number.</p>
FI00717	<p>FI00717 indicates that the EIA-232/V.24 non-enhanced cable is the failing item.</p> <p>Check the communications cable for the part number.</p>
FI00718	<p>FI00718 indicates that an IOP card is the failing item.</p> <p>Use the IOP type to determine the part.</p>
FI00719	<p>FI00719 indicates that an IOA card is the failing item.</p> <p>Use the IOA type to determine the part.</p>
FI00720	<p>FI00720 indicates that the Ethernet transceiver is the failing item.</p> <p>Verify that the signal quality error switch in the transceiver that the Ethernet is attached to is set to active.</p> <p>See the transceiver operator's guide for correct operation or correct removal and installation procedure.</p>
FI00721	<p>FI00721 indicates that the token-ring IOA card is the failing item.</p> <p>Use the IOA type to determine the part.</p>
FI00722	<p>FI00722 indicates that the cable attached to the local area network IOA is the failing item.</p>
FI00723	<p>FI00723 indicates that the communications two-port adapter cable for the communications IOA card is the failing item.</p> <p>Exchange the communications two-port adapter cable.</p> <p>If this does not correct the problem, use the IOA type to determine the part.</p>
FI00725	<p>FI00725 indicates that the Ethernet IOA card is the failing item.</p> <p>Use the IOA type to determine the part.</p>
FI00726	<p>FI00726 indicates that a communications IOA card is the failing item:</p> <p>Use the IOA type to determine the part.</p>
FI00727	<p>FI00727 indicates that one of the IOAs attached to either a combined function I/O processor (CFIOP), multiline communications IOP or an Integrated Netfinity Server for AS/400 is the failing item.</p> <p>Perform "BUS-PIP5" on page 459 to isolate the failing IOA.</p>
FI00728	<p>FI00728 indicates that the local communications cable (RS449/V.36 interface) is the failing item.</p> <p>Check the communications cable for the part number.</p>
FI00730	<p>FI00730 indicates that the Licensed Internal Code module for an I/O card may be the failing item.</p> <p>Ask your next level of support for assistance.</p>

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the “Type, Model, and Part Number List” on page 362 to determine the part number.
FI00731	<p>FI00731 indicates that one of the distributed data interface IOAs is the failing item.</p> <p>Use the IOA type to determine the part.</p>
FI00732	<p>FI00732 indicates the cryptographic IOP card is the failing item.</p> <p>Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 757 before disconnecting or removing the cryptographic I/O processor.</p> <p>Use the IOP type to determine the part.</p>
FI00733	<p>FI00733 indicates that one of the following personal security cards is the failing item:</p> <ul style="list-style-type: none"> • Full function—part 41F9970 • Limited function—part 82F5486
FI00734	<p>FI00734 indicates that one of the following security interface units is the failing item:</p> <ul style="list-style-type: none"> • 4754-001—82F0421 • 4754-L01—82F0422
FI00735	<p>FI00735 indicates that the optical bypass switch is the failing item.</p> <p>See the optical bypass switch information for correct operation, removal, and installation procedures for the optical bypass switch.</p>
FI00741	<p>FI00741 indicates that the telephone cable to the wall outlet is the failing item.</p> <p>Check the cable for the part number.</p>
FI00742	<p>FI00742 indicates that the communications coupler is the failing item.</p> <p>Check the coupler for the part number.</p>
FI00750	<p>FI00750 indicates that the wireless LAN IOA is the failing item.</p> <p>Use the IOA type to determine the part.</p>
FI00751	<p>FI00751 indicates that a Licensed Internal Code module is the failing item.</p> <p>Ask your next level of support for assistance.</p>
FI00752	<p>FI00752 indicates that the file server IOA card is the failing item.</p> <p>Use the IOA type to determine the part.</p>
FI00810	<p>FI00810 indicates that the magnetic tape is the failing item.</p> <p>Exchange the magnetic tape.</p>
FI00820	<p>FI00820 indicates that the 2440 Tape Unit or the 9348 Tape Unit is the failing item.</p> <p>If the 2440 Tape Unit is the failing item, see “Diagnostic Information” in the <i>2440 Magnetic Tape Subsystem Service Guide</i>.</p> <p>If the 9348 Tape Unit is the failing item, see “Analyzing Problems” in the <i>9348 Tape Unit Service Information</i>.</p>
FI00830	<p>FI00830 indicates that the external signal cable is the failing item.</p> <p>See “EXTSCSI” on page 396 for cable part numbers.</p>
FI00832	<p>FI00832 indicates that the external signal cable is the failing item.</p> <p>See “EXTSCSI” on page 396 for cable part numbers.</p>

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00840	FI00840 indicates that the device controller for the attached device is the failing item. <ul style="list-style-type: none"> • Type 7208—see FI00882 • Type 9337—see the <i>9337 Disk Array Service Information</i> • Type 9427—see FI00882
FI00841	FI00841 indicates that the terminating plug for the attached device is the failing item. <ul style="list-style-type: none"> • For tape devices—see FI00880 • Type 9337—part 85F7887
FI00842	FI00842 indicates that the external signal cable for the attached device is the failing item. <ul style="list-style-type: none"> • For tape devices—see FI00830 • Type 9337—see FI00832
FI00844	FI00844 indicates that the device controller for the attached device is the failing item. <ul style="list-style-type: none"> • For tape devices—see FI00882 • For type 9337, see "Analyzing Problems" in the service information for the specific 9337 model installed on the system.
FI00845	FI00845 indicates that the external signal cable is the failing item. Is the I/O processor type 2644? No Yes ↓ See "EXTSCSI" on page 396. The failing items may be • Adapter cable—part 62X3421.
FI00850	FI00850 indicates that the interface cables attached to the tape IOP are the failing items.
FI00851	FI00851 indicates that the I/O device attached to the tape IOP is the failing item. Use the service information of the I/O device to continue analyzing the problem.
FI00852	FI00852 indicates that the tape I/O processor (TIOP) adapter cable is the failing item. The following list shows the possible failing item and its part number: <ul style="list-style-type: none"> • TIOP type 2644 adapter cable—part 6472924
FI00853	FI00853 indicates that a terminating plug on the tape unit channel is the failing item. The following list shows the possible failing items and their part numbers: <ul style="list-style-type: none"> • Terminating plug for tape unit bus lines—part 2282675 • Terminating plug for tape unit tag lines—part 2282676 • 78-pin terminating plug—part 6473048
FI00855	FI00855 indicates that the type of tape unit attached to the tape IOP is not correct. One of the following tape unit types can be attached to the tape IOP: • 3422 • 3430 • 3480 • 3490 • 3494.
FI00856	FI00856 indicates that an active tape IOP is the failing item. Use the IOP type to determine the part: • 2621 • 2644 • 6501 • 6534 • 2729 (IOA).
FI00870	FI00870 indicates that a storage device is the failing item. Use the device type to determine the part. Note: The 636x Tape Unit is located in the FC 5032 Removable Storage Unit.

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00871	<p>FI00871 indicates that the attached tape device is the failing item.</p> <ul style="list-style-type: none"> • 6381 – Internal 1/4 inch cartridge drive with QIC-2GB (DC) on the door, P/N 21H7658. • 6382 - Internal 1/4 inch cartridge drive with QIC-4GB (DC) on the door, Use P/N 97H7331 if in a FC 5065 or 5066 expansion tower, otherwise use P/N 21H7019. • 6383 - Internal 1/4 Inch cartridge drive with MLR1-S on the front cover, Use P/N 24L1064 if in a FC 5065 or 5066 expansion tower, otherwise use P/N 97H7717. • 6386 - Internal 1/4 inch cartridge drive with MLR3 on the front door, Use P/N 24L1065 if in a FC 5065 or 5066 expansion tower, otherwise use P/N 97H7528. • 7207 model 122 - External 1/4 inch cartridge drive with QIC-4GB-DC on the door, PN 59H4434. • 7208 model 342 - External 8mm tape drive; refer to the device service information to determine the Part Number(s) to replace. • 9348 – External 1/2 inch reel tape unit. <p>Is one of the following status codes displayed anywhere on the 9348 control panel? (x = any number)</p> <ul style="list-style-type: none"> - Exxx - Fxxx - ***xx - ***** <p>No Yes</p> <p>↓ Use the "Status Codes" section of the 9348 Service Information to determine the failing items.</p> <p>Refer to the 9348 Service Information and use the "Running Diagnostic Tests" procedure to run Diagnostic Test 1. If the test fails, use the 9348 Service Information to determine the failing items.</p> <ul style="list-style-type: none"> • Other device type – Refer to the device service information to determine the part number(s) to replace.
FI00872	<p>FI00872 indicates that the interface is the failing item.</p> <ul style="list-style-type: none"> • Internal Device See "FI01140" on page 361. • External device See "EXTSCSI" on page 396.

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI00880	<p>FI00880 indicates that a terminating plug on the device bus to this IOP is the failing item. Note: If the unit is a 2440, 3995, or 9348, a terminating plug is used. If the unit is a 636x, 6378, 6379, 6380, or 6385, a terminating card is used. The 636x terminating card is located in the FC 5032 Removable Storage Unit.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> • Terminating plug for 2440 Tape Unit—part 79X3795 • Terminating plug for 3490, 3570, 3590, and 7208 Model 342 Tape Units—part 61G8324 • SCSI differential terminating plug for 3995 AS/400 Optical Library Dataserver—part 79X3795 • SCSI single-ended terminating plug for 3995 AS/400 Optical Library Dataserver models C4x—part 34H5608 • Terminating card for 636x Tape Unit—part 21F8890 • Terminating card for 6378, 6379, 6380, and 6385 Tape Units—part 72X5631 • Terminating plug for 6390 Tape Drive—part 90H6285 • Terminating plug for 63A0 Tape Unit—See device documentation • Terminating plug for 7208 Model 002 Tape Drive—part 91F0721 • Terminating plug for 7208 Model 012 Tape Drive—part 46G2599 • Terminating plug for 7208 Model 222 Tape Drive—part 46G2599 • Terminating plug for 7208 Model 232 Tape Drive—part 79X3795 • Terminating plug for 7208 Model 234 Tape Drive—part 79X3795 • Terminating plug for 9348 Tape Unit—part 79X3795
FI00882	<p>FI00882 indicates that the addressed unit is the failing item.</p> <p>Determine the address and type of the failing unit (see "System Reference Code (SRC) Record" in the <i>AS/400 Service Functions</i> information).</p> <p>If one of the following device types is the failing item, see the service information for the device model installed on the system: • 2440 • 3490 • 3570 • 3590 • 3995 • 6381 • 63A0 • 7208 • 9347 • 9348 • 9427.</p> <p>If the tape unit being used is in the FC 5032 Removable Storage Unit, the failing item is the 636x Tape Unit.</p> <p>See "Removable Storage Unit (FC 5032)" in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.</p> <p>Note: The FC 5032 DSE module connects tape units as follows:</p> <ul style="list-style-type: none"> • Tape units in the top 5032 locations (positions 1 and 2) use the top external cable connector. • Tape units in the bottom 5032 locations (positions 3 and 4) use the bottom external cable connector. <p>A tape unit to the left or right of the tape unit being used (in position 1 or 2 or in position 3 or 4) may be causing the failure.</p> <p>A tape unit above or below the tape unit being used is <i>not</i> a probable cause of the failure because it is attached to a different internal FC 5032 DSE I/O bus and, as described above, uses the other external signal cable.</p>
FI00883	<p>FI00883 indicates that a unit attached to the same IOP, other than the addressed unit identified by FI00882, is the failing item.</p>
FI00884	<p>FI00884 indicates that any unit attached to the IOP may be the failing item.</p> <p>See FI00882 for the list of possible units.</p>

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI01040	FI01040 indicates that you have an OptiConnect/400 system, and the error is on an AS/400 system that is connected to it.
FI01101	<p>FI01101 indicates that the addressed IOA card on the I/O processor is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. Determine the address of the IOA card (see "SRC Address Formats" on page 740). 2. Determine the location of the IOA card (see "System Unit Locations and Addresses" on page 695). 3. Exchange the failing device. Use the device type to determine the part.
FI01103, FI01104	<p>FI01103 and FI01104 indicate that an attached IOA card is the failing item.</p> <ol style="list-style-type: none"> 1. Find the IOP address (see "SRC Address Formats" on page 740). 2. To determine the location of the I/O processor card, see "System Unit Locations and Addresses" on page 695. 3. The failing item may be any one of the IOA cards attached to the IOP card.
FI01105	<p>FI01105 indicates that the addressed storage device is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. Is the device location information available in the Service Action Log? <ul style="list-style-type: none"> No Yes ↓ Exchange the failing item. See "Chapter 7. Recovery Procedures" on page 879. Use the device type to determine the part number to use in the "Type, Model, and Part Number List" on page 362. <li style="text-align: center;">This ends the procedure. 2. Find the IOP address and the device address (see "SRC Address Formats" on page 740). 3. To determine the location of the I/O processor card, see "System Unit Locations and Addresses" on page 695 and find the diagram of the system unit or the expansion unit. Then, find: <ul style="list-style-type: none"> • The IOP card location identified by the direct select address. • The addressed storage device location identified by the device address. 4. Exchange the failing device. Use the device type to determine the part.
FI01106	<p>FI01106 indicates that a storage device other than the addressed storage device is the failing item.</p> <p>See FI01105 to find the addressed device. The failing item could be any device with the same IOP address and I/O bus number but with a different device unit number.</p> <p>If the reference code that called this FI does not have a problem analysis procedure, perform "SDIOP-PIP16" on page 585 to isolate the possible failing device.</p>

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.
FI01107	<p>FI01107 indicates that any storage device attached to the I/O bus of this IOP may be the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. Find the IOP address (see "SRC Address Formats" on page 740). 2. To determine the location of the I/O processor card, see "System Unit Locations and Addresses" on page 695. The unit reference code indicates the I/O bus that has the problem: <ul style="list-style-type: none"> • URC 3020, 3100 —I/O Bus 0 • URC 3021, 3101 —I/O Bus 1 • URC 3022, 3102 —I/O Bus 2 • Any Other URC—Any I/O bus on the I/O card 3. See "System Unit Locations and Addresses" on page 695 and find the diagram of the system unit or the expansion unit and find: <ul style="list-style-type: none"> • The IOP card location identified by the direct select address. • All the storage devices on the same I/O bus. Note: The I/O bus number is the first character of the device unit address. 4. Exchange the failing device. Use the device type to determine the part. If the reference code that called this FI does not have a problem analysis procedure, perform "SDIOP-PIP16" on page 585 to isolate the possible failing device.
FI01108	<p>FI01108 indicates that the I/O (SCSI) bus or power cable is the failing item.</p> <p>See FI01140 and FI01141.</p>
FI01109	<p>See the symbolic FRU "BACKPLN" on page 376.</p>
FI01110	<p>FI01110 indicates that the diskette unit is the failing item.</p> <p>See the service information for the specific 9331 Diskette Unit model installed on the system to analyze the problem.</p>
FI01112	<p>FI01112 indicates that the active IOP is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. Find the IOP address (see "SRC Address Formats" on page 740). 2. To determine the location of the I/O processor card, see "System Unit Locations and Addresses" on page 695. 3. Use the IOP type to determine the part.
FI01117	<p>FI01117 indicates that any IOA, card, cable, or device attached to the IOP may be the failing item.</p> <ol style="list-style-type: none"> 1. Find the IOP address (see "SRC Address Formats" on page 740). 2. To determine the location of the I/O processor card, see "System Unit Locations and Addresses" on page 695. 3. Identify the IOAs, cards, cables, and devices attached to the IOP found in the preceding steps. 4. Exchange the IOAs, cards, cables, and devices attached to the IOP one at a time until you have corrected the problem.
FI01119	<p>See the symbolic FRU "BACKPLN" on page 376.</p>
FI01130	<p>FI01130 indicates that the disk drive and logic card is the failing item.</p> <p>Find the disk unit type number in the "Type, Model, and Part Number List" on page 362 to determine the part number.</p>

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 362 to determine the part number.								
FI01131	<p>FI01131 indicates that the disk drive logic card is the failing item.</p> <p>Find the disk unit type number in the "Type, Model, and Part Number List" on page 362 to determine the part number.</p>								
FI01132	<p>FI01132 indicates that the disk unit tray is the failing item.</p> <p>Use the symbolic FRU "DISKTRY" on page 389 to determine the part number.</p>								
FI01140	<p>FI01140 indicates that the I/O bus cable is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. Are there external devices attached? <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">No</td> <td>Yes</td> </tr> <tr> <td style="padding-right: 20px;">↓</td> <td>See "EXTSCSI" on page 396.</td> </tr> </table> 2. Find the IOP address (see "SRC Address Formats" on page 740). 3. To determine the location of the I/O processor card, see "System Unit Locations and Addresses" on page 695. 4. Exchange the failing item associated with the IOP address. <p>Notes:</p> <ol style="list-style-type: none"> a. To find the I/O bus cables, see "Cable Diagrams for Expansion Towers" on page 719. b. There are no I/O bus cables for the internal tape units, the optical storage units, or the four disk units in the card enclosure. The I/O bus for these devices is wired into the backplane. See "BACKPLN" on page 376 for part number information. 	No	Yes	↓	See "EXTSCSI" on page 396.				
No	Yes								
↓	See "EXTSCSI" on page 396.								
FI01141	<p>FI01141 indicates that a loss of power to an IOP, to an internal device, or to an external device may have occurred.</p> <ol style="list-style-type: none"> 1. Are 0000 xxxx, 1xxx xxxx, or A6xx 698x SRCs displayed on the control panel? <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">No</td> <td>Yes</td> </tr> <tr> <td style="padding-right: 20px;">↓</td> <td>Go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC displayed on the control panel.</td> </tr> </table> 2. Did the SRC that directed you to this FI code involve an externally attached device or an IOP with an externally attached device? <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">No</td> <td>Yes</td> </tr> <tr> <td style="padding-right: 20px;">↓</td> <td>Verify that there is no obvious problem with power to the device. If you suspect a power problem with the device, go to the service information for that external device.</td> </tr> </table> 3. The power supply cables or connections to internal disk units, tape units, diskette units, or optical storage units may be the failing item. <ul style="list-style-type: none"> • For cable information, see "Cable Diagrams for Expansion Towers" on page 719. • For part numbers, see "Chapter 8. Parts Listing" on page 909. 	No	Yes	↓	Go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC displayed on the control panel.	No	Yes	↓	Verify that there is no obvious problem with power to the device. If you suspect a power problem with the device, go to the service information for that external device.
No	Yes								
↓	Go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC displayed on the control panel.								
No	Yes								
↓	Verify that there is no obvious problem with power to the device. If you suspect a power problem with the device, go to the service information for that external device.								
FI01201, FI01202, FI01203	<p>FI01201 through FI01203 indicate that the Licensed Internal Code module AJDG301 is the failing item.</p>								
FI02092	<p>See FI00092</p>								

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" to determine the part number.				
FI02112	<p>FI02112 indicates that the addressed storage device is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> Is the device location information available in the Service Action Log? <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">No</td> <td>Yes</td> </tr> <tr> <td style="padding-right: 20px;">↓</td> <td>Exchange the failing item. See "Chapter 7. Recovery Procedures" on page 879. Use the device type to determine the part number to use in the "Type, Model, and Part Number List".</td> </tr> </table> <p style="text-align: center;">This ends the procedure.</p> Find the IOP address and the device address (see "SRC Address Formats" on page 740). To determine the location of the I/O processor card, see "System Unit Locations and Addresses" on page 695 and find the diagram of the system unit or the expansion unit. Then, find: <ul style="list-style-type: none"> • The IOP card location identified by the direct select address. • The addressed storage device location identified by the device address. Exchange the failing device. Use the device type to determine the part. <p>Note: If the device is an external unit, see the device maintenance instructions for that external unit to resolve the problem.</p> 	No	Yes	↓	Exchange the failing item. See "Chapter 7. Recovery Procedures" on page 879. Use the device type to determine the part number to use in the "Type, Model, and Part Number List".
No	Yes				
↓	Exchange the failing item. See "Chapter 7. Recovery Procedures" on page 879. Use the device type to determine the part number to use in the "Type, Model, and Part Number List".				

Type, Model, and Part Number List

Table 7. Type, Model, and Part Number List

Type	Description	System Unit Model	Part Number
2188	System Processor and Interactive Card	650	97H6184 and 97H6491
2189	System Processor and Interactive Card	650	97H6191 and 97H6498
2206	System Processor and Interactive Card	730	97H6178 and 97H6484
2207	System Processor and Interactive Card	S40 or 740	97H6185 and 97H6491
2208	System Processor and Interactive Card	S40 or 740	97H6192 and 97H6498
2237	System Processor	640	90H9372
2238	System Processor	640	90H9373
2239	System Processor	640	90H9374
2240	System Processor	650	90H9406
2243	System Processor	650	90H9375
2256	System Processor	S40	90H9699
2257	System Processor	S30	90H9378
2258	System Processor	S30	90H9379
2259	System Processor	S30	90H9380
2260	System Processor	S30	90H9409
2261	System Processor	S40	90H9667
2310	System Processor	SB1	90H9377

Table 7. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
2311	System Processor	SB1	90H9408
2312	System Processor and Interactive card	SB1	97H6186 and 97H6491
2313	System Processor and Interactive Card	SB1	97H6193 and 97H6498
2320	System Processor	S30	90H9604
2321	System Processor	S30	90H9607
2322	System Processor	S30	90H9610
2340	System Processor and Interactive Card	S40	97H6369 and 97H6491
2440	Magnetic Tape Unit. See 2440 <i>Magnetic Tape Subsystem Service Guide</i>	All	
241A	Dual-Piece Processor component, May not order separately. Go to the failing item and order both part numbers.		
241B	Dual-Piece Processor component, May not order separately. Go to the failing item and order both part numbers.		
241C	Dual-Piece Processor component, May not order separately. Go to the failing item and order both part numbers.		
241D	Dual-Piece Processor component, May not order separately. Go to the failing item and order both part numbers.		
241E	Dual-Piece Processor component, May not order separately. Go to the failing item and order both part numbers.		
241F	Dual-Piece Processor component, May not order separately. Go to the failing item and order both part numbers.		
25A9	Clock card	All	21H6559
2605	ISDN Basic IOA	All	17G2570
2609	2-line EIA-232/V.24 Communications IOA	All	21F4867
2610	2-line X.21 Communications IOA	All	21F4868
2612	EIA-232/V.24 Communications IOA	All	86G8117
2613	V.35 Communications IOA	All	44H6464
2614	X.21 Communications IOA	All	86G8369
2617	Ethernet IOP	All	85F9107
2618	Distributed Data Interface IOP	All	85F8977
2619	Token-Ring Network IOP	All	91H0010
2620	Cryptographic IOP	All	99G9709
2621	SCSI IOP	All	86G8303
2623	Multiline Communications IOP	All	85F7223
2624	Magnetic Storage IOP	All	86G8317
2626	Token-Ring Network IOP	All	85F9033

Type, Model, Part Number List

Table 7. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
2628	Cryptographic IOP	All	99G9714
2629	Communications IOP	All	91H0465
2644	Tape IOP	All	21F6085
2663	I/O Attachment Processor	All	21H9149
2664	Integrated Fax IOP (not United Kingdom)	All	85F9099
2664	Integrated Fax IOP (United Kingdom)	All	75G3874
2665	Distributed Data Interface IOP	All	17G2919
2666	High Speed Communications IOP	All	8193663
2668	Wireless LAN IOA Australia US and Canada France Spain European Telecommunications and Standards Institute (ETSI) Japan	All	75G3949 75G6041 75G3911 75G3950 75G3905 75G3906
2680	SPD Optical Bus Receiver Card (266)	All	90H9443
2682	SPD Optical Bus Receiver Card (1063)	All	21H6573
2684	SPD Optical Bus Receiver Card (266)	All	16G5837
2685	SPD Optical Bus Receiver Card (1063)	All	21H6579
2686	SPD Optical Bus Driver Card (266)	All	87G5316
2688	SPD Optical Bus Driver Card	All	87G5560
2690	I/O Bus Adapter	All	6475987
2695	Local Bus Adapter Card	All	87G5400
2696	Local Bus Adapter Card	All	21H6529
2699	2-line Communications IOA	All	21H5412
2713	SPD I/O Regulator	All	21H4829
2718	Storage IOA (external removable media)	All	91H3974
2723	Ethernet IOA	All	21H9201
2724	Token-Ring Network IOA	All	44H7571
2726	Storage IOA	All	44H6303
2728	Storage IOA	All	21H9207
2729	Storage IOA (external media)	All	21H9249
2730	Memory / Processor Regulator	All	21H7763
2731	Memory Control / CPM Regulator	All	21H7100
2740	Storage IOA Card Card Cache Battery Pack Cache Battery Pack	All	44H6442 (Non-Japan) 23L2845 (Japan) 44L0305 (Non-Japan) 44L0304 (Japan)

Type, Model, Part Number List

Table 7. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
2741	Storage IOA	All	91H0271
2746	Twinaxial IOA	All	21H5497
2748	Storage IOA Card Card Cache Battery Pack Cache Battery Pack Mode Jumper	All	91H3987 (Non-Japan) 23L2841 (Japan) 44L0302 (Non-Japan) 44L0301 (Japan) 23L3442
272A	Passthru card (Goes into the 9251)	650, S40, 740, SB1	21H7623
2750	ISDN Communications IOA	All	97H7674
2751	ISDN Communications IOA	All	97H7675
2761	Integrated Modem IOA United States Europe Germany Australia Spain Czechoslovakia	All	97H7678 97H7679 97H7680 97H7681 97H7682 97H7683
2809	Combined Function IOP	All	21H5312
2810	High speed communications IOP	All	91H0461
2811	ATM 25 Mb/sec IOA	All	21H7976
2812	ATM 45 Mb/sec IOA	All	21H7979
2815	ATM 155 Mb/sec IOA	All	21H7977
2816	ATM 155 Mb/sec IOA	All	21H7909
2818	ATM 155 Mb/sec IOA	All	21H7975
2819	ATM 34 Mb/sec IOA	All	91H4002
2822	Clock card	All	87G5649
2823	Active Backplane for: Model S30 8-way and Model 730 with FC 2C6C, 2C6D, 2C6E, 2C6F, or 2D6A	See description	90H9433
2824	Combined Function IOP	All	91H4023
2828	Active Backplane for: Model 640 and Model S30 with FC 2257, 2258, 2259, or 2320 and Model 730 with FC 2A6x, 2B6x, 2C6A, or 2C6B and	See description	90H9437
2829	Active Backplane, Models 650, 740, S40, and SB1	All	90H9429
2838	Ethernet 100 Mb/sec IOA	All	21H5460
285B	SPCN Card	All	21H6961

Type, Model, Part Number List

Table 7. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
2861	32MB Integrated Netfinity Server for AS/400 memory module	All	44H7558
2862	128MB Integrated Netfinity Server for AS/400 memory module	All	90H9075
2867	256MB Integrated Netfinity Server for AS/400 memory module	All	97H7725
2A6A	System Processor and Interactive Card	730	99H4101 and 97H6477
2A6B	System Processor and Interactive Card	730	99H4102 and 97H6477
2A6C	System Processor and Interactive Card	730	99H4103 and 97H6477
2A6D	System Processor and Interactive Card	730	99H4104 and 97H6477
2A6E	System Processor and Interactive Card	730	99H4094 and 97H6468
2A6F	System Processor and Interactive Card	730	99H4095 and 97H6468
2B6A	System Processor and Interactive Card	730	99H4091 and 97H6468
2B6B	System Processor and Interactive Card	730	99H4092 and 97H6468
2B6C	System Processor and Interactive Card	730	99H4093 and 97H6468
2B6D	System Processor and Interactive Card	730	99H4079 and 97H6461
2B6E	System Processor and Interactive Card	730	99H4080 and 97H6461
2B6F	System Processor and Interactive Card	730	99H4081 and 97H6461
2C6A	System Processor and Interactive Card	730	99H4082 and 97H6461
2C6B	System Processor and Interactive Card	730	99H4083 and 97H6461
2D6B	System Processor and Interactive Card	740	99H4109 and 97H6491
2D6C	System Processor and Interactive Card	740	99H4110 and 97H6491
2D6D	System Processor and Interactive Card	740	99H4111 and 97H6491
2D6E	System Processor and Interactive Card	740	99H4112 and 97H6491
2E6E	System Processor and Interactive Card	740	99H4113 and 97H6491
3179	256MB Main Storage	All except SB1	90H9593
3180	512MB Main Storage	All except SB1	90H9597
3188	64MB Main Storage	All	90H9446

Table 7. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
3189	128MB Main Storage	All	90H9450
3190	256MB Main Storage	All	90H9454
3191	512MB Main Storage	All	90H9458
3192	1024MB Main Storage	All	90H9463
3193	2048MB Main Storage	All	97H6242
3194	1GB Main Storage	SB1	97H6222
3422	Magnetic Tape Unit. See 3422 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3430	Magnetic Tape Unit. See 3430 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3480	Magnetic Tape Unit. See 3480 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3490	Magnetic Tape Unit. See 3490 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3490E	Magnetic Tape Unit. See 3490 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3494	Magnetic Tape Library. See 3494 <i>Magnetic Tape Library Maintenance Information</i>	All	
3570	Magnetic Tape Unit. See 3570 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3590	Magnetic Tape Unit. See 3590 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3995	AS/400 Optical Library Dataserver See 3995 <i>Optical Library Dataserver Maintenance Information Manual</i>	All	
4010	2726/2741 Storage IOA Cache Adapter	All	44H6330
4700	6512/6532/6533/6751/6754 IOP Cache Adapter	All	86G8149
4758	PCI Cryptographic Coprocessor	All	10J0053
6050	Twinaxial Workstation IOP	All	75G3719
6112	Magnetic Storage IOP	All	85F9041
6140	Twinaxial Workstation IOP	All	21F1888
6141	ASCII Workstation IOP	All	73F9267
6142	ASCII 12-Port Workstation Attachment 3-meter 6-meter	All	59X3816 59X3829
6146	Diskette IOA	All	46G0235
6147	Diskette IOA	All	86G8103
6149	Token Ring Network IOA	All	99G9897
6153	V.35 Communications IOA	All	17G2940
6180	Twinax Workstation IOA	All	21H5406
6181	Ethernet Communications IOA	All	91H0435
6321	Optical Storage Unit (CD-ROM)	All (except FC 5065 or 5066)	86G7836

Type, Model, Part Number List

Table 7. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
	Optical Storage Unit (CD-ROM)	FC 5065 or 5066 (Only)	97H7330
6330	Optical Storage Unit (DVD)	All (except FC 5065 or 5066)	04N5968
	Optical Storage Unit (DVD)	FC 5065 or 5066 (Only)	04N5966
6335	1/4-inch Magnetic Tape Unit • Tray with regulator	All	86G7803
6368	1/4-inch Magnetic Tape Unit (blue eject button; QIC-1000 on tape unit door)	All	17G2504
6369	1/4-inch Magnetic Tape Unit (blue eject button; QIC-2GB on tape unit door)	All	8191923
6378	1/4-inch Magnetic Tape Unit • Tray with regulator	All	46G3738
6379	1/4-inch Magnetic Tape Unit • Tray with regulator	All	46G3740
6380	1/4-inch Magnetic Tape Unit • Tray with regulator	All	46G3742
6381	1/4-inch Magnetic Tape Unit • Tray with regulator	All	21H7658
6382	1/4-inch Magnetic Tape Unit • Tray with regulator	All	21H7019
	Tape unit and holder for a FC 5065 or 5066 expansion tower		97H7331
6383	1/4-inch Cartridge Drive (with MLR1-S on the front cover) • Tray with regulator	All	97H7717
	Tape unit and holder for a FC 5065 or 5066 expansion tower		24L1064
6385	1/4-inch Magnetic Tape Unit • Tray with regulator	All	46G3540
6386	1/4-inch Magnetic Tape Unit • Tray with regulator	All	97H7528
	Tape unit and holder for a FC 5065 or 5066 expansion tower		24L1065
6390	8-mm Magnetic Tape Drive • Tray with regulator	All	46G3844
63A0	Tape Unit	All	See device service information.
6500	Magnetic Storage IOP	All	85F8909
6501	Magnetic Storage IOP	All	85F8935
6502	Magnetic Storage IOP	All	17G2900
6503	6502 IOP Cache Adapter	All	85F7214
6506	File Server IOP	All	21H3909
6509	File Server Storage Expansion	All	75G8362
6510	File Server IOA	All	8193654
6512	Magnetic Storage IOP	All	99G9473
6513	Tape IOP	All	17G1325
6520	File Server IOA	All	8193655
6530	Magnetic Storage IOP	All	46G3299
6532	Magnetic Storage IOP	All	91H0485
6533	Magnetic Storage IOP	All	21H9060
6534	Magnetic Media IOP	All	91H0470

Type, Model, Part Number List

Table 7. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
6600	Disk Unit.		
6602	See "Disk Unit Type, Model, and Part Number List" on page 370.		
6603			
6605			
6606			
6607			
6616	Integrated Netfinity Server for AS/400 (IOP)	All	91H0353
6617	Integrated Netfinity Server for AS/400 (IOP) Model 011 (200mhz) Model 012 (333mhz)	All	97H7627 23L4205
6713	Disk Unit. See "Disk Unit Type, Model, and Part Number List" on page 370.		
6714	Disk Unit. See "Disk Unit Type, Model, and Part Number List" on page 370.		
6716	Disk unit. See "Disk Unit Type, Model, and Part Number List" on page 370.		
6717	Disk Unit. See "Disk Unit Type, Model, and Part Number List" on page 370.		
6731	Disk Unit See "Disk Unit Type, Model, and Part Number List" on page 370.		
6751	Multiple Function IOP	All	86G8183
6754	Multiple Function IOP	All	91H0480
7207	External 1/4-inch Cartridge Drive (with QIC-4GB-DC on the door)	All	59H4434
7208	8-mm Magnetic Tape Drive See <i>7208 Tape Drive Service Guide</i>	All	
7210	External Optical Storage Drive See <i>7210 Optical Storage Service Information</i>	All	
9331	Diskette Unit • Model 001 and Model 002 • Model 011 and Model 012 See <i>9331 Diskette Unit Service Information</i>	All	
9347	Magnetic Tape Unit See <i>9347 Tape Unit Service Guide</i>	All	
9348	Magnetic Tape Unit See <i>9348 Tape Unit Service Information</i>	All	
9427	8-mm Tape Cartridge Library See <i>9427 8-mm Tape Cartridge Library Service Guide</i>	All	

Type, Model, Part Number List

Table 7. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
9429	Tape Cartridge Library See 9429 <i>Tape Cartridge Library Service Guide</i>	All	

Disk Unit Type, Model, and Part Number List

Notes:

1. Disk unit part numbers 05G3988, 05G3989, and 05G3990 will be seen in multiple places within the following table, but with different level numbers. For disk units with these part numbers, the disk unit level can be found in the system information or on the disk unit label following the FRU part number. For example, FRU PN 05G3988-1 indicates a type 6605 disk unit with a level of 1.
2. When ordering a disk unit, use the part number that is followed by an asterisk (*) for your particular type and level. This ensures that you receive the correct replacement part if a substitute is sent in place of the original part number.
3. When exchanging a logic card, use the part number indicated for that type and level disk unit.
 - A logic card with a part number of 27H0253 or 27H1830 cannot be used again once it has been installed on a disk unit that was powered on. The logic card customizes itself to that disk unit and cannot be reset in the field. Do not attempt to remove a logic card from another disk unit with the same part number because it will not function for that reason.
 - Once a logic card has been installed on a failed disk unit for data recovery, the disk unit and logic card should be removed from the system and then returned. The recovered, or system, data should be restored to a new disk unit assembly.

Table 8. Disk Unit Type, Model, and Part Number List

Type	Description	System Unit Model	Part Number
6600	Disk Unit. Remove the disk unit from the system to determine the part number of the failing item.		
6602	Disk Unit Level 0 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 1 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator 	All	Level 0 <ul style="list-style-type: none"> • 45G9470 • 45G9463 • 86G7766 Level 1 <ul style="list-style-type: none"> • 45G9509 • 45G9501 • 86G7768

Table 8. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
6603	<p>Disk Unit Level 0</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator <p>Disk Unit Level 1</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator 	All	<p>Level 0</p> <ul style="list-style-type: none"> • 86F0110 • 86F0100 • 86G7762 <p>Level 1</p> <ul style="list-style-type: none"> • 86F0112 • 86F0103 • 86G7764
6605	<p>Disk Unit Level 1</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator <p>Disk Unit Level 4</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator 	All	<p>Level 1</p> <ul style="list-style-type: none"> • 74G7014 • 74G6977* • 05G3988 • 86G7888 <p>Level 4</p> <ul style="list-style-type: none"> • 86G9130 • 86G9123* • 05G3988 • 86G7888
6606	<p>Disk Unit Level 1</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator <p>Disk Unit Level 3</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator <p>Disk Unit Level 4</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator <p>Disk Unit Level 5</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator 	All	<p>Level 1</p> <ul style="list-style-type: none"> • 74G7014 • 74G6978* • 05G3989 • 86G7888 <p>Level 3</p> <ul style="list-style-type: none"> • N/A • 74G8821* • 86G7888 <p>Level 4</p> <ul style="list-style-type: none"> • 86G9130 • 86G9124* • 05G3989 • 86G7888 <p>Level 5</p> <ul style="list-style-type: none"> • 27H0253 • 27H1712* • 86G7888
6607	<p>For system unit and expansion towers, except FC 506x</p> <p>Disk Unit Level 1</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator 	All	<p>Level 1</p> <ul style="list-style-type: none"> • 74G7014 • 74G6979* • 05G3990 • 86G7888

Type, Model, Part Number List

Table 8. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
	Disk Unit Level 3 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 4 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 5 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 6 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 7 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 8 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 9 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator For FC 506x (All Disk Drive Levels) <ul style="list-style-type: none"> • Disk Unit and Carrier 		Level 3 <ul style="list-style-type: none"> • N/A • 74G8822* • 86G7888 Level 4 <ul style="list-style-type: none"> • 86G9130 • 86G9125* • 05G3990 • 86G7888 Level 5 <ul style="list-style-type: none"> • 27H0253 • 27H1711* • 86G7888 Level 6 <ul style="list-style-type: none"> • N/A • 59H6612 • 86G7888 Level 7 <ul style="list-style-type: none"> • N/A • 74G8703 • 86G7888 Level 8 <ul style="list-style-type: none"> • N/A • 59H7001* • 86G7888 Level 9 <ul style="list-style-type: none"> • N/A • 25L3130 • 86G7888 All Levels <ul style="list-style-type: none"> • 44L0061
6713	For system unit and expansion towers, except FC 506x Disk Unit Level 2 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 3 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 4 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator 	All	Level 2 <ul style="list-style-type: none"> • N/A • 74G8823* • 86G7888 Level 3 <ul style="list-style-type: none"> • 27H1830 • 27H1710* • 86G7888 Level 4 <ul style="list-style-type: none"> • N/A • 59H6611 • 86G7888

Table 8. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
	Disk Unit Level 5 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 6 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 9 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator For FC 506x (All Disk Drive Levels) <ul style="list-style-type: none"> • Disk Unit and Carrier 		Level 5 <ul style="list-style-type: none"> • N/A • 74G8704 • 86G7888 Level 6 <ul style="list-style-type: none"> • N/A • 25L3131 • 86G7888 Level 9 <ul style="list-style-type: none"> • N/A • 07N3681 • 86G7888 All Levels <ul style="list-style-type: none"> • 44L0062
6714	For system unit and expansion towers, except FC 506x Disk Unit Level 1 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray with regulator Disk Unit Level 2 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator Disk Unit Level 3 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator For FC 506x (All Disk Drive Levels) <ul style="list-style-type: none"> • Disk Unit and Carrier 	All	Level 1 <ul style="list-style-type: none"> • N/A • 59H6613 • 86G7888 Level 2 <ul style="list-style-type: none"> • N/A • 74G8705 • 86G7888 Level 3 <ul style="list-style-type: none"> • N/A • 25L3132 • 86G7888 All Levels <ul style="list-style-type: none"> • 44L0063
6716	For system unit and expansion towers, except FC 506x Disk Unit Level 1 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray, with regulator • For FC 506x (All Disk Drive Levels) <ul style="list-style-type: none"> • Disk Unit and Carrier 	All	Level 1 <ul style="list-style-type: none"> • N/A • 07N3690 • 44H4637 All levels <ul style="list-style-type: none"> • 04N2165
6717	For system unit and expansion towers, except FC 506x Disk Unit Level 2 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray with regulator 	All	Level 2 <ul style="list-style-type: none"> • N/A • 34L2279 • 44H4637

Type, Model, Part Number List

Table 8. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
	Disk Unit Level 3 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray with regulator Disk Unit Level 4 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray with regulator For FC 506x (All Disk Drive Levels) <ul style="list-style-type: none"> • Disk Unit and Carrier 		Level 3 <ul style="list-style-type: none"> • N/A • 09L4044 • 44H4637 Level 4 <ul style="list-style-type: none"> • N/A • 07N3685 • 44H4637 All Levels <ul style="list-style-type: none"> • 97H7332
6718	For system unit and expansion towers, except FC 506x Disk Unit Level 2 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray with regulator Disk Unit Level 3 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Tray with regulator For FC 506x (All Disk Drive Levels) <ul style="list-style-type: none"> • Disk Unit and Carrier 	All	Level 2 <ul style="list-style-type: none"> • N/A • 09L3932 • 44H4637 Level 3 <ul style="list-style-type: none"> • N/A • 07N3686 • 44H4637 All Levels <ul style="list-style-type: none"> • 04N2737
6731	For system unit and expansion towers, except FC 506x Read Cache Level 1 <ul style="list-style-type: none"> • Read Cache Drive • Read Cache Tray with regulator For FC 506x (All Disk Drive Levels) <ul style="list-style-type: none"> • Read Cache and Carrier 	All	Level 1 <ul style="list-style-type: none"> • 74G8715 • 44H4637 All Levels <ul style="list-style-type: none"> • 24L1095

Symbolic FRU Isolation

ACMODUL

An ac module may be failing.

Perform the following to determine the part number for the failing ac module:

1. Is SRC 1xxx 00AC displayed?

Yes No

↓ Go to step 3 of this procedure.

2. On a model 650, 740, S40, or SB1 system the 00AC reference code can be caused by an SPCN frame-to-frame cable problem. This usually occurs between the system unit and the 9251 Base I/O Tower. See FI00235 in the "Failing Item (FI) Code Table" on page 341 for a parts list. Return here and continue with the next step of this procedure if the problem is not resolved.

3. Is the failing ac module on a system unit?

No Yes

↓ Use the following part for all models:

- USA-part 21H7000
- World Trade 1PH-part 21H7261
- World Trade 2PH-part 21H7264

If the problem is not resolved after exchanging the FRUs listed, exchange the BKSPCN (see “BKSPCN” on page 380) if it was not previously exchanged.

4. The failing AC module is on a secondary expansion unit or base I/O unit.
 - AC Module (except FC 9251,5071,5073,5081,5083) — part 87G6300
 - AC Module FC 9251,5071,5073,5081,5083 — part 21H7697

This ends the procedure.

AIRMOVR

An air moving device may be failing.

Perform the following steps to determine the part number for the failing air moving device:

Note: When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

Note: The address of the failing frame and unit is shown in the second, third and fourth characters of the 4 leftmost characters of the SRC.

11-x xFFU-xxxx (F=frame and U=unit).

1. Is the failing air moving device in a system unit?

No Yes

↓ Find the reference code in the following list to determine the failing AMD.

Then see “System Unit Locations and Addresses” on page 695 to determine the location of the failing item. Look for the section that covers the model number and processor type you are working on. See “Chapter 6. Removal and Installation Procedures” on page 793 for removal instructions.

Reference Code	FRU	Part Number
7000, 7500	AMD 1	21H6959
7001, 7501	AMD 2	21H6959
7002, 7502	AMD 3	21H6959
7003, 7503	AMD 4	21H6959

This ends the procedure.

2. The failing air moving device is in a secondary expansion unit.

Find the unit reference code in the following list to determine the failing AMD or AMD and part number except for the FC 5065 or 5066 expansion tower. Use Table 10 on page 376 for AMD information for the FC 5065 or 5066 expansion tower.

Symbolic FRUs

Then see "System Unit Locations and Addresses" on page 695 to determine the location of the failing item. Look for the section that covers the feature code of the expansion tower that you are working on. See "Chapter 6. Removal and Installation Procedures" on page 793 for removal instructions.

Table 9. AMD information except for the FC 5065 or 5066 expansion tower

Unit Reference Code	FRU	Part Number
7000	AC Module	ACMODUL
7001	AMD 1	46G3510
7002	AMD 2	46G3510
7003	AMD 3	46G3587
7004	AMD 4	46G3587

Table 10. AMD information for the FC 5065 or 5066 expansion tower

Unit Reference Code	FRU	Part Number
7610, 8610	AMD 1	44L0023
7620, 8620	AMD 2	44L0023

This ends the procedure.

ANYBUS

Any cable, card, or card enclosure may be causing an IOP-detected bus error. The IOP reporting the problem may not be causing the problem.

1. Is SRC 0000 xxxx displayed?

No **Yes**

↓ Go to step "BUS-PIP2" on page 450.

2. Go to "BUS-PIP1" on page 443.

Note: To determine FRU part numbers, compare the labels on the cards and cables with the "Type, Model, and Part Number List" on page 362.

This ends the procedure.

AS4NTDD

The Windows NT Server Application Processor device driver may be causing the problem. Refer to the *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03 book, or contact your next level of support for assistance.

This ends the procedure.

BACKPLN

A backplane or a connection to the backplane may be failing. Before replacing any parts, the connections to the backplane should be verified. The following steps identify which backplane may be failing. Part numbers are listed so that the backplane can be replaced in the event that reseating the connections does not solve the problem.

Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read "Important Cryptographic I/O Processor Information" on page 757 before disconnecting or removing the cryptographic I/O processor.

Perform the following:

1. Determine the location of the device. Use the location information in the Service Action Log if it is available. If no location information for the device is available, use the location information for the I/O card instead. If no location information is available for either the device or the I/O card, find the address of the device or I/O card. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
2. Determine the system model number:
 - Select manual mode on the control panel and display function 20-3. Characters 2 through 4 of function 20-3 contain the system model number.
3. Is the backplane located in the system unit?

No Yes

↓

Find the part number in the following list:

- Models S30 (8-way), or 730 with FC 2C6C, 2C6D, 2C6E, 2C6F, or 2D6A system unit backplane—part 90H9433 (1xxx reference codes only)
- Models 640, S30 with FC 2257, 2258, 2259, or 2320, or 730 with FC 2A6x, 2B6x, 2C6A, or 2C6B system unit backplane—part 90H9437 (1xxx reference codes only)
- Models 640, 730, and S30 system unit SPD board—part 21H7403 (all reference codes)
- Models 650, 740, S40, and SB1 system unit backplane—part 90H9429 (1xxx reference codes only)
- Models 650, 740, S40, and SB1 system unit I/O tower card enclosure—part 21H7465 (all reference codes)

Exchange the failing item (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

4. Is the device located in a FC 507x expansion tower?

No Yes

↓

The system unit expansion tower backplane or storage expansion unit backplane may be failing.

System Unit Expansion Tower Backplane

- FC 5072—part 86G7633
- FC 5073—part 90H6425

Storage Expansion Unit Backplane

- FC 5052 Locations K1 through K8—part 16G6496
- FC 5052 Locations K9 through K16—part 86G7872
- FC 5055 Locations K1 through K8—part 21H7750
- FC 5057 Locations K1 through K8, FC 5057 and FC 5058 Locations K9 through K16—part 21H6940
- FC 5058 Locations K1 through K8—part 21H6938

Symbolic FRUs

Exchange the failing item (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

5. Is the device located in a FC 508x expansion tower?

No Yes

↓

The storage expansion tower backplane or storage expansion unit backplane may be failing.

System Expansion Tower Backplane

- FC 5082–part 87G4357
- FC 5083–part 90H6426

Storage Expansion Unit Backplane (Locations K1 through K16)

- FC 5052 Locations K1 through K8—16G6496
- FC 5052 Locations K9 through K16—86G7872
- FC 5057 Locations K1 through K8, FC 5057 and FC 5058 Locations K9 through K16—part 21H6940
- FC 5058 Locations K1 through K8—part 21H6938

Upper Backplane

- Locations 09C, 11C, 13C, 15C only—part 87G4362

Exchange the failing item (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

6. Is the device located in the FC 5065 or 5066 expansion tower?

No Yes

↓

The following may be failing:

- Tower Card Assembly-CB1
See “TWRCARD” on page 425.
- Device Board-DB1 (Locations D01 – D05, D11 – D15, D21 – D25)
Use part number 24L1029. See “Device Boards – DB1 and DB2” on page 830 to replace the board.
- Device Board-DB2 (Locations D06 – D10, D16 – D20, D26 – D30)
Use part number 24L1029. See “Device Boards – DB1 and DB2” on page 830 to replace the board.
- Device Board-DB3 (Locations D31 – D40, D41, D42, D46 – D50)
Use part number 24L0892. See “Device Board – DB3” on page 831 to replace the board.

This ends the procedure.

7. If the FC 504x system unit expansion rack is a possible failing item, use part 74F1543.

Exchange the failing item (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

BATCHGR

A battery power unit charger is the failing item. Perform “SPCN-PIP5” on page 623, then return here and continue with this procedure.

Perform the following to determine the part number for the failing unit:

Note: When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

The system power control network (SPCN) detected a failure.

Note: The second and third characters of the SRC indicate the frame number of the failing unit.

Note: The C in the SRC (1xxC xxxx) indicates the problem is on the 9251 base I/O frame side. Any value other than C indicates the problem is on the processor side.

Note: See “Chapter 6. Removal and Installation Procedures” on page 793 before exchanging the Battery Charger.

1. Is the failing battery power unit charger in the processor frame?

No **Yes**

↓

- Battery Power Unit Charger–part 21H7060.
- FC 9251 Internal Battery Power Unit 1 or 2 charger–part 86G8020.

This ends the procedure.

2. The failing battery power unit charger is in a secondary unit. Is the failing battery power unit charger in a 5065 or 5066 expansion tower?

Yes **No**

↓

Find the failing battery power unit charger and part number:

- Internal Battery Power Unit 1 or 2 charger–part 86G8020
- External Battery Power Unit 2 charger–part 86G7750
- 9309 multi-purpose frame with SPCN–part 21F9380

This ends the procedure

3. Replace the battery power unit charger – part 97H7316.

This ends the procedure

BATRY

A battery may be failing.

Perform the following to determine the part number for the failing unit.

Note: When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

Note: See “Chapter 6. Removal and Installation Procedures” on page 793 before exchanging the battery.

1. Is the failing battery in a system unit?

Symbolic FRUs

No Yes

↓

- Internal battery unit pack assembly—part 21H7080
 - External battery unit—part 90H6294
 - BACKPLN
2. The failing battery is in a secondary expansion unit. Use one of the following batteries and parts:
- Internal battery power unit 1 and 2 battery pack — part 86G8040
 - External battery power unit 2 battery pack — part 86G7714
 - External battery power unit 2 cable — part 86G7712
 - 9309 general purpose I/O frame with SPCN (FC9171) — part 21F9380
 - Base I/O Tower (9251), battery power unit — part 86G8040
 - FC 5065 or 5066 expansion tower battery power unit — part 97H7320 (Replace all four battery power units (97H7320) at the same time.)

This ends the procedure.

BKSPCN

An SPCN card may be failing. The SPCN card may be part of the AC Module in some parts of the system.

Perform the following to determine the part number:

Perform “SPCN-PIP5” on page 623, then return here and proceed with this procedure.

Note: See “Chapter 6. Removal and Installation Procedures” on page 793 before exchanging the SPCN.

1. Is the failing SPCN card in a system unit?

No Yes

↓

All models—part 21H6961. For location of the SPCN card refer to “Chapter 5. Locations, Addresses, and Service Reference Information” on page 693.

This ends the procedure.

2. The failing SPCN card is in a secondary expansion unit or base I/O unit.
- For FC 5072 and 5082, the SPCN card is part of the ACMODUL. The part number is 87G6300.
 - For FC 5073, 5083, and 9251 Base I/O, the SPCN card is part of the ACMODUL. The part number is 21H7697.
 - For FC 5065 or 5066 expansion tower the SPCN card is part of the TWRCARD. The part number is 97H7532.

This ends the procedure.

BUSPWR

A power supply is failing.

Attention: AC power **must** be removed from the system before removing or installing regulators 17 or 18.

Perform the following:

1. Is the SRC 1xxx 1200 displayed?

Yes No

↓ Go to “Starting Point for All Problems” on page 4.

2. Perform the following:

- a. Remove regulators R01 to R16, R19, and R20 from the system unit. Do not remove R17 and R18.
- b. Power on the system.

Is the SRC 1xxx 1200 displayed?

Yes No

↓ Go to step 21 on page 384.

3. Perform the following:

- a. Remove one of the AMDs from the system not previously removed during this procedure.
- b. Power on the system.

Is the SRC 1xxx 1200 displayed?

Yes No

↓ The AMD you removed in this step is the failing item.

This ends the procedure.

4. Have you removed all of the AMDs one at a time?

No Yes

↓ Install all AMDs and go to step 6.

5. Perform the following:

- a. Power off the system.
- b. Read “Important Continuously Powered Main Storage (CPM) Information” on page 757.
- c. Perform “SPCN-PIP5” on page 623. Then return here and continue with the next step of this procedure.
- d. Install the AMD that was removed in step 3.
- e. Go to step 3.

6. Perform the following:

- a. Power off the system.
- b. Remove the battery power unit charger.
- c. Power on the system.

Is the SRC 1xxx 1200 displayed?

Yes No

↓ The battery power unit charger that you removed in this step is the failing item.

This ends the procedure.

7. Is the SRC 1xxx 1200 on a 650 Model System?

No Yes

↓ Go to step 11 on page 382.

Symbolic FRUs

8. Perform the following:
 - a. Power off the system.
 - b. Disconnect all disk units and removable media devices by pulling them out of the enclosure about one inch.
 - c. Power on the system.

Is the SRC 1xxx 1200 displayed?

No **Yes**

↓ Go to step 11.

9. One of the disk units or removable media devices removed in step 8 is the failing item.

Perform the following:

- a. Power off the system.
- b. Install one of the disk units or removable media devices that was removed in step 8.
- c. Power on the system.

Is the SRC 1xxx 1200 displayed?

No **Yes**

↓ The disk unit or removable media device you installed in this step was the failing item.

This ends the procedure.

10. Have all of the disk units and removable media devices been installed back into the system?

Yes **No**

↓ Repeat step 9 until all of the disk units and removable media devices have been installed back into the system.

This ends the procedure.

11. Perform the following:
 - a. Remove all except one of the bulk power supplies from the system.
 - b. Disconnect all of the disk units and removable media devices by pulling them out of the enclosure about one inch.
 - c. Power on the system.

Is the SRC 1xxx 1200 displayed?

Yes **No**

↓ Go to step 18 on page 383.

12. Perform the following:
 - a. Power off the system.
 - b. Remove the only bulk power supply installed.
 - c. Install one of the other bulk power supplies that was removed in step 11.
 - d. Power on the system.

Is the SRC 1xxx 1200 displayed?

Yes **No**

↓ The bulk power supply just removed in this step is the failing item.

This ends the procedure.

13. Perform the following:
 - a. Read “Important Continuously Powered Main Storage (CPM) Information” on page 757.
 - b. Perform SPCN-PIP5. Then return here and continue with the next step of this procedure.
14. Perform the following:
 - a. Remove regulator R17.
 - b. Power on the system.

Is the SRC 1xxx 1200 displayed?

Yes No

↓ Regulator R17 is the failing item.
15. Perform the following:
 - a. Remove regulator R18.
 - b. Power on the system.

Is the SRC 1xxx 1200 displayed?

Yes No

↓ Regulator R18 is the failing item.
16. Perform the following:
 - a. Power off the system.
 - b. Exchange the SPCN card (BKSPCN).
 - c. Power on the system.

Is the SRC 1xxx 1200 displayed?

Yes No

↓ The SPCN card exchanged in this step was the failing item.

This ends the procedure.
17. Replace the BACKPLN.
This ends the procedure.
18. Perform the following:
 - a. Power off the system.
 - b. Install one of the bulk power supplies that was removed in step 11 on page 382.
 - c. Power on the system.

Is the SRC 1xxx 1200 displayed?

No Yes

↓ The power supply you installed in this step is the failing item.

This ends the procedure.
19. Have you installed all of the power supplies that were removed in step 11 on page 382?
Yes No
↓ Repeat step 18.
20. Install all units removed in this procedure.
This ends the procedure.

Symbolic FRUs

21. Perform the following:
 - a. Power off the system.
 - b. Install one of the regulators that was removed in step 2 on page 381.
 - c. Remove all bus load (processor, memory, and IOP except Clock card).
 - d. Power on the system.

Is the SRC 1xxx 1200 displayed?

No **Yes**

↓ The regulator installed in this step is the failing item.

This ends the procedure.

22. Have you installed all of the regulators that were removed in step 2 on page 381?

Yes **No**

↓ Go to step 21.

This ends the procedure.

CACHBAT

The cache battery pack may be failing. Use the cache battery pack location information in the Service Action Log if it is available. If the location is not available, find the address of the storage IOA. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695

Using the type number of the storage IOA, go to “Type, Model, and Part Number List” on page 362 to determine the cache battery pack part number.

Power the system down normally prior to replacing the cache battery pack.

To exchange the cache battery pack, see “Cache Battery Pack, For Type 2740, 2748” on page 822.

This ends the procedure.

CACHE

The cache adapter card on the IOP may be failing.

- For the 2726/2741 IOA, the failing item is the 4010 cache adapter card (part number 44H6330).
- For the 6502 IOP, the failing item is the 6503 cache adapter card (part number 85F7214).
- For the 6512/6532/6533/6751/6754 IOP, the failing item is the 4700 cache adapter card (part number 86G8149).
- For the 2740 and 2748 IOAs, the cache adapter card is not a removable FRU. Return to the FRU list to exchange other items in the failing item list.

Exchange the failing item (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

CBLALL

A power cable may be the failing item.

Note: When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

Perform the following to determine the part number for the failing power supply:

1. Is the SRC 1xxx 1512, 1522, or 1532?

No **Yes**

↓ Exchange one of the following one at a time:

- The failing item is the SPCN cable, exchange the following - part 24L0843.
- The failing item is the power distribution backplane, exchange the following - part 24L0891.

This ends the procedure.

2. Is the SRC 1xxx 2612?

No **Yes**

↓ The failing item is the SPCN frame to frame cable. The following list shows the lengths and part numbers of the possible failing items:

- 6.0 meters--part 21F9469
- 15.0 meters--part 21F9358
- 30.0 meters--part 21F9359
- 60.0 meters--part 21F9360
- 100.0 meters (SPCN optical cable)--part 21F9415
- SPCN optical adapter--part 90H6287
- SPCN port cable (frame-to-node)--part 21F9362
- Frame-to-frame cable--part 87G6235
- SPCN optical adapter --part 90H6287

3. Go to “Starting Point for All Problems” on page 4.

This ends the procedure.

CDAWKLD

Too many communications lines are in use.

This ends the procedure.

CDTRAY

This symbolic FRU is not supported.

This ends the procedure.

CHECK

If the attached device is an external device, do the following before exchanging any parts:

- Ensure that the device is powered on.
- If an interposer is required, make sure that it is connected between the I/O Processor and the SCSI cable.

Symbolic FRUs

- Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable.
- Ensure that a terminating plug is attached to the device end of the SCSI cable.

This ends the procedure.

CLKCARD

A Clock card at location M07 may be failing.

Use the following information to determine the part number of the Clock card to exchange.

- Models 640, 730, and S30 — part 87G5649 (type 2822)
- Models 650, 740, S40 and SB1— part 21H6559 (type 25A9)

This ends the procedure.

CMPRES1

The compressed device and the compression IOA are not compatible.

Ask the customer to perform “Recovering from SRC 6xxx7051” in the *Backup and Recovery*, SC41-5304-04.

This ends the procedure.

CRYPBAT

The batteries for the IBM 4758 Cryptographic Adapter card need to be replaced.

Attention: If you remove either of the batteries without first backing up the power with a fresh battery, the data in the card’s protected memory could be lost, which would render the 4758 Adapter card useless and require replacement of the 4758 Adapter card. DO NOT attempt to remove/replace batteries unless you have a Battery Replacement Kit (PN 09J8199). Refer to “Cards-PCI Type 4758 Battery Replacement Procedure” on page 826 for additional information.

This ends the procedure.

CTLPNL

A control panel or control panel cable may be failing.

Perform the following to determine the part number for the failing item:

1. Read “Important Continuously Powered Main Storage (CPM) Information” on page 757.
2. Perform “SPCN-PIP5” on page 623. Then return here and continue with the next step of this procedure.
3. Exchange the following parts one at a time:
 - Control panel card with keystick — part 21H3727
 - Keystick — 46G3507
 - Control panel cable:
 - Model 640, 730, or S30, 14 position control panel to MFIOP backplane (SIG30D) — part 21H6974
 - Model 640, 730, or S30, 40 position control panel to SPD backplane (SIG30E) — part 21H6975

Symbolic FRUs

- Model 650, 740, S40, or SB1, 14 position control panel to frame tailgate (SIG30G) — part 21H6996
- Model 650, 740, S40, or SB1, 40 position control panel to MFIO backplane (SIG30F) — part 21H7760
- Model 650, 740, S40, or SB1, Ext. 5 meter frame tailgate to I/O frame (SIG30H) — part 21H7374
- For expansion panel:
 - Models 5065 or 5066 and 5066 — part 24L0946
 - Models 507x and 508x — part 17G0574
 - Models 9309 see *FC 504x Problem Analysis and Repair and Parts*.

DEVBPLN

A device backplane in the FC 5065 or 5066 Expansion Tower may be failing.

Replace the device backplane. Use the device backplane information in the Service Action Log. See “FC 5065 and FC 5066 Expansion Towers” on page 708 for location information. To exchange the device backplane at location DB1 or DB2, use part number 24L1029 and go to “Device Boards – DB1 and DB2” on page 830. To exchange the device backplane at location DB3, use part number 24L0892 and go to “Device Board – DB3” on page 831.

DEVICE

The device is located in the FC 5065 or 5066 expansion tower. See FI01105 in topic “Failing Item (FI) Code Table” on page 341.

DEVTERM

The device terminating plug may be failing.

Perform the following:

1. Find the IOP type:
 - a. Find the IOP location information in the Service Action Log if it is available. If the location is not available, find the address of the IOP. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
 - b. Find the IOP card in the system and read the type number of the card at that location.
2. Use the information in the following table to determine the failing terminating plug:

For IOPs and IOAs that attach external devices:	
IOP Type	Action
2621	See FI00880 in “Failing Item (FI) Code Table” on page 341.
2809/2824 with 2718 IOA	For device type 7207, use part 52G9907.
6500, 6501, 6534, 2809/2824 with 2729 IOA	For tape devices, tape libraries, or optical libraries, see FI00880 in “Failing Item (FI) Code Table” on page 341. For all other device types use part 85F7887.

Symbolic FRUs

For IOPs and IOAs that attach internal devices:	
Internal Device Location	Action
Device located in the system unit or feature code 507x or 508x towers.	Use part 90H6285. Note: See "Cable Diagrams for Expansion Towers" on page 719 to determine the terminating plug location.
Device located in a FC 5065 or 5066 expansion tower.	The terminator is integrated into the backplane.

3. Exchange the failing item.

Note: If the terminating plug is located on a backplane, go to "BACKPLN" on page 376. Follow the procedure until the terminating plug is accessible and then remove or exchange the plug.

This ends the procedure.

DISKDRV

The disk drive and logic card may be failing.

Perform the following:

1. Were you sent here from a power SRC (1xxx xxxx)?

No **Yes**

↓ Go to step 7 of this procedure.

2. Is the device location information available in the Service Action Log?

No **Yes**

↓ To exchange the failing item, see "Chapter 7. Recovery Procedures" on page 879.

This ends the procedure.

3. Find the IOP address and the device address (see "SRC Address Formats" on page 740).
4. See "System Unit Locations and Addresses" on page 695 and find the diagram of the system unit or the expansion unit and find:
 - The IOP card location identified by the direct select address.
 - The addressed disk location identified by the device address.
5. Is the SRC reported on the control panel?

No **Yes**

↓ See "Hardware SRC Formats" in the *AS/400 Service Functions* information.

The 2 rightmost characters of function 12-3 define the SRC format. Use the correct SRC format to locate the function containing the characters tttt lmmm, where:

- tttt=Type number
- l=Level
- mmm=Model

Go to step 9 of this procedure.

6. Go to step 8 of this procedure.

7. Use the disk/device unit number called out in the reference code table for this SRC.
Physically locate the disk/device using “System Unit Locations and Addresses” on page 695.
8. Remove the disk unit to determine the part number.
To exchange the disk drive and logic card, see “Chapter 7. Recovery Procedures” on page 879.
This ends the procedure.
9. Using the type and level information, go to “Disk Unit Type, Model, and Part Number List” on page 370 to determine the part number. If you do not know the type and level, remove the disk unit to determine the part.
To exchange the disk drive and logic card, see “Chapter 7. Recovery Procedures” on page 879.
This ends the procedure.

DISKIMG

There may be a problem with the Network Server Description (NWSA). First, vary off and then vary back on the Network Server Description (NWSA).

If this does not correct the problem, delete and recreate the Network Server Description (NWSA), or call your next level of support.

DISKTRY

The disk unit tray may be failing. If the disk unit is located in the FC 5065 or 5066 expansion tower, the disk tray is not a FRU and this symbolic FRU does not apply.

Perform the following:

1. Were you sent here from a power SRC (1xxx xxxx)?
No Yes
↓ Go to step 7 of this procedure.
2. Is the device location information available in the Service Action Log?
No Yes
↓ To exchange the failing item, see “Chapter 7. Recovery Procedures” on page 879.
This ends the procedure.
3. Find the IOP address and the device address (see “SRC Address Formats” on page 740).
4. See “System Unit Locations and Addresses” on page 695, locate the diagram of the system unit or the expansion unit, and find:
 - The IOP card location identified by the direct select address.
 - The addressed disk location identified by the device address.
5. Is the SRC reported on the control panel?
No Yes
↓ See “Hardware SRC Formats” in the *AS/400 Service Functions* information.

Symbolic FRUs

The 2 rightmost characters of function 12–3 define the SRC format. Use the correct SRC format to locate the function containing the characters tttt lmmm, where:

- tttt=Type number
- l=Level
- mmm=Model

Go to step 9 of this procedure.

6. Go to step 8 of this procedure.
7. Use the disk/device unit number called out in the reference code table for this SRC.

Physically locate the disk/device using “System Unit Locations and Addresses” on page 695.

8. Remove the disk unit to determine the part number.

To exchange the failing item, see “Chapter 7. Recovery Procedures” on page 879.

This ends the procedure.

9. Using the type and level information, go to “Disk Unit Type, Model, and Part Number List” on page 370 to determine the part number. If you do not know the type and level, remove the disk unit to determine the part.

To exchange the failing item, see “Chapter 7. Recovery Procedures” on page 879.

This ends the procedure.

DMREG

A power regulator card is the failing item.

Perform the following:

Attention: AC power **must** be removed from the system before removing or installing regulators 17 or 18.

1. Read “Important Continuously Powered Main Storage (CPM) Information” on page 757.
2. Perform SPCN-PIP5. Then return here and continue with the next step of this procedure.
3. Is the SRC 1xxx 140x?

No **Yes**

↓ Go to step 29 of this procedure.

4. Is the SRC 1xxx 1201?

Yes **No**

↓ Go to step 9 of this procedure.

5. Perform the following:
 - a. Check the jumper location for the jumper load selection (see Figure 23 on page 698).
 - b. Find the model number of the system.
 - c. After finding the correct model and jumper configuration, remove the load cards Mxx in the following table.

Jumper	Model	Load Position
--------	-------	---------------

J1	640, 730, S30	M08, M09
J2	640, 730, S30	M08, M09
J1	650, 740, S40, SB1	M08, M09, M20
J2	650, 740, S40, SB1	M08, M09, M20

d. Power on the system.

Does the system power on?

Yes No

↓ Go to step 29 of this procedure.

6. Perform the following:

a. Power off the system.

b. Install one of the Mxx load cards that was removed in step 5 of this procedure.

c. Power on the system.

Does the system power on?

Yes No

↓ The last card that was installed in step 6 of this procedure is the failing item.

This ends the procedure.

7. Have all the Mxx load cards been installed?

Yes No

↓ Repeat step 6 of this procedure.

8. **This ends the procedure.**

9. Is the SRC 1xxx 1202?

Yes No

↓ Go to step 14 of this procedure.

10. Perform the following:

a. Check the jumper location for the jumper load selection (see Figure 23 on page 698).

b. Find the model number of the system.

c. After finding the correct model and jumper configuration, remove the load cards Mxx in the following table.

Jumper	Model	Load Position
J1	640, 730, S30	M07
J1	650, 740, S40, SB1	M07, M20

d. Power on the system.

Does the system power on?

Yes No

↓ Go to step 29 of this procedure.

11. Perform the following:

a. Power off the system.

Symbolic FRUs

- b. Install one of the Mxx load cards that was removed in step 10 of this procedure.
- c. Power on the system.

Does the system power on?

Yes **No**

- ↓ The last card that was installed in step 11 of this procedure is the failing item.

This ends the procedure.

12. Have all the Mxx load cards been installed?

Yes **No**

- ↓ Repeat step 11 of this procedure.

13. **This ends the procedure.**

14. Is the SRC 1xxx 1203?

Yes **No**

- ↓ Go to step 17 of this procedure.

15. Perform steps 29 through 31 of this procedure and then return here.

Did performing steps 29 through 31 resolve SRC 1xxx 1203?

No **Yes**

- ↓ **This ends the procedure.**

16. Exchange the BACKPLN.

The possible failing items are:

Jumper	Model	Position
J1	640, 730, S30	BACKPLN
J2	640, 730, S30	BACKPLN
J1	650, 740, S40, SB1	BACKPLN
J2	650, 740, S40, SB1	BACKPLN

This ends the procedure.

17. Is the SRC 1xxx 1204?

Yes **No**

- ↓ Go to step 19 of this procedure.

18. Perform steps 29 through 31 of this procedure and then return here.

Did performing steps 29 through 31 resolve SRC 1xxx 1204?

No **Yes**

- ↓ **This ends the procedure.**

19. Is the SRC 1xxx 1205?

Yes **No**

- ↓ Go to step 24 of this procedure.

20. Perform the following:

- a. Check the jumper location for the jumper load selection (see Figure 23 on page 698).

- b. Find the model number of the system.
- c. After finding the correct model and jumper configuration, remove the cards Mxx in the following table.

Jumper	Model	Failing Item
J1	640, 730, S30	M10, M15
J2	640, 730, S30	M10, M15
J1	650, 740, S40, SB1	M10, M15
J2	650, 740, S40, SB1	M10, M15

- d. Power on the system.

Does the system power on?

Yes No

↓ Go to step 29 of this procedure.

- 21. Perform the following:

- a. Power off the system.
- b. Install one of the Mxx load cards that was removed in step 20 of this procedure.
- c. Power on the system.

Does the system power on?

Yes No

↓ The last card that was installed in step 21 of this procedure is the failing item.

This ends the procedure.

- 22. Have all the Mxx load cards been installed?

Yes No

↓ Repeat step 21 of this procedure.

- 23. **This ends the procedure.**

- 24. Is the SRC 1xxx 1206?

Yes No

↓ Go to "Starting Point for All Problems" on page 4.

- 25. Perform the following:

- a. Check the jumper location for the jumper load selection (see Figure 23 on page 698).
- b. Find the model number of the system.
- c. After finding the correct model and jumper configuration, remove the cards Mxx in the following table.

Jumper	Model	Failing Item
J1	640, 730, S30	M1 - M6
J2	640, 730, S30	M1 - M6
J1	650, 740, S40, SB1	M1 - M6
J2	650, 740, S40, SB1	M1 - M6

- d. Power on the system.

Symbolic FRUs

Does the system power on?

Yes No

↓ Go to step 29 of this procedure.

26. Perform the following:

- a. Power off the system.
- b. Install one of the Mxx load cards that was removed in step 25 of this procedure.
- c. Power on the system.

Does the system power on?

Yes No

↓ The last card that was installed in step 26 of this procedure is the failing item.

This ends the procedure.

27. Have all the Mxx load cards been installed?

Yes No

↓ Repeat step 26 of this procedure.

28. **This ends the procedure.**

29. Perform the following:

- a. Power off the system.
- b. Using the reference code, jumper, and model, see the table at the end of this procedure to identify the possible failing regulators.
- c. Remove one of the possible failing regulators and install a new regulator card.
- d. Power on the system.

Does the system power on?

No Yes

↓ The regulator you removed in this step is the failing item.

This ends the procedure.

30. Have you swapped all of the regulator cards?

No Yes

↓ **This ends the procedure.**

31. Perform the following:

- a. Power off the system.
- b. Remove the new regulator and install the original regulator.
- c. Go to step 29 of this procedure to test another regulator.

	The Possible Failing Regulators are:		
Reference Code	Jumper	Model	Regulator

Symbolic FRUs

1201, 1401	J1	640, 730, S30	R13 - R16, R19 part 21H7763
	J2	640, 730, S30	R12 - R16, R19 part 21H7763
	J1	650, 740, S40, SB1	R1 - R7, R15, R16, R19 part 21H7763
	J2	650, 740, S40, SB1	R1 - R7, R9, R10, R12, R15, R16 part 21H7763
1202, 1402	J1	640, 730, S30	R12 - R16 part 21H7763
	J1	650, 740, S40, SB1	R3 - R7, R9, R10, R12, R15, R16 part 21H7763
1203, 1204, 1403, 1404	J1	640, 730, S30	R17, R18 part 21H7100
	J2	640, 730, S30	R17, R18 part 21H7100
	J1	650, 740, S40, SB1	R17, R18 part 21H7100
	J2	650, 740, S40, SB1	R17, R18 part 21H7100
1205, 1206, 1405, 1406	J1	640, 730, S30	R11, R12 part 21H7763
	J2	640, 730, S30	R11, R12 part 21H7763
	J1	650, 740, S40, SB1	R11, R12 part 21H7763
	J2	650, 740, S40, SB1	R9 - R12 part 21H7763

DPAC

The two port adapter cable (P/N 21F9345) is the failing item.

This ends the procedure.

DRVSWCH

The address switches on an Optical Disk Drive in the Optical Library need to be checked and verified. Refer to the *3995 Optical Library Dataserver Maintenance Information Manual* for more information.

DSKUNIT

The disk drive is located in the FC 5065 or 5066 expansion tower. See "DISKDRV" in topic "Symbolic FRU Isolation" on page 374.

EACODE

An error occurred in the error analysis Licensed Internal Code.

Ask your next level of support for assistance.

This ends the procedure.

EXTREMD

An external removable media storage device may be failing.

See "CHECK" on page 385 for more information prior to removing or replacing any parts. Return here if "CHECK" doesn't reveal any problems.

Symbolic FRUs

Use the device type and refer to the appropriate service documentation for that device. This documentation will help you determine the FRU part numbers and replacement procedures that you are to use during this repair action. If you are unable to locate the documentation for your specific device, then contact your next level of support for assistance.

EXTSCSI

If more than one device is attached, they may have duplicate addresses. See "External Devices" on page 730.

The external signal cable may be failing.

Perform the following:

1. Find the IOP type:
 - a. Find the IOP address (see "SRC Address Formats" on page 740).
 - b. See "System Unit Locations and Addresses" on page 695 and find the location of the IOP card at the IOP address (direct select address) you just read.
 - c. Find the IOP card in the system and read the type number of the card at that location.
2. Find the IOP type, the attached device, the cable length, and the cable part number in the following list.

Note: Verify that the part number in the list is the same as the part number on the cable.

IOP Type	Device	Lengths	Part Number
2621	All except 9427	4.0 meters	6495268
		12.0 meters	6495269
		20.0 meters	21F4980
	9427	2.0 meters	21F9043
		4.0 meters	21F9044
		6.0 meters	56F0382
		20.0 meters	21F9045
6500	9337	2.0 meters	21F9043
		4.0 meters	21F9044
		6.0 meters	56F0382
		20.0 meters	21F9045

Symbolic FRUs

IOP Type	Device	Lengths	Part Number	
6501	9337	1.5 meters	21F9046	
		4.0 meters	21F9047	
		6.0 meters	56F0381	
		24.0 meters	21F9048	
	3490, 3490 Exx, 3590	2.8 meters	05H4647	
		4.5 meters	05H4648	
		12.0 meters	05H4649	
		18.0 meters	05H4650	
		25.0 meters	05H4651	
	3490/Fxx, 3570	0.5 meters	49G6456	
		4.5 meters	49G6457	
		12.0 meters	49G6458	
		18.0 meters	49G6459	
	63A0	See device documentation to determine cable P/Ns		
	6534, 2809/2824 with 2729 IOA	3490, 3490/Exx, 3590	2.8 meters	05H4647
			4.5 meters	05H4648
12.0 meters			05H4649	
18.0 meters			05H4650	
25.0 meters			05H4651	
3490/Fxx, 3570, 7208/342, 9427		0.5 meters	49G6456	
		4.5 meters	49G6457	
		12.0 meters	49G6458	
		18.0 meters	49G6459	
63A0		See device documentation to determine cable P/Ns		
7208/012, 7208/222		1.5 meters	52G0174	
		4.0 meters	59H3462	
		12.0 meters	59H3463	
7208/232, 7208/234, 9348		0.5 meters	06H6037	
		4.0 meters	59H3460	
		12.0 meters	59H3461	
3995		12.0 meters	59H3461	
2809/2824 with 2718 IOA		7207/122, 7210/020	2.4 meters	67G1260

Notes:

- a. All cables for the type 6501 IOP, with the exception of 9337 cables, must include an interposer, part 05H3834 on the IOP end of the cable.
- b. All cables for the 9427 tape library must include an interposer, part 05H3834, on the device end of the cable.
- c. If the tape unit being used is in the FC 5032 Removable Storage Unit, the failing item may also be one of the following:
 - DSE module—part 21F8890

Symbolic FRUs

- Cable carrier—part 21F8872

The DSE module internal to the FC 5032 Removable Storage Unit terminates each external signal cable. No terminating plug is required. The DSE module connects tape units as follows:

- Tape units in the top 5032 locations (positions 1 and 2) use the top external cable connector.
- Tape units in the bottom 5032 locations (positions 3 and 4) use the bottom external cable connector.

This ends the procedure.

HLNY3

See to the following information for assistance:

- *ASCII Work Station Reference*:
Provides information on ASCII workstation controller configurations.
- *Local Device Configuration* information
Explains configuration menus, commands, and parameters.
- *ASCII Workstation Planning and Configuration Guide, SA21-9969*.
Contains ASCII workstation diagrams, which provide system configurations and physical hardware layouts. This information is used when problem analysis or hardware changes are required and it should be kept current.
- Device service information:
Provides information on how to use, set-up, and service a device that may be attached to the ASCII workstation controller. PC Support or Dial 3/X program documentation should be used when programmable workstations are attached to ASCII workstation controllers.

This ends the procedure.

IDPART

A system unit part is failing.

Perform the following:

1. Is the SRC 1xxx 7405?
Yes No
↓ Go to “Starting Point for All Problems” on page 4
2. Read “Important Continuously Powered Main Storage (CPM) Information” on page 757.
3. Perform SPCN-PIP5. Then return here and continue with the next step of this procedure.
4. Perform the following:
 - a. Power off the system.
 - b. Remove all processor and memory cards from the system.
 - c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

Yes No

↓ Go to step 10 on page 399.

5. Perform the following:

- a. Power off the system.
- b. Exchange the AC module in the system unit (ACMODUL).
- c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

Yes No

↓ The AC module you replace in this step is the failing item.

This ends the procedure.

6. Perform the following:
 - a. Power off the system.
 - b. Exchange the control panel in the system unit.
 - c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

Yes No

↓ The control panel you replaced in this step is the failing item.

This ends the procedure.

7. Perform the following:
 - a. Power off the system.
 - b. Exchange the SPCN card in the system unit (BKSPCN).
 - c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

Yes No

↓ The SPCN card you replaced in this step is the failing item.

This ends the procedure.

8. Perform the following:
 - a. Power off the system.
 - b. Exchange the Clock card in the system unit.
 - c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

Yes No

↓ The Clock card you replaced in this step is the failing item.

This ends the procedure.

9. Perform the following:
 - a. Power off the system.
 - b. Exchange the BACKPLN in the system unit.
 - c. Install all parts that were removed.

This ends the procedure.

10. Perform the following:
 - a. Power off the system.
 - b. Install one of the units removed in step 4 on page 398.
 - c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

Symbolic FRUs

No Yes

↓ The last unit you installed in this step is the failing item.

This ends the procedure.

11. Have you installed all of the units removed in step 4 on page 398?

Yes No

↓ Repeat step 10 on page 399.

This ends the procedure.

12. **This ends the procedure.**

IOP

Replace the I/O Processor. Use the I/O Processor location information in the Service Action Log if it is available. If the location is not available, find the address of the I/O Processor. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695. To Exchange the I/O Processor, see Cards in "Chapter 6. Removal and Installation Procedures" on page 793.

This ends the procedure.

LBSADP1

The failing item is the *Local Bus Adapter* card.

- For models 650, 740, S40 and SB1: The card position is S09 and the card type is 2696.
- For models 640, 730 and S30: The card position is S06 and the card type is 2696.
- See the "Chapter 5. Locations, Addresses, and Service Reference Information" on page 693 section of this document to determine the removal and installation procedure for this *Local Bus Adapter* card.

LBSADP2

The failing item is the *Local Bus Adapter* card.

- For models 650, 740, S40 and SB1: The card position is S07 and the card type is 2695.
- For models 640, 730 and S30: The card position is S05 and the card type is 2695.
- See the "Chapter 5. Locations, Addresses, and Service Reference Information" on page 693 section of this document to determine the removal and installation procedure for this *Local Bus Adapter* card.

LBSADP3

The failing item is the *Local Bus Adapter* card.

- For models 650, 740, S40 and SB1: The card position is S10 and the card type is 2695.
- For models 640, 730 and S30: The card position is S04 and the card type is 2695.
- See the "Chapter 5. Locations, Addresses, and Service Reference Information" on page 693 section of this document to determine the removal and installation procedure for this *Local Bus Adapter* card.

LBUSADP

The local bus adapter is the failing item. This FRU contains the card slots for the local SPD optical bus driver cards in the system unit.

Use the BBBBCcbb format of the SRC to determine the failing bus number. Use the following table to determine the failing card location and type.

- For Models 640, 730 and S30:
 - Buses 2 – 7 = Location S06 • 2696
 - Buses 8 – 13 (or 0008 - 000D in hex as in the DSA) = Location S05 • 2695
 - Buses 14 – 19 (or 000E - 0013 in hex as in the DSA) = Location S04 • 2695
- For Models 650, 740, S40, and SB1:
 - Buses 2 – 7 = Location S09 • 2696
 - Buses 8 – 13 (or 0008 - 000D in hex as in the DSA) = Location S07 • 2695
 - Buses 14 – 19 (or 000E - 0013 in hex as in the DSA) = Location S10 • 2695

LPARCFG

There is a configuration problem with a logical partition.

Have the customer check processor and memory allocations to the secondary partitions. The customer must ensure there are enough functioning processor and memory resources in the system for all the partitions. Be aware that processor or memory resources that failed during system IPL could have caused the IPL problem in the secondary partition.

Have the customer check the bus and I/O processor allocations for the secondary partition. The customer must ensure that the partition has load source and console I/O resources.

Have the customer check the IPL mode of the Primary partition and the failing secondary partition. If the Primary partition is IPL'd in mode 'C' then secondary partitions can only be IPL'd in mode 'C'. If that is the problem, then re-IPL the Primary partition in either 'A' or 'B' mode. Then the secondary partition can IPL in any mode.

For further assistance the customer should contact their software service provider, or visit the IBM web page at <http://www.as400.ibm.com/lpar> for additional support direction.

This ends the procedure.

LPARSUP

There is an IPL or MSD problem with a secondary partition.

During the IPL or mainstore dump of a secondary partition, a complex problem was detected. The Primary partition's SAL has to be searched or the secondary partition's SRC history list has to be analyzed in sequence. Contact your next level of hardware support.

This ends the procedure.

Symbolic FRUs

MEDIA

Defective media. See the I/O device service information.

This ends the procedure.

MEMORY

The memory module on the Integrated Netfinity Server card is the failing item.

Feature	Size	Part Number
2861	32MB	44H7558
2862	128MB	90H9075
2867	256MB	97H7725

This ends the procedure.

MSCONFG

This symbolic FRU indicates that the memory configuration is invalid.

For main storage plugging rules and procedures, refer to *AS/400e server 170, 250, 6xx, 7xx, and Sxx System Installation and Upgrade* .

If the system is:

- Model 640 with any feature code,
- Model S30 with feature code 2257,
- Model S30 with feature code 2258,
- Model S30 with feature code 2259,
- Or model S30 with feature code 2320,

Then the maximum allowable main storage configuration has been exceeded. This system allows up to 16G of main storage. Remove the extra main storage and re-IPL the system.

If the system is:

- Model 650 with feature code 2240,
- Model 650 with feature code 2243,
- Model S30 with feature code 2260,
- Model S30 with feature code 2321,
- Model S30 with feature code 2322,
- Model S40 with feature code 2256,
- Model S40 with feature code 2261,
- Model SB1 with feature code 2310,
- Or model SB1 with feature code 2311,

Then the maximum allowable main storage configuration has been exceeded. This system allows up to 32G of main storage. Remove the extra main storage and re-IPL the system.

If the system is:

- Model 650 with feature code 2188,
- Model 650 with feature code 2189,

- Model 730 with feature code 2C6C,
- Model 730 with feature code 2C6D,
- Model 730 with feature code 2C6E,
- Model 730 with feature code 2C6F,
- Model 730 with feature code 2D6A,
- Model 740 with any feature code,
- Model S40 with feature code 2207,
- Model S40 with feature code 2208,
- Model S40 with feature code 2340,
- Model S40 with feature code 2341,
- Model SB1 with feature code 2312,
- Or model SB1 with feature code 2313,

Then the main storage is not configured correctly. This system allows any configurations up to and including 32G, and exactly 40G, but no configurations are allowed between 32G and 40G. Remove one quad non-2G main storage card and re-IPL the system.

If the system is:

- Model 730 with feature code 2A6x,
- Model 730 with feature code 2B6x,
- Model 730 with feature code 2C6A,
- Model 730 with feature code 2C6B,

Then the main storage configuration is unbalanced. A balanced configuration is one which has equal amounts of main storage on each side of the system. In other words, the total main storage on the right hand side (slots 01-06) must equal the total main storage on the left hand side (slots 07-12). Rearrange the main storage cards and re-IPL the system.

This ends the procedure.

NOFRUS

No failing items are identified for the reference code.

This ends the procedure.

NTDEVDR

The Windows NT Server device driver may be causing the problem. Refer to the *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03 book, or contact your next level of support for assistance.

This ends the procedure.

NTLANDD

The Windows NT Server Virtual LAN device driver may be causing the problem. Refer to the *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03 book, or contact your next level of support for assistance.

This ends the procedure.

Symbolic FRUs

NTOPSYS

The Windows NT Server Operating System may be causing the problem. Refer to the *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03 book, or contact your next level of support for assistance.

This ends the procedure.

NTUSER

The Windows NT Server problem may be caused by:

- User-initiated action.
- A Windows NT user application.
- No keyboard or mouse attached to the Integrated Netfinity Server for AS/400.

Refer to the *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03 book, or contact your next level of support for assistance.

This ends the procedure.

NTVSCSI

The Windows NT Server Virtual SCSI device driver may be causing the problem. Refer to the *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03 book, or contact your next level of support for assistance.

This ends the procedure.

OPTLCBL

The cabling for an Optical Disk Drive in the Optical Library needs to be checked. The cabling may be incorrectly installed or defective.

Refer to the *3995 Optical Library Dataserver Maintenance Information Manual* for more information.

OPTLDRV

An Optical Disk Drive in the Optical Library is failing.

Refer to the *3995 Optical Library Dataserver Maintenance Information Manual* for more information.

PCIBUS

The failing item is any PCI adapter controlled by the I/O processor indicated either in the Direct Select Address of the SRC or in the location given by the SAL entry. Perform "BUS-PIP5" on page 459 to determine which IOA is the failing item.

This ends the procedure.

PGDPART

Perform the following to determine the part number for the failing PGDPART:

Attention: AC power **must** be removed from the system before removing or installing regulators 17 or 18.

Note: The address of the failing frame and unit is shown in the second, third and fourth character of the 4 leftmost characters of the SRC.

11-x xFFU-xxxx (F=frame and U=unit).

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 757.
2. Perform SPCN-PIP5. Then return here and continue with the next step of this procedure.
3. Is the SRC 1xxx 2600 on a FC 5065 or 5066 expansion tower?

No Yes

↓ Go to 13 on page 406.

4. Is the SRC 1xxx 640x?

Yes No

↓ Go to "Starting Point for All Problems" on page 4.

5. Perform the following:
 - a. Power off the system.
 - b. In a system unit: Exchange the SPCN card (BKSPCN).
 - c. In an expansion unit: Exchange the AC module (ACMODUL).
 - d. Power on the system.

Does the SRC 1xxx 640x continue to be displayed?

Yes No

↓ The SPCN card that was replaced in this step was the failing item.

This ends the procedure.

6. Perform the following:
 - a. Power off the system.
 - b. Remove one of the regulators in position 11, 16, 17 or 20 (expansion 1, 2) and install a new regulator (see "System Unit Locations and Addresses" on page 695)

Note: The regulator in position 17 is not the same part number as the other three regulators.

- c. Power on the system.

Is SRC 1xxx 640x displayed?

Yes No

↓ The regulator that was removed in this step is the failing item.

This ends the procedure.

7. Perform the following
 - a. Power off the system.
 - b. Remove the new regulator that was installed in step 6 and replace it with the original regulator.
 - c. Remove one of the untested regulators from position 11, 16, 17, or 20 and install a new regulator.
 - d. Power on the system.

Is SRC 1xxx 640x displayed?

Symbolic FRUs

Yes No

↓ The regulator that was removed in this step is the failing item.

This ends the procedure.

8. Repeat step 7 until a new regulator has been installed in positions 11, 16, 17, and 20. Then continue with the next step.

9. **CAUTION:**

To prevent overheating problems, do not remove any device completely from the enclosure unless you install an airflow card in it's place.

Remove the following cards from the system unit:

- Models 640, 730 and S30 - Processor cards (2237, 2238, and 2239) and all cards in the first six positions of the SPD card enclosure (located in the rear of the system, upper right side).
- Models 650, 740, S40, and SB1 - Processor cards (2240)

See "System Unit Locations and Addresses" on page 695 for more location information.

10. Power on the system.

Does the SRC 1xxx 640x continue to be displayed?

No Yes

↓ Exchange the BACKPLN in the system.

This ends the procedure.

11. Perform the following:

- a. Install one of the cards you removed in step 9 of this procedure.
- b. Power on the system.

Is the SRC 1xxx 640x displayed?

No Yes

↓ Power off the system.

Replace the last card installed in this step.

This ends the procedure.

12. Repeat step 11 until all the cards have been reinstalled.

13. Is the SRC 1xxx 2600?

Yes No

↓ Go to "Starting Point for All Problems" on page 4.

14. Perform the following:

- a. Power off the expansion frame.
- b. Check that the tower card (TWRCARD) is connected and seated properly.
- c. Check that the power supplies (PWRSPPLY) are connected and seated properly.
- d. Power on the expansion frame.

15. Is there an SRC 1xxx 2600?

No Yes

↓ Exchange the following frus one at time:

- TWRCARD (See "System Unit Locations and Addresses" on page 695.)

- PWRSPY (See “System Unit Locations and Addresses” on page 695 .)

This ends the procedure.

PLUS

The list of possible failing items displayed online is not complete. There is not enough space to display all of the failing items. See the complete list of possible failing items in the appropriate unit reference code table in “Chapter 2. Unit Reference Codes” on page 59.

This ends the procedure.

PNLBAT

A control panel (time of day) battery may be failing.

Perform the following to determine the part number for the failing part:

1. Read “Important Continuously Powered Main Storage (CPM) Information” on page 757.
2. Perform “SPCN-PIP5” on page 623. Then return here and continue with the next step of this procedure.
3. Exchange the control panel battery — part 16G8095.

PROCARD

This symbolic FRU indicates that the system processor card is the failing item.

Access function 20-3. The first four characters are the model number, and the last four characters are the processor feature code. Look closely at both sections below and find the processor feature code. Then follow the instructions for isolation which are contained in that section.

Single-Piece Processors

See “System Unit Locations and Addresses” on page 695 for location information. Obtain the part number from the “Type, Model, and Part Number List” on page 362.

Table 11. Address Table for Single-Piece Processors

Processor Feature Code	Model	Processor Card 0 (Location-M08)	Processor Card 1 (Location-M09)	Processor Card 2 (Location-M20)
2237	640	2237		
2238	640	2238		
2239	640	2239		
2240	650	2239	2240	
2243	650	2239	2240	2243
2256	S40	2259	2256	
2257	S30	2257		
2258	S30	2258		
2259	S30	2259		

Symbolic FRUs

Table 11. Address Table for Single-Piece Processors (continued)

Processor Feature Code	Model	Processor Card 0 (Location-M08)	Processor Card 1 (Location-M09)	Processor Card 2 (Location-M20)
2260	S30	2259	2260	
2261	S40	2259	2260	2261
2310	SB1	2310	2311	
2311	SB1	2310	2311	2310
2320	S30	2320		
2321	S30	2320	2321	
2322	S30	2320	2322	

For models 640 and S30 see “Locations in Models 640, 730 and S30 System Unit” on page 696 for the processor locations. For models 650, S40, and SB1 see “Locations in Models 650, 740, S40, and SB1 System Unit” on page 700 for the processor locations.

Dual-Piece Processors

1.

See “System Unit Locations and Addresses” on page 695 for location information. Obtain the part number from the “Type, Model, and Part Number List” on page 362.

Table 12. Processor Cards for Dual-Piece Processors with Interactive Card Technology

Processor Feature Code	Model	Processor Card 0 (Location-M08)	Processor Card 1 (Location-M09)	Processor Card 2 (Location-M20)
2188	650	2188	2189	
2189	650	2188	2189	2188
2313	SB1	2312	2313	2312
2312	SB1	2312	2313	
2207	S40	2207	2208	
2208	S40	2207	2208	2207
2340	S40	2340	2208	
2341	S40	2340	2208	2340
2A6A	730	2A6A		
2A6B	730	2A6B		
2A6C	730	2A6C		
2A6D	730	2A6D		
2A6E	730	2A6E		
2A6F	730	2A6F		
2B6A	730	2B6A		
2B6B	730	2B6B		

Table 12. Processor Cards for Dual-Piece Processors with Interactive Card Technology (continued)

Processor Feature Code	Model	Processor Card 0 (Location-M08)	Processor Card 1 (Location-M09)	Processor Card 2 (Location-M20)
2B6C	730	2B6C		
2B6D	730	2B6D		
2B6E	730	2B6E		
2B6F	730	2B6F		
2C6A	730	2C6A		
2C6B	730	2C6B		
2C6C	730	2B6D	2206	
2C6D	730	2B6E	2206	
2C6E	730	2B6F	2206	
2C6F	730	2C6A	2206	
2D6A	730	2C6B	2206	
2D6B	740	2D6B	2208	
2D6C	740	2D6C	2208	
2D6D	740	2D6D	2208	
2D6E	740	2D6E	2208	
2E6A	740	2D6B	2208	2207
2E6B	740	2D6C	2208	2207
2E6C	740	2D6D	2208	2207
2E6D	740	2D6E	2208	2207
2E6E	740	2E6E	2208	2207

- Use the table above to determine the type number. Go to “Type, Model, and Part Number List” on page 362 to obtain the two orderable features. Order **both** of them.
- When you have obtained both the Processor card and the Interactive card, **DO NOT ASSEMBLE THEM**. Go to “Cards” on page 798.

This ends the procedure.

PROCCFG

The system has encountered an invalid configuration.

Use Function 20 to access the system model and processor feature information.

Access Function 16 and record the last for characters of the information.

Use the following table to identify the FRU to replace.

Notes:

- These processors are dual-piece, using the Interactive card technology. Use the associated procedures for removal and installation.

System Model	Processor Feature	Right half of Function 16	FRU Location	FRU Feature Code
640	2237, 2238, 2239	xx01	M06	2822

Symbolic FRUs

System Model	Processor Feature	Right half of Function 16	FRU Location	FRU Feature Code
640	2237, 2238, 2239	xx02	M00	2828
640	2237	xx03	M01	2237
640	2238	xx03	M01	2238
640	2239	xx03	M01	2239
650	2188, 2189	xx03	M08	2188 ¹
650	2188, 2189	xx04	M09	2189 ¹
650	2189	xx05	M20	2188 ¹
650	2188, 2189, 2240, 2243	xx01	M07	25A9
650	2188, 2189, 2240, 2243	xx02	—	2829
650	2240, 2243	xx03	M08	2239
650	2240, 2243	xx04	M09	2240
650	2243	xx05	M20	2243
730	ALL	xx01	M07	2822
730	2C6C, 2C6D, 2C6E, 2C6F, 2D6A	xx02		2823
730	2A6C, 2B6C, 2C6A, 2C6B	xx02		2828
730	2A6A	xx03	M08	2A6A
730	2A6B	xx03	M08	2A6B
730	2A6C	xx03	M08	2A6C
730	2A6D	xx03	M08	2A6D
730	2A6E	xx03	M08	2A6E
730	2A6F	xx03	M08	2A6F
730	2B6A	xx03	M08	2B6A
730	2B6B	xx03	M08	2B6B
730	2B6C	xx03	M08	2B6C
730	2B6D, 2C6C	xx03	M08	2B6D
730	2B6E, 2C6D	xx03	M08	2B6E
730	2B6F, 2C6E	xx03	M08	2B6F
730	2C6A, 2C6F	xx03	M08	2C6A
730	2C6B, 2D6A	xx03	M08	2C6B
730	2C6C, 2C6D, 2C6E, 2C6F, 2D6A	xx04	M09	2206
S30	2257, 2258, 2259, 2260, 2320, 2321, 2322	xx01	M07	2822
S30	2257, 2258, 2259, 2320	xx02	—	2828
S30	2260, 2321, 2322	xx02	—	2823
S30	2257	xx03	M08	2257
S30	2258	xx03	M08	2258
S30	2259, 2260	xx03	M08	2259
S30	2320, 2321, 2322	xx03	M08	2320

Symbolic FRUs

System Model	Processor Feature	Right half of Function 16	FRU Location	FRU Feature Code
S30	2260	xx04	M09	2260
S30	2321	xx04	M09	2321
S30	2322	xx04	M09	2322
740	ALL	xx01	M07	25A9
740	ALL	xx02		2829
740	2D6B, 2E6A	xx03	M08	2D6B
740	2D6C, 2E6B	xx03	M08	2D6C
740	2D6D, 2E6C	xx03	M08	2D6D
740	2D6E, 2E6D	xx03	M08	2D6E
740	2E6E	xx03	M08	2E6E
740	ALL	xx04	M09	2208
740	2E6A, 2E6B, 2E6C, 2E6D, 2E6E	xx05	M20	2207
S40	2207, 2208, 2256, 2261, 2340, 2341	xx01	M07	25A9
S40	2207, 2208, 2256, 2261, 2340, 2341	xx02	—	2829
S40	2207, 2208	xx03	M08	2207 ¹
S40	2340, 2341	xx03	M08	2340 ¹
S40	2207, 2208, 2340, 2341	xx04	M09	2208 ¹
S40	2208	xx05	M20	2207 ¹
S40	2341	xx05	M20	2340 ¹
S40	2256, 2261	xx03	M08	2259
S40	2256	xx04	M09	2256
S40	2261	xx04	M09	2260
S40	2261	xx05	M20	2261
SB1	2310, 2311, 2312, 2313	xx01	M07	25A9
SB1	2310, 2311, 2312, 2313	xx02	—	2829
SB1	2310, 2311	xx03	M08	2310
SB1	2310, 2311	xx04	M09	2311
SB1	2311	xx05	M20	2310
SB1	2312, 2313	xx03	M08	2312 ¹
SB1	2312, 2313	xx04	M09	2213 ¹
SB1	2313	xx05	M20	2312 ¹

This ends the procedure.

PWRREG

Attention: To avoid thermal damage to other cards when exchanging regulators, you must put the EMC access plate for the CEC regulator in place before powering on the system.

Symbolic FRUs

Perform any SPCN-PIPs before exchanging parts.

A power regulator card may be failing.

Attention: AC power **must** be removed from the system before removing or installing regulators 17 or 18.

Note: The C in the SRC (1xxC xxxx) indicates the problem is on the 9251 base I/O frame side. Any value other than C indicates the problem is on the processor side.

Perform the following to determine the part number for the failing power regulator:

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 757.
2. Perform "SPCN-PIP5" on page 623. Then return here and continue with the next step of this procedure.
3. Is the SRC 1xxC 6xxx?

No **Yes**

↓ The failing power regulator is located in the Model 650, 740, S40, or SB1 with Base I/O Tower 9251.

Go to step 39 of this procedure.

4. Is the SRC 1xxx 1108 or 1308?

No **Yes**

↓ Power regulator R01 is the failing item.

The following list shows the possible failing items:

- Models 650, 740, S40, and SB1 System Unit –part 21H7763
- Models 640, 730, and S30 System Unit–part BKSPCN

This ends the procedure.

5. Is the SRC 1xxx 1109 or 1309?

No **Yes**

↓ Power regulator R02 is the failing item.

The following list shows the possible failing item:

- Models 650, 740, S40, and SB1 System Unit–part 21H7763 (if installed, if not installed the failing item may be BKSPCN)
- Models 640, 730, and S30 System Unit–part BKSPCN

This ends the procedure.

6. Is the SRC 1xxx 110A or 130A?

No **Yes**

↓ Power regulator R03 is the failing item.

The following list shows the possible failing items:

- Models 650, 740, S40, and SB1 System Unit–part 21H7763
- Models 640, 730, and S30 System Unit–part BKSPCN

This ends the procedure.

7. Is the SRC 1xxx 110B or 130B?

No Yes

↓ Power regulator R04 is the failing item.

The following list shows the possible failing items:

- Models 650, 740, S40, and SB1 System Unit–part 21H7763 (if installed, if not installed the failing item may be BKSPCN)
- Models 640, 730, and S30 System Unit–part BKSPCN

This ends the procedure.

8. Is the SRC 1xxx 110C or 130C?

No Yes

↓ Power regulator R05 is the failing item.

The following list shows the possible failing items:

- Models 650, 740, S40, and SB1 System Unit–part 21H7763 (if installed, if not installed the failing item may be BKSPCN)
- Models 640, 730, and S30 System Unit–part BKSPCN

This ends the procedure.

9. Is the SRC 1xxx 110D or 130D?

No Yes

↓ Power regulator R06 is the failing item.

The following list shows the possible failing item:

- Models 650, 740, S40, and SB1 System Unit–part 21H7763 (if installed, if not installed the failing item may be BKSPCN)
- Models 640, 730, and S30 System Unit–part BKSPCN

This ends the procedure.

10. Is the SRC 1xxx 110E or 130E?

No Yes

↓ Power regulator R07 is the failing item.

The following list shows the possible failing item:

- Models 650, 740, S40, and SB1 System Unit–part 21H7763 (if installed, if not installed the failing item may be BKSPCN)
- Models 640, 730, and S30 System Unit–part BKSPCN

This ends the procedure.

11. Is the SRC 1xxx 1110 or 1310?

No Yes

↓ Power regulator R09 is the failing item.

The following list shows the possible failing items:

- Models 650, 740, S40, and SB1 System Unit–part 21H7763 (if installed, if not installed the failing item may be BKSPCN)
- Models 640, 730, and S30 System Unit–part BKSPCN

This ends the procedure.

12. Is the SRC 1xxx 1111 or 1311?

No Yes

↓ Power regulator R10 is the failing item.

Symbolic FRUs

The following list shows the possible failing items:

- Models 650, 740, S40, and SB1 System Unit–part 21H7763
- Models 640, 730, and S30 System Unit–part BKSPCN

This ends the procedure.

13. Is the SRC 1xxx 1112 or 1312?

No Yes

↓ Power regulator R11 is the failing item.

The following list shows the possible failing item:

- All Models System Unit–part 21H7763

This ends the procedure.

14. Is the SRC 1xxx 1113 or 1313?

No Yes

↓ Power regulator R12 is the failing item.

The following list shows the possible failing item:

- All Models System Unit–part 21H7763

This ends the procedure.

15. Is the SRC 1xxx 1114 or 1314?

No Yes

↓ Power regulator R13 is the failing item.

The following list shows the possible failing items:

- Models 650, 740, S40, and SB1 System Unit–part BKSPCN
- Models 640, 730, and S30 System Unit–part 21H7763 (if installed, if not installed the failing item may be BKSPCN)

This ends the procedure.

16. Is the SRC 1xxx 1115 or 1315?

No Yes

↓ Power regulator R14 is the failing item.

The following list shows the possible failing items:

- Models 650, 740, S40, and SB1 System Unit –part BKSPCN
- Models 640, 730, and S30 System Unit –part 21H7763 (if installed, if not installed the failing item may be BKSPCN)

This ends the procedure.

17. Is the SRC 1xxx 1116 or 1316?

No Yes

↓ Power regulator R15 is the failing item.

The following list shows the possible failing items:

- All Models System Unit – part 21H7763
- If the SRC still exists, replace SPCN card – part BKSPCN

This ends the procedure.

18. Is the SRC 1xxx 1117 or 1317?

No Yes

↓ Power regulator R16 is the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7763
- If the SRC still exists, replace SPCN card – part BKSPCN

This ends the procedure.

19. Is the SRC 1xxx 1118 or 1318?

No Yes

↓ Power regulator R17 is the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7100
- If the SRC still exists, replace SPCN card – part BKSPCN

This ends the procedure.

20. Is the SRC 1xxx 1119 or 1319?

No Yes

↓ Power regulator R18 is the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7100
- BKSPCN; see “BKSPCN” on page 380
- BACKPLN; see “BACKPLN” on page 376

This ends the procedure.

21. Is the SRC 1xxx 111A or 131A?

No Yes

↓ Power regulator R19 is the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7763
- If the SRC still exists, replace SPCN card – part BKSPCN

This ends the procedure.

22. Is the SRC 1xxx 111B or 131B?

No Yes

↓ Power regulator R20 is the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7763
- If the SRC still exists, replace SPCN card – part BKSPCN

This ends the procedure.

23. Is the SRC 1xxx 1401?

No Yes

↓ Power regulators are the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7763

Go to “DMREG” on page 390 and perform steps 29 through 31 to determine the failing item.

Symbolic FRUs

This ends the procedure.

24. Is the SRC 1xxx 1402?

No Yes

↓ Power regulators are the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7763

Go to “DMREG” on page 390 and perform steps 29 through 31 to determine the failing item.

This ends the procedure.

25. Is the SRC 1xxx 1403?

No Yes

↓ Power regulators are the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7100

Go to “DMREG” on page 390 and perform steps 29 through 31 to determine the failing item.

This ends the procedure.

26. Is the SRC 1xxx 1404?

No Yes

↓ Power regulators are the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7100

Go to “DMREG” on page 390 and perform steps 29 through 31 to determine the failing item.

This ends the procedure.

27. Is the SRC 1xxx 1405?

No Yes

↓ Power regulators are the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7763

Go to “DMREG” on page 390 and perform steps 29 through 31 to determine the failing item.

This ends the procedure.

28. Is the SRC 1xxx 1406?

No Yes

↓ Power regulators are the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7763

Go to “DMREG” on page 390 and perform steps 29 through 31 to determine the failing item.

This ends the procedure.

29. Is the SRC 1xxx 6018, 6118, 6518, 6818 or CE18?

No Yes

↓ Power regulator 1, 2, or 3 is the failing item.

The following list shows the possible failing items:

- Models 640, 730, and S30 –part 21H4829
- Models 650, 740, S40, and SB1 –part BKSPCN
- System Unit Expansion (FC 507x)–part 87G6049
- Storage Expansion Tower (FC 508x)–part 17G1209 (on FC 508x only reg.1 installed).

Perform “SPCN-PIP1” on page 619 to determine the failing item.

This ends the procedure.

30. Is the SRC 1xxx 601A, 671A, or 673A?

No Yes

↓ Power regulator 17 or 18 is the failing item.

The following list shows the possible failing items:

- All Models System Unit–part 21H7100

To determine the failing regulator, replace each regulator with a new regulator, one at a time.

This ends the procedure.

31. Is the SRC 1xxx 6218, 6318, 631A, 6618, 6718, or 6A18?

No Yes

↓ Power regulator 1 is the failing item.

The following list shows the possible failing items:

- Models 640, 730, and S30 —part 21H4829
- Models 650, 740, S40, and SB1 System Unit–part BKSPCN
- System Unit Expansion (FC 507x)–part 87G6049
- Storage Expansion Tower (FC 508x)–part 17G1209 (on FC 508x only reg.1 installed).

Perform “SPCN-PIP1” on page 619 to determine the failing item.

This ends the procedure.

32. Is the SRC 1xxx 6x38?

No Yes

↓ Power regulator 2 is the failing item.

The following list shows the possible failing items:

- Models 640, 730, and S30 –part 21H4829
- Models 650, 740, S40, and SB1 System Unit–part BKSPCN
- System Unit Expansion (FC 507x)–part 87G6049

Symbolic FRUs

- Storage Expansion Tower (FC 508x)—see the next FRU in the SRC list.
- Base I/O Tower 9251—part 21H4829

Perform “SPCN-PIP1” on page 619 to determine the failing item.

This ends the procedure.

33. Is the SRC 1xxx 6x58?

No Yes

↓ Power regulator 3 is the failing item.

The following list shows the possible failing items:

- Model 640, 730, and S30 System Unit—part BKSPCN
- Model 650, 740, S40, and SB1 System Unit—part BKSPCN
- System Unit Expansion (FC 507x)—see the next FRU in the SRC list.
- Storage Expansion Tower (FC 508x)—see the next FRU in the SRC list.
- Base I/O Tower 9251 – part 21H4829

This ends the procedure.

34. Is the SRC 1xxx 7201, 7202, OR 7203?

No Yes

↓ One of the power regulators is the failing item. The following list shows the possible failing items:

- System Unit Expansion (FC 507x) – part 87G6049
- Storage Expansion Tower (FC 508x) – part 17G1209

This ends the procedure.

35. Is the SRC 1xxx 7401?

No Yes

↓ One of the power regulators is the failing item.

The following list shows the possible failing items:

- Models 640, 730, and S30 –part 21H7100
- Models 650, 740, S40, and SB1 System Unit—part 21H7100
- Battery Charger—part 21H7060

This ends the procedure.

36. Is the SRC 1xxx B101 or B102?

No Yes

↓ If the system can be powered on with this SRC, perform symbolic FRU BATCHGR, and then continue.

One of the power regulators is the failing item.

The following list shows the possible failing items:

- Models 640, 730, and S30 —part 21H4829, 21H7100 or 21H7763
- Models 650, 740, S40, and SB1 —part 21H7100 or 21H7763
- System Unit Expansion (FC 507x)—part 87G6049
- Storage Expansion Tower (FC 508x)—part 17G1209 (on 508x only reg.1 installed).

- Base I/O tower (FC 9251)—part 21H4829
- Symbolic FRU BATCHGR

This ends the procedure.

37. Is the SRC 1xxx B201 or B202?

No Yes

↓ If the system can be powered on with this SRC, perform symbolic FRU BATCHGR, and then continue.

The battery unit is reporting an over-current.

The following list shows the possible failing items:

- Regulator—part 21H7100
- Battery Charger—part 21H7060
- Symbolic FRU BATCHGR

This ends the procedure.

38. Go to “Starting Point for All Problems” on page 4.

39. Is the SRC 1xxC 6018, 6118, 6518, 6818, or 6918 or 601A?

No Yes

↓ Power regulator 1, 2, or 3 is the failing item.

The following list shows the possible failing items:

- Model 650, 740, S40, or SB1 with Base I/O Tower 9251—part 21H4829

Perform “SPCN-PIP1” on page 619 to determine the failing item.

This ends the procedure.

40. Is the SRC 1xxC 6218, 6318, 631A, 6618, 6718, 671A, or 6A18?

No Yes

↓ Power regulator 1 is the failing item.

The following list shows the possible failing items:

- Model 650, 740, S40, or SB1 with Base I/O Tower 9251—part 21H4829

Perform “SPCN-PIP1” on page 619 to determine the failing item.

This ends the procedure.

41. Is the SRC 1xxC 6x38 or 6x3A?

No Yes

↓ Power regulator 2 is the failing item.

The following list shows the possible failing items:

- Model 650, 740, S40, or SB1 with Base I/O Tower 9251—part 21H4829

This ends the procedure.

42. Is the SRC 1xxC 6x58?

No Yes

↓ Power regulator 3 is the failing item.

Symbolic FRUs

The following list shows the possible failing items:

- Model 650, 740, S40, or SB1 with Base I/O Tower 9251–part 21H4829

This ends the procedure.

43. Go to “Starting Point for All Problems” on page 4.

This ends the procedure.

PWROC

An over current has been detected which could indicate that a load is at fault or in rare occasions the power supply diagnostics maybe the failing item. Perform the following SPCN-PIPs to identify the failing item.

1. Perform “SPCN-PIP5” on page 623, then return here and continue with the next step of this procedure.
2. Is the SRC 1xxx 1810, 1820, 1830, or 1840 on a FC 5065 or FC 5066 expansion?

No Yes

↓ Perform “SPCN-PIP11” on page 630 to isolate the failing item. The failing item maybe one of the following parts:

- Power Supply P01 — part 90H6629
- Power Supply P02 — part 90H6629
- Power Supply P03 — part 90H6629\
- Any part on the system bus.

3. Is the SRC 4414?

Yes No

↓

This ends the procedure.

4. Power on the system. Does the expansion tower that was failing power on?

Yes No

↓

Go to “Starting Point for All Problems” on page 4.

This ends the procedure.

5. Remove the AC line cord from the outlet. Does a battery power unit charger fault occur?

Yes No

↓

This ends the procedure.

6. Replace the battery power unit charger – part 97H7316.

This ends the procedure.

PWRSPLY

A power supply may be failing.

Note: When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

Symbolic FRUs

Note: The C in the SRC (1xxC xxxx) indicates the problem is on the 9251 base I/O frame side. Any value other than C indicates the problem is on the processor side.

If the LED on a bulk power supply, part 21H7030, is not on or is blinking, it may be the failing item. The LED not on may be the only indication of a failure. Exchange the bulk power supply to correct this problem.

Perform the following to determine the part number for the failing power supply:

1. Is the SRC 1xxx-11xx, 1xxx-13xx, 1xxx-15xx, 1xxx-18xx, 1xxx-2600?

No **Yes**

↓ The failing power supply is located in the system unit or an I/O secondary frame.

Find the unit reference code in the following list to determine the failing power supply and the part number. Then see "System Unit Locations and Addresses" on page 695 to determine the location of the failing item.

For 1xxx-11xx SRCs use this table:

Unit Reference Code	Power Supply	Part Number
1100	P01	21H7030
1101	P02	21H7030
1102	P03	21H7030
1103	P04	21H7030
1104	P05	21H7030
1105	P06	21H7030

For 1xxx-13xx SRCs use this table:

Unit Reference Code	Power Supply	Part Number
1300	P01	21H7030
1301	P02	21H7030
1302	P03	21H7030
1303	P04	21H7030
1304	P05	21H7030
1305	P06	21H7030

For 1xxx-15xx SRCs in a secondary FC 5065 or 5066 expansion tower, use this table:

Note: For SRCs 1510, 1520, and 1530: before replacing any parts, verify that the voltage is correct at the AC outlet and the power supply input connector.

Unit Reference Code	Power Supply	Part Number
1510, 1511, 1512, 1513	P01	90H6629
1520, 1521, 1522, 1523	P02	90H6629
1530, 1531, 1532, 1533	P03	90H6629

For 1xxx-15xx, and 2600, SRCs in a secondary FC 5065 or 5066 expansion tower perform "SPCN-PIP11" on page 630.

Symbolic FRUs

Unit Reference Code	Power Supply	Part Number
2600	P01, P02, P03	90H6629

2. Is the SRC 1xxx CD00?

No **Yes**

↓ The system unit is not detecting any power supplies installed. If a power supply is installed replace the following one at a time:

In the System Unit frame:

- Power supply — part 21H7030
- SPCN card — part 21H6961

This ends the procedure.

In a FC 5065 or 5066 Expansion Tower:

- Power supply — part 90H6629
- SPCN card — part 97H7532

This ends the procedure.

In a FC 9251, 5073, and 5083 Expansion Tower:

- Part 21H7697

This ends the procedure.

In all others with an AC module

- Part 87G6300

This ends the procedure.

3. Is the SRC 1xxx 7xxx?

No **Yes**

↓ The failing power supply is located in a secondary tower. The address of the failing tower and unit is shown in the third and fourth character of the 4 leftmost characters of the SRC.

Find the unit reference code in the following list to determine the failing power supply and the part number. Then see “System Unit Locations and Addresses” on page 695 to determine the location of the failing item.

Unit Reference Code	Power Supply	Part Number
7x01	AC Module (except 9251,5071,5073,5081,5083)	87G6300
	AC Module 9251,5071,5073,5081,5083	21H7697
7x02	Feature 2 (all except 9251,5071,5073,5081,5083)	87G6290
	9251,5071,5073,5081,5083	87G6110
7x03	Feature 1 (all except 9251,5071,5073,5081,5083)	87G6290
	9251,5071,5073,5081,5083	87G6110
7x04	Feature 1-2 (all except 9251,5071,5073,5081,5083)	87G6290
	9251,5071,5073,5081,5083	87G6110

This ends the procedure.

4. Go to “Starting Point for All Problems” on page 4.

This ends the procedure.

QSYSOPR

For more information, look in the System Operator message queue for a message with the same date/time. Perform any actions defined in the message.

This ends the procedure.

REFER

Consult the appropriate 3995 Optical Library Dataserver Maintenance Information Manual to assist in analyzing the URC.

This ends the procedure.

RMDEV

A removable media power regulator or device is failing.

The last two digits of the reference code identify the failing device:

- xx16 is D01
- xx17 is D02
- xx1C is D03
- xx1F is D04

Use "System Unit Locations and Addresses" on page 695 to determine where the failing device is located and to identify what type of device it is (disk unit, optical storage unit or tape).

Note: Before removing a failing device, refer to the appropriate concurrent maintenance procedure in "Chapter 6. Removal and Installation Procedures" on page 793.

1. Is the SRC 1xxx 6B16, 6B17, 6B1C, 6B1F, 6C16, 6C17, 6C1C or 6C1F ?

Yes No

↓ Go to "Starting Point for All Problems" on page 4.

2. Is the failing device a disk unit?

No Yes

↓ Go to "DISKTRY" on page 389 to replace the failing device.

Return to step 6 after exchanging the device.

3. Is the failing device an optical storage unit?

No Yes

↓ The optical storage unit is the failing item. Using a type of 632x, look up the part number in the "Type, Model, and Part Number List" on page 362.

Return to step 6 of this procedure after exchanging the device.

4. The failing device is a magnetic tape unit. Determine the device type by reading the QIC number from the front door of the device. Find the type number in the table below.

QIC or Tape Device	Type Number
QIC 3040	6335
QIC 1000	6379
QIC 2GB	6380, 6381

Symbolic FRUs

QIC or Tape Device	Type Number
QIC 5010	6385
8mm Tape Device	6390

- Use the device type to determine the part number in the "Type, Model, and Part Number List" on page 362. Return to step 6 of this procedure after exchanging the device.
- Is the SRC 1xxx 6B16, 6B17, 6B1C, 6B1F, 6C16, 6C17, 6C1C or 6C1F displayed?
Yes **No**
↓ The regulator you replaced in this step is the failing item.
This ends the procedure.
- Exchange the SPCN card (BKSPCN). See "Chapter 6. Removal and Installation Procedures" on page 793. After exchanging the part, return here and continue with this procedure.
Is the SRC 1xxx 6B16, 6B17, 6B1C, 6B1F, 6C16, 6C17, 6C1C or 6C1F displayed?
Yes **No**
↓ The SPCN card you replaced in this step is the failing item.
This ends the procedure.
- Exchange the backplane (BACKPLN)
This ends the procedure.

SIGx

The failing item may be a signal cable. Check "System Unit Locations and Addresses" on page 695 for signal cable information. Check "Assembly 23: Internal Cable Assemblies" on page 984 for part number information.

This ends the procedure.

SNSDATA

This is a portion of the SCSI sense data associated with the URC, it is not a failing item in and of itself. This data is referenced by certain failure isolation procedures within the 3995 Optical Library Dataserver Maintenance Information Manuals.

This ends the procedure.

STORIOA

The storage IOA may be failing. For some IOPs, the storage IOA is not a separate FRU. In this instance, replace the whole IOP. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 740. Use the address to find the location. See "System Unit Locations and Addresses" on page 695.

The 2809 and 2824 IOPs have the following removable storage IOAs: 2718, 2726, 2728, 2729, 2740, 2741, and 2748. For these IOPs, replace the storage IOA.

For all other IOPs, replace the IOP.

This ends the procedure.

SVCDOCS

See the *Description/Action* column in the “Chapter 2. Unit Reference Codes” on page 59 for the Unit Reference Code you have.

This ends the procedure.

TAPCLN

Clean the tape unit.

This ends the procedure.

TAPCNFG

Tape and DASD devices are attached to an I/O Processor that can not support both Tape and DASD at the same time.

This ends the procedure.

TWRCARD

An SPCN card may be failing. The SPCN card may be part of the AC Module in the system expansion.

Note: See “Chapter 6. Removal and Installation Procedures” on page 793 before exchanging the SPCN.

Note: When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

Perform the following to determine the part number:

- Perform “SPCN-PIP5” on page 623. Then, return here and continue with the next step in this procedure.

1. Is the failing SPCN card in a system unit?

No **Yes**

↓ All models - part 21H6961. For location of the SPCN card refer to “System Unit Locations and Addresses” on page 695.

This ends the procedure.

2. The failing SPCN card is in a secondary expansion unit or base I/O unit.

- For FC 5072 and 5082, the SPCN card is part of the ACMODUL - part 87G6300.
- For FC 5073, 5083, and 9251 Base I/O, the SPCN card is part of the ACMODUL - part 21H7697.
- For FC 5065 or 5066 or 5066 expansion tower the SPCN card is part of the PCI/SPCN card assembly - part 97H7532.
- See “Chapter 6. Removal and Installation Procedures” on page 793 before exchanging the part.

This ends the procedure.

UAMR1

The LAN Server/400 configuration may be causing the problem.

Symbolic FRUs

See the *OS/2 Warp Server for AS/400 Administration, SC41-5423-00* book for more information about the configuration.

This ends the procedure.

UC235

The problem may be that the card (a resource) was removed from the card enclosure without updating the system configuration records.

Note: If the system has OptiConnect/400, verify that the remote system was powered on at the time of the failure.

Perform the following:

1. See the original system message and record the name of the resource.
2. Use the Work with Hardware Resources (WRKHDWRSC) command to determine the location of the card. Be sure to note all other resources that appear on the bus.

This ends the procedure.

UC236

The problem may be that the card (a resource) is not correctly plugged into the card enclosure.

Perform the following:

1. See the original system message and record the name of the resource.
2. Use the Work with Hardware Resources (WRKHDWRSC) command to determine the location of the card.
3. Verify that the card is installed properly.

This ends the procedure.

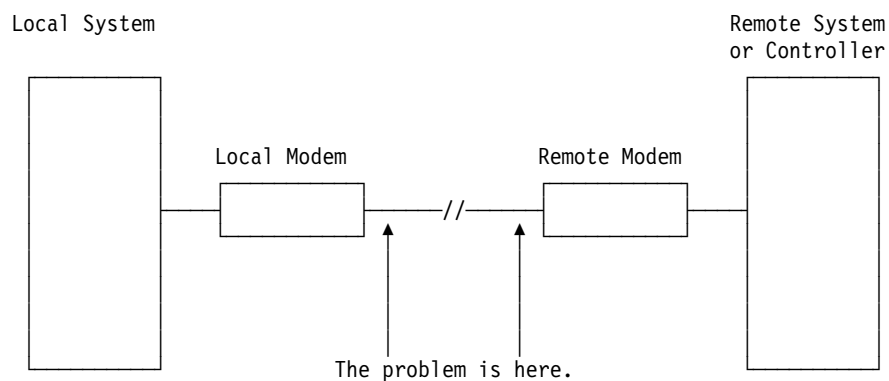
UG3AS

An error has been detected in AS/400 Licensed Internal Code.

Contact your next level of support for possible corrective actions.

This ends the procedure.

UJ0E7



The problem has been isolated to the telephone line equipment that links the local and the remote equipment.

This ends the procedure.

UJ6P3

An error occurred in the IBM Facsimile Support/400 Licensed Program.

Please contact your next level of support for possible corrective actions.

Additional information on Facsimile Support/400 can be found in *Application System/400 Facsimile Support/400 User's Guide*.

This ends the procedure.

UJE34

The error message may have been logged from a temporary error that is not caused by equipment failure. This type of error message sometimes contains information about system performance.

See the original system message for cause and recovery information about the error.

This ends the procedure.

UJE40

The problem may be at the remote site or on the network media.

Perform the following:

1. Ask the remote site operator to verify the following:
 - The remote equipment is powered on and ready.
 - The configuration values are correct.
 - The local area network cables are securely connected and are not damaged.
2. If the problem continues, run all available diagnostic tests on the remote equipment and perform the repair action specified.

This ends the procedure.

ULNZ2

A maximum of 18 devices can be varied on for one ASCII workstation controller.

Perform the following:

1. Use the work with device description (WRKDEV) command to display the workstation controller information. Verify that only 18 devices on each ASCII workstation controller have *YES in the device description field for the Online at IPL parameter.

If more than 18 devices are attached to the ASCII workstation controller, you must vary off a device that is not being used before you can vary on another device.
2. If possible, move some of the devices to another ASCII workstation controller.

This ends the procedure.

Symbolic FRUs

ULNZ3

Communications line problems:

When a workstation is attached to the system through modems, it may fail or lose communication with the system for various lengths of time. This is due to a communications line problem.

Refer to the modem service information to determine how to test the modems and verify that the communications line between the modems is working correctly.

This ends the procedure.

ULNZ4

Independent workstation and SDLC support:

The system considers an independent workstation to be an attached remote system when it is attached using PC Support asynchronous communications on an ASCII workstation controller.

Perform the following:

- See the *ASCII Work Station Reference* information for instructions on how to verify that the remote system (independent workstation) attached to the failing port is a supported device.
- See the device hardware maintenance and service information for instructions on how to verify that the device is working correctly.

This ends the procedure.

UNP20

The internal code of the I/O card that detected the error may be defective.

Perform the following:

1. Replace the suspected card.
2. If the failure occurs again, contact your next level of support and report the problem.

This ends the procedure.

UPLF1

The system may not have been able to complete the APPN session initiation due to the number of jobs that were active when the timeout occurred.

The timeout condition could have been caused by a system performance problem. System performance could be impacted by the capacity of the system. System performance can also be impacted by processing requests from other systems in the network.

For capacity planning and system performance information, refer to *LPS: Performance Tools for AS/400*.

This ends the procedure.

USER

System operator or user error. See the system operator information.

This ends the procedure.

UX201

The printer definition table may be causing the problem.

See the original system message for cause and recovery information about the error.

This ends the procedure.

UX202

A problem was detected while downloading a device Licensed Internal Code change to the device.

See the original system message for cause and recovery information about the error.

This ends the procedure.

UY1Z1

Cable problems:

See the *IBM Technical Information Manual* for information on how to correct cabling problems. Problems associated with noise can cause a workstation to fail or lose communication with the system for various lengths of time. Noise or electrical interference can be caused by a motor or any device that is a source of electrical radiation. The following are common causes for noise problems:

- Cables that are located near a source of electrical interference.
- Cables that are loose, damaged, or not correctly connected

This ends the procedure.

UY1Z2

This error occurs if you attempted to activate more workstations than the amount allowed.

Perform one of the following to correct the problem:

- Turn off the power for the workstation that caused the error, or connect the workstation to a different controller.
- Turn off the power for a different workstation connected to the same workstation controller.

See the local workstation diagrams for the physical location of workstations.

This ends the procedure.

UY1Z3

This error is caused by a workstation connected to the port.

Perform the following:

Symbolic FRUs

1. Turn off the power for one workstation on the port, then check if the other workstations operate correctly. Repeat this step for each workstation on the port. The workstation causing the problem is the one that is turned off when the others are working correctly.
If you did not find the problem, continue to step 2.
2. Turn off the power for all workstations on the port. Then turn on one workstation to check if it works when all other workstations are turned off. Repeat this step for each workstation on the port. The workstation causing the problem is the one that works when all other workstations are turned off.

This ends the procedure.

UY1Z4

An error occurred with the pass-through command between the workstation controller and the workstation.

This type of error is caused by a failure in the Licensed Internal Code in the workstation or the Licensed Internal Code in the workstation controller.

This ends the procedure.

UY1Z5

The communication between the workstation controller and a workstation was interrupted during an active session.

Possible causes:

- The power for the workstation was turned off, then on.
- A temporary loss of power to the workstation occurred.

This ends the procedure.

VPDPART

A VPDPART may be failing.

Perform the following to determine the part for the failing VPDPART:

Note: The address of the failing frame and unit is shown in the second, third and fourth characters of the 4 leftmost characters of the SRC.

11-x xFFU-xxxx (F=frame and U=unit).

Attention: AC power **must** be removed from the system before removing or installing regulators 17 or 18.

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 757.
2. Perform "SPCN-PIP5" on page 623. Then return here and continue with the next step of this procedure.
3. Is the SRC 1xxx 8401?

No **Yes**

↓ Exchange the following parts one at a time:

- Control panel (CTLPNL) – part 21H3727
- Clock card (CLKCARD)

- Models 640, 730, and S30 – part 87G5649 (type 2822)
- Models 650, 740, S40 and SB1 – part 21H6559 (type 25A9)

4. Is the SRC 1xxx 8402?

No Yes

↓ Exchange the following parts one at a time:

- Clock card (CLKCARD)
 - Models 640, 730, and S30 – part 87G5649 (type 2822)
 - Models 650, 740, S40 and SB1 – part 21H6559 (type 25A9)
- Control panel (CTLPNL) – part 21H3727

5. Is the SRC 1xxx 8403?

No Yes

↓ Check for correct installation of VPD parts then exchange the following parts one at a time:

- Clock card (CLKCARD)
 - Models 640, 730, and S30 – part 87G5649 (type 2822)
 - Models 650, 740, S40 and SB1 – part 21H6559 (type 25A9)
- Memory cards (See “Type, Model, and Part Number List” on page 362 for the correct part.)
- Processor cards (See “PROCARD” on page 407 for the correct part.)

6. Is the SRC 1xxx 8404?

No Yes

↓ Exchange the following parts one at a time:

- Processor 0 (See symbolic fru “PROCARD” on page 407 for the correct part.)
- Processor 1 (See symbolic fru “PROCARD” on page 407 for the correct part.)

7. Is the SRC 1xxx 8405?

No Yes

↓ Exchange the following parts one at a time:

- Processor 2 (See symbolic fru “PROCARD” on page 407 for the correct part.)
- Processor 0 and 1 (See symbolic fru “PROCARD” on page 407 for the correct part.)

8. Is the SRC 1xxx 8407?

No Yes

↓ The regulator backplane cache jumpers are not correct for the processor installed. Correct the cache jumper positions. Cache jumpers J1 and J2 are behind R17.

Note: If cache jumpers are correct, exchange the MEM regulators R17 or R18 one at a time.

9. Is the SRC 1xxx 8409?

No Yes

Symbolic FRUs

↓ No processors are installed. If you are in test mode and have removed all the processors, disregard this SRC. Otherwise, correct the processors.

If the processors are installed correctly, exchange the following part:

- All Processors (See symbolic fru "PROCARD" on page 407 for the correct part.)

10. Is the SRC 1xxx 8413?

No **Yes**

↓ Exchange the following part:

- Processor 0 (See symbolic fru "PROCARD" on page 407 for the correct part.)

11. Is the SRC 1xxx 8414?

No **Yes**

↓ Exchange the following part:

- Processor 1 (See symbolic fru "PROCARD" on page 407 for the correct part.)

12. Is the SRC 1xxx 8415?

No **Yes**

↓ Exchange the following part:

- Processor 2 (See symbolic fru "PROCARD" on page 407 for the correct part.)

13. Is the SRC 1xxx 8423?

No **Yes**

↓ Exchange the following part:

- Processor 0 (See symbolic fru "PROCARD" on page 407 for the correct part.)

14. Is the SRC 1xxx 8424?

No **Yes**

↓ Exchange the following part:

- Processor 1 (See symbolic fru "PROCARD" on page 407 for the correct part.)

15. Is the SRC 1xxx 8425?

No **Yes**

↓ Exchange the following part:

- Processor 2 (See symbolic fru "PROCARD" on page 407 for the correct part.)

16. Go to "Starting Point for All Problems" on page 4.

Chapter 4. Problem Isolation Procedures (PIPs)

PIP Type List

ASCII Workstation I/O Processor Problem			
Isolation Procedures	434	MSIOP-PIP2	541
Overview	434	MSIOP-PIP3	543
ASCII-PIP1	435	MSIOP-PIP4	544
ASCII-PIP2	440	MSIOP-PIP5	546
Bus Problem Isolation Procedures	442	MSIOP-PIP6	547
Overview	442	MSIOP-PIP7	548
BUS-PIP1	443	MSIOP-PIP8	549
BUS-PIP2	450	MSIOP-PIP9	550
BUS-PIP3	455	MSIOP-PIP10	550
BUS-PIP5	459	MSIOP-PIP11	551
BUS-PIP6	465	MSIOP-PIP12	552
BUS-PIP7	477	MSIOP-PIP13	554
BUS-PIP8	481	MSIOP-PIP14	555
BUS-PIP9	483	MSIOP-PIP15	556
BUS-PIP10	488	MSIOP-PIP16	558
BUS-PIP11	491	MSIOP-PIP17	560
Communications Problem Isolation Procedures	492	MSIOP Test Procedure	561
Overview	492	MSIOP Parts Location	563
COMM-PIP1	493	MSIOP (Type 611x) Failing Items	564
Disk Unit Problem Isolation Procedures	495	MSIOP (Type 650x) Failing Items	565
Overview	495	Storage Device Ready Conditions for MSIOP	
DU-PIP3	495	Devices	566
Intermittent Problem Isolation Procedures	498	Power Problem Isolation Procedures	567
Introduction	498	Overview	567
INT-PIP3 External Noise on AC Voltage Lines	499	POW-PIP3	568
INT-PIP5 External Noise on Twinaxial Cables	500	Remote Operations Console Problem Isolation	
INT-PIP7 Electromagnetic Interference (EMI)	500	Procedures	569
INT-PIP8 Grounding	501	Overview	569
INT-PIP9 Utility Power and Battery Power		ROC-PIP3	570
Units	503	ROC-PIP5	573
INT-PIP14 Station Protectors	506	ROC-PIP7	574
INT-PIP16 Licensed Internal Code	506	Storage Device I/O Processor (SDIOP) Problem	
INT-PIP18 PTFs Not Installed	506	Isolation Procedures	576
INT-PIP20 Performance Problems.	506	Overview	576
INT-PIP24 Service Processor Data Collection	507	SDIOP-PIP1	577
Licensed Internal Code (LIC) Problem Isolation		SDIOP-PIP3	580
Procedures	508	SDIOP-PIP13	582
Overview	508	SDIOP-PIP16	585
LIC-PIP1	509	SDIOP-PIP17	589
LIC-PIP3	510	SDIOP-PIP18	592
LIC-PIP4	511	SDIOP-PIP19	594
LIC-PIP7	512	SDIOP-PIP20	596
LIC-PIP8	516	SDIOP-PIP21	598
LIC-PIP11	517	SDIOP-PIP22	600
LIC-PIP13	529	SDIOP-PIP23	600
Logical Partition (LPAR) Problem Isolation		SDIOP-PIP25	603
Procedures	536	SDIOP-PIP26	606
LPAR-PIP01	536	SDIOP-PIP27	608
Magnetic Storage I/O Processor (MSIOP)		SDIOP-PIP28	610
Problem Isolation Procedures	540	SDIOP-PIP29	610
Overview	540	SDIOP-PIP30	612
MSIOP-PIP1	541	SDIOP-PIP31	613
		SDIOP-PIP32	615

Storage Device I/O Card FRU Locations	615	Overview.	656
Service Processor Problem Isolation Procedures	616	TU-PIP1	656
Overview.	616	TU-PIP2	659
SP-PIP40	617	TU-PIP3	661
System Power Control Network (SPCN)		TU-PIP4	664
Problem Isolation Procedures	618	TU-PIP6	669
Overview.	618	TU-PIP5	671
SPCN-PIP1	619	Introduction.	671
SPCN-PIP5	623	Tape Device Ready Conditions	675
SPCN-PIP10	625	Introduction.	675
SPCN-PIP11	630	Twinaxial Workstation I/O Processor Problem	
SPCN-PIP20	637	Isolation Procedures	676
SPCN-PIP21	638	TWSC-PIP1	677
Tape I/O Processor Problem Isolation		Workstation Adapter Problem Isolation	
Procedures	638	Procedures	684
Overview.	638	Overview.	684
TIOP-PIP1	639	WS-PIP1	685
TIOP-PIP5	640	Workstation Adapter Console Problem Isolation	
System/370 Interface Cable Wrap Test	641	Procedures	688
Tape I/O Processor Failing Items	653	Overview.	688
Problem Summary Form Content (Example)	655	WSAC-PIP1	689
Tape Unit Problem Isolation Procedures	656		

ASCII Workstation I/O Processor Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure that is detected by the ASCII workstation I/O processor. These procedures are used when no display is available with which to perform online problem analysis.

The workstation I/O processor detected an error while communicating with the workstation which is used as the primary console.

Note: If you are using a PC, you must install an emulation program.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 761
- “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information

ASCII-PIP1

Introduction: This procedure isolates problems to the ASCII workstation I/O processor card, its interface to the consoles, the console and alternative console, and the console configuration.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 434 before continuing with this procedure.

1. Were the console and the alternative console powered on before starting the IPL (see “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information)?

No Yes

↓ Go to step 3 of this procedure.

2. Power on the console and the alternative console.
3. Perform an IPL from disk (see “Initial Program Load (IPL) Information” in the *AS/400 Service Functions* information).

Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

4. Ensure that the following conditions for the console are met. If you need additional information, see the *ASCII Work Station Reference* information.

ASCII Workstation PIPs

- The ASCII workstation that is used as the console must be an IBM 315x, an IBM 316x, or a display that is equal to these.
- The console must be attached to port 0.

Note: If the system has logical partitions, this is true only for the Primary partition. To locate the console for a secondary partition see “Locating a Secondary Partition’s Console” on page 783.

- The device settings for the console must be correct. See the example in the next step of this procedure.
5. Enter the correct device settings by doing the following:
 - a. Press and hold the Control (CTRL) key, then press the Setup key. A display that shows the device settings appears.
 - b. Enter the correct settings.

Note: See the device service information for the correct settings.

For example, the device settings for the 3161 are:

Device Settings	Enter
Machine Mode	3161
Operation Mode	echo
Interface	EIA 232-C
Line Control	IPRTS
Line Speed (bps)	19,200 bps
Parity	even
Stop Bit	1
Word Length (bits)	8

- c. The cable that connects the console to the system must be a *direct* (8-wire) cable.

Note: There are several different cable types available. Ensure that you are using a *direct* (8-wire) cable. This cable is described in the *Physical Planning Reference* information.

- d. All cable connections must be tight and have no visible damage.
6. Is the system powered off?

Yes No

↓ Go to step 9 of this procedure.

7. Perform the following:
 - a. Select Manual mode on the control panel.
 - b. Power on the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - c. Wait for one of the following to appear:
 - A display on the console
 - The System Attention light and a reference code on the control panel

Does a display appear on the console?

Yes No

↓ Go to step 10 of this procedure.

8. Select the *Perform an IPL* option to continue performing an IPL.

This ends the procedure.

9. Perform an IPL by doing the following:
 - a. Select Manual mode on the control panel (see “Selecting IPL Type, Mode, and Speed” on page 765).
 - b. Select function 03 (Start IPL) on the control panel and press Enter.
 - c. Wait for one of the following to appear:
 - A display on the console or alternative console
 - The System Attention light and a reference code on the control panel

Does a display appear on the console?

No **Yes**

↓ Select the *Perform an IPL* option to continue performing an IPL.

This ends the procedure.

10. Does the same reference code that sent you to this procedure occur?

Yes **No**

↓ A different system reference code (SRC) or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

11. Is there an alternative console?

Note: The alternative console is the workstation that is attached to port 0 of the second workstation I/O processor. (See “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information.)

Note: If the system has logical partitions, this is true only for the Primary partition. To locate the alternative console for a secondary partition see “Locating a Secondary Partition’s Console” on page 783.

Yes **No**

↓ Go to step 24 of this procedure.

12. Make dedicated service tools (DST) available by doing the following (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information):

- a. Ensure that the alternative console is powered on.
- b. Ensure that the Manual mode on the control panel is selected.
- c. Select function 21 (Make DST Available) on the control panel and press Enter.

Does a display appear on the console or on the alternative console?

No **Yes**

↓ Exit DST.

This appears to be a software problem. Ask your next level of support for assistance.

This ends the procedure.

13. Does the same reference code that sent you to this procedure occur?

Yes **No**

↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

ASCII Workstation PIPs

This ends the procedure.

14. Is the alternative console an ASCII workstation?

No Yes

↓ Go to step 20 of this procedure.

15. Is the alternative console a LocalTalk** workstation?

Yes No

↓ Go to step 18 of this procedure.

16. You must select the icon on the workstation to make it the console (if you have not already done this). You must also save the console selection. For more information see *Local Device Configuration* and *LAN, Frame-Relay and ATM Support* books.

Did you correct any of the items that are listed above?

No Yes

↓ Go to step 26 of this procedure.

17. Go to step 29 of this procedure.

18. The alternative console is a twinaxial display. Ensure that the following conditions are met and if they are not, correct them:

- The workstation addresses of all workstations on the failing port must be correct.

Each workstation on the port must have a separate address from 0 through 6. The twinaxial alternative console address must be 0 on port 0 of the second workstation I/O processor. See the workstation service information if you need help with checking addresses.

- The last workstation on the failing port must be terminated. Any other workstations on that port must not be terminated.

Note: See the service information that was used to set up the workstations if you need more information on terminating twinaxial workstations.

- The cables attached to the console on the failing port must be tight and have no visible damage.

Did you need to correct any of the above conditions?

Yes No

↓ Go to step 29 of this procedure.

19. Perform an IPL by doing the following:

- a. Ensure that alternative console is powered on.
- b. Select Manual mode on the control panel.
- c. Select function 03 (Start IPL) on the control panel and press Enter.
- d. Go to step 22 of this procedure.

20. Ensure that the following conditions for the alternative console are met. If they are not, correct them (see the *ASCII Work Station Reference* information if you need additional information):

- The ASCII workstation being used as the alternative console must be an IBM 315x, an IBM 316x, or a display that is equal to these.
- The device settings for the alternative console must be correct. See the following example.
 - Press and hold the Control (CTRL) key, then press the Setup key. A display that shows the device settings appears.

- Enter the correct settings.

Note: See the specific device information for the correct settings for the device.

For example, the device settings for the 3161 are:

Device Settings	Enter
Machine Mode	3161
Operation Mode	echo
Interface	EIA 232-C
Line Control	IPRTS
Line Speed (bps)	19,200 bps
Parity	even
Stop Bit	1
Word Length (bits)	8

- The cable that connects the alternative console to the system must be a *direct* (8-wire) cable.

Note: There are several different cable types available. Ensure that you are using a *direct* (8-wire) cable. This cable is described in the *Physical Planning Reference* information.

- All cable connections must be tight and have no visible damage. If there were any cable changes in this area, check them over carefully.

Did you need to correct any of the above conditions?

Yes No

↓ Go to step 24 of this procedure.

21. Perform an IPL by doing the following:
 - a. Ensure that the alternative console is powered on.
 - b. Select Manual mode on the control panel.
 - c. Select function 03 (Start IPL) on the control panel and press Enter.
 - d. Wait for one of the following to appear:
 - A display on the console
 - The System Attention light and a reference code on the control panel

22. Does a display appear on the console or on the alternative console?

No Yes

↓ Continue to perform an IPL.

This ends the procedure.

23. Does the same reference code that sent you to this procedure occur?

Yes No

↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

This ends the procedure.

24. Do you have another available, working IBM 315x, IBM 316x, or a display that is equal to these?

Yes No

ASCII Workstation PIPs

↓ Go to step 29 of this procedure.

25. Exchange the console with the working display.
26. Perform an IPL by doing the following:
 - a. Select Manual mode on the control panel.
 - b. Select function 03 (Start IPL) on the control panel and press Enter.
 - c. Wait for one of the following to appear:
 - A display on the console
 - The System Attention light and a reference code on the control panel

Does a display appear on the console?

No Yes

↓ The original console is the failing item. Select the *Perform an IPL* option to continue performing an IPL.

This ends the procedure.

27. Did reference 5082 send you to this procedure?

No Yes

↓ Perform "LIC-PIP3" on page 510.

This ends the procedure.

28. Perform the following:
 - a. Exchange the following parts:

Failing Item	Probable Cause (%)
ASCII workstation IO processor card	50
Cable used to attach to the console	40
ASCII 6-port attachment	10

- b. Power on the system.

This ends the procedure.

29. Perform the following:
 - a. Exchange the following parts:

Failing Item	Probable Cause (%)
ASCII workstation IO processor card	40
Cable used to attach to the console	30
Console	20
ASCII 6-port attachment	10

- b. Power on the system.

This ends the procedure.

ASCII-PIP2

Introduction: This procedure isolates problems on the ASCII workstation I/O processor card and the 12-port attachment.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 434 before continuing with this procedure.

1. Do you have a 12-port attachment?

Yes No

↓ Perform the following:

- a. Exchange the first workstation I/O processor card (see “Chapter 6. Removal and Installation Procedures” on page 793).
- b. Power on the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

This ends the procedure.

2. Power off the system unit or the expansion tower where the failing workstation is connected. (See “Powering Off and Powering On the System or Expansion Tower” on page 761.)

3. **DANGER**

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

- a. Find the ASCII workstation I/O processor card to which the failing workstation is connected.
 - b. Disconnect the 12-port attachment from the ASCII workstation I/O processor card (see “Chapter 6. Removal and Installation Procedures” on page 793).
4. Perform an IPL by doing the following:
 - a. Select Manual mode on the control panel (see “Selecting IPL Type, Mode, and Speed” on page 765).
 - b. Power on the system.

Does a display appear on the console?

No Yes

↓ The 12-port attachment is the failing item. Exchange the 12-port attachment.

Power on the system.

This ends the procedure.

5. Does the same reference code that sent you to this procedure occur?

Yes No

↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

6. Exchange the ASCII workstation I/O processor card to which the failing workstation is connected.

Power on the system.

This ends the procedure.

Bus Problem Isolation Procedures

Overview

Note: Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

Reference Materials:

- “System Unit Locations and Addresses” on page 695.
- “Powering Off and Powering On the System or Expansion Tower” on page 761.
- “Chapter 6. Removal and Installation Procedures” on page 793.
- “Start a Service Tool” and “Control Panel Functions”, in the *AS/400 Service Functions* information.

Read all safety notices before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system before removing, exchanging, or installing a field-replaceable unit (FRU).

Attention: To prevent overheating problems, do not remove any SPD (book) card completely from the card enclosure unless you install an airflow card in its place.

Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 757 before disconnecting or removing the cryptographic I/O processor.

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

This procedure allows you to:

- Determine the correct bus number

Bus hardware SRCs are listed in the Service Action Log, Product Activity Log, or on the control panel.

The SRC has the following format:

Note: The “words” shown in the following table are the same information that the corresponding control panel function would display for the same SRC.

Table 13. SRC Word and Control Panel Function Descriptions

SRC Word Number	Panel Function	Format	Description
1	11	B600 uuuu	uuuu = unit reference code (69xx)
2	12	MIGVEP62	See the <i>AS/400 Service Functions</i> information for details.
3	13	cccc cccc	Component reference code
4	14	pppp pppp	Programming reference code
5	15	pppp pppp	Programming reference code
6	16	pppp pppp	Programming reference code
7	17	BBBB Ccbb	BBBB = bus, Cc= card, bb = board Note: The BBBB bus number is in hexadecimal. It must be converted into decimal to match HSM bus numbers on console screens and in service documents.
8	18	tttt mmmm	tttt = IOP type, mmmm = IOP model (00000000 when missing)
9	19	0000 0000	Reserved field

BUS-PIP1

Introduction: BUS-PIP1 describes how to isolate a problem on a system SPD bus.

Note: Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: This procedure will indicate the logical partition in which to perform service. Whenever the service actions in this procedure move from one

Bus PIPs

logical partition to a different logical partition this procedure will indicate which logical partition to perform service in.

Refer to the "Overview" on page 442 for a list of Attentions, Dangers and understanding the SRC.

1. Is there an SRC in function 5 of the system control panel?

Yes No

↓ Go to step 3.

2. Have you been sent here by a power procedure?

Yes No

↓ Use the SRC in function 5 and go to "Chapter 2. Unit Reference Codes" on page 59.

This ends the procedure.

3. Were you sent here by a Power SRC (1xxx xxxx)?

No Yes

↓ Go to "BUS-PIP2" on page 450.

4. Does the system have logical partitions?

Yes No

↓ Go to step 12 on page 445 of this procedure.

5. Perform the service actions from the Primary partition. Is there an SRC on the system control panel?

No Yes

↓ Go to step 13 on page 445 of this procedure.

6. From Start a Servic Tool (SST) or Dedicated Service Tool (DST) *Work with Partition Status* screen, examine the logical partition where the problem was reported. Is the logical partition's state "Failed" on the *Work with Partition Status* screen?

No Yes

↓ Go to step 8 of this procedure.

7. Is the failing partition's console functional?

No Yes

↓ Go to the console of the logical partition where the problem was reported. Perform the service actions from that secondary partition. (See "Locating a Secondary Partition's Console" on page 783 for help in locating the console of the logical partition.)

Go to step 19 on page 445 of this procedure.

8. Perform the following:

- a. Power off the logical partition. See "Powering Off a Secondary Partition" on page 764.
- b. Select Manual mode for the logical partition. See "Selecting IPL Type and Mode for a Secondary Partition" on page 788.
- c. Power on the logical partition. See "Powering On a Secondary Partition" on page 765.

9. Is the logical partition's state "Failed" on the *Work with Partition Status* screen?

- No** **Yes**
- ↓ Go to step 11 of this procedure.
10. Is the failing partition's console functional?
- No** **Yes**
- ↓ Go to the console of the logical partition where the problem was reported. Perform the service actions from that logical partition. (See "Locating a Secondary Partition's Console" on page 783 for help in locating the console of the logical partition.)
- Go to step 18 of this procedure.
11. Remain at the console of the Primary partition. Perform the service actions from the Primary partition.
- Go to step 19 of this procedure.
12. Does an SRC appear on the control panel?
- Yes** **No**
- ↓ Go to step 19 of this procedure.
13. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
14. Verify the I/O bus SRC by performing the following:
- a. Select Manual mode on the control panel.
 - b. Power on the system.
15. Does an SRC appear on the control panel?
- Yes** **No**
- ↓ Go to step 18 of this procedure.
16. Is the SRC B600 69xx?
- Yes** **No**
- ↓ Go to step 40 of this procedure.
17. Perform the following:
- a. Select control panel function 17.
 - b. Record the first 6 digits of function 17. This is the direct select address.
- Note:** The first 4 characters of the direct select address are the bus number. The fifth and sixth characters are the card address.
- Go to step 34 of this procedure.
18. Does the IPL complete successfully to the IPL or Install the System display?
- Yes** **No**
- ↓ Go to step 27 of this procedure.
19. Use the full-authority password to sign on to DST.
- Search the Service Action and Product Activity Logs (see "Using the Service Action Log" on page 8 and "Using the Product Activity Log" on page 11) for one of the following SRCs that **occurred during the last IPL:**

B600 6901
 B600 6902
 B600 6905

B600 69E0
 B600 69E8
 B600 69F0

Bus PIPs

B600 69B8
B600 69D0
B600 69D8

B600 69F8

Note: Perform one of the following to assist in the search for a specific SRC:

- Enter the specific SRCs in the *Reference code* field on the Select Analysis Report Options display.
- Use the Sort by function key to display specific SRC entries.

Did you find one of the SRCs listed, **and** did it occur during the last IPL?

No **Yes**

- ↓ Record the bus number from the Product Activity Log. Then go to "BUS-PIP6" on page 465.

Note: If the bus number is not available, select F4 (Additional information) from the Display Detail Report for Resource display. Record the first 6 digits of SRC word 7 (function 17), the direct select address.

This ends the procedure.

20. Search the Service Action and Product Activity Logs (see "Using the Service Action Log" on page 8 and "Using the Product Activity Log" on page 11) for the following SRCs: • B600 69C1; • B600 69C5

Note: Perform one of the following to assist in the search for a specific SRC:

- Enter the specific SRCs in the *Reference code* field on the Select Analysis Report Options display.
- Use the Sort by function key to display specific SRC entries.

Did you find either one of the SRCs?

No **Yes**

- ↓ Record the bus number and card position from the Product Activity Log. Then go to "BUS-PIP7" on page 477.

This ends the procedure.

21. Use the hardware service manager function to search for missing or failed bus resources.

Are there I/O processor cards listed with a status other than operational?

Note: Ignore any IOPs that are listed with a status of *not connected*.

Yes **No**

- ↓ Press the F16 key to return to the Use Dedicated Service Tools (DST) display.

Go to step 31 of this procedure.

22. Is only one I/O processor not operational?

Note: Ignore any IOPs that are listed with a status of *not connected*.

Yes **No**

- ↓ Go to step 26 of this procedure.

23. Use the packaging resource information in the hardware service manager function to determine the card position of the I/O processor.

If the I/O processor card is located in an expansion tower, then power off the expansion tower and exchange the I/O processor card. See “Expansion Tower Power Procedure” on page 766.

If the I/O processor is located in the system unit, or the system expansion unit then power off the system and exchange the I/O processor card. See “Powering Off the System” on page 761.

24. Power on the expansion tower or system where the I/O processor card is located.

Is the status of the I/O processor card operational?

No Yes

↓ You have corrected the problem. Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

25. Perform the following:
- a. Power off the system or expansion tower where the I/O processor card is located.
 - b. Remove the I/O processor card you installed in step 23 of this procedure.
 - c. Reinstall the original I/O processor card.
 - d. Power on the system or expansion tower where the I/O processor card is located.

26. Use the hardware service manager function to record information about the bus:

Find the non-operational I/O processor card that has the lowest card address. Record the card address, bus number, board number, frame ID, and card position.

Note: Ignore any I/O processor card with a status of *not connected*.

Use Table 14 to determine your next action.

Table 14. Bus Isolation Procedures for a Non-Operational I/O Processor

Bus	Board	Action
Any	1	An unsupported bus extension unit failed. This indicates a Licensed Internal Code problem. Ask your next level of support for assistance.
1	0	Bus 1 failed. Perform “BUS-PIP2” on page 450.

Bus PIPs

Table 14. Bus Isolation Procedures for a Non-Operational I/O Processor (continued)

Bus	Board	Action
2-19	0	<p>An optically connected bus failed.</p> <ol style="list-style-type: none"> If only one I/O processor is not operational and you know the card position of the IOP then perform "BUS-PIP5" on page 459 for the I/O processor. If "BUS-PIP5" on page 459 does not identify the failing item, return here and continue with the next step in this table. If the expansion tower is FC 507x or FC 508x, perform "BUS-PIP3" on page 455. If the expansion tower is FC 5044, perform "BUS-PIP9" on page 483. If the expansion tower is FC 5065 or 5066, perform "BUS-PIP10" on page 488. Otherwise perform "BUS-PIP6" on page 465.

This ends the procedure.

27. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

No **Yes**

- ↓ Record all B600 xxxx entries (they may be related to the problem).
 Go to step 30 of this procedure.

28. Does the Display Failing System Bus display appear on the console?

Yes **No**

- ↓ A different error occurred. Go to "Starting Point for All Problems" on page 4 to correct the problem.

This ends the procedure.

29. Record the failing system buses that are listed on the Display Failing System Bus display. You will need these bus numbers later in these procedures.
30. Press the Enter key.
 The Use Dedicated Service Tools (DST) display appears.
31. Use the full-authority password to sign on to DST.
 Search the Service Action and Product Activity Logs for the SRC that sent you to this procedure (see "Using the Service Action Log" on page 8 and "Using the Product Activity Log" on page 11).

Notes:

- a. Search only for SRCs that occurred during the last IPL. You may ignore informational and statistical log entries.
- b. For multiple entries of the SRC that sent you to this procedure, select the entry with the lowest card logical address (direct select address).
- c. Perform one of the following to assist in the search for a specific SRC:
 - Enter the specific SRCs in the *Reference code* field on the Select Analysis Report Options display.
 - Use the Sort by function key to display specific SRC entries.

Did you find an entry for the SRC that sent you to this procedure?

Yes No

- ↓ The problem appears to be intermittent. Check the service action and Product Activity Logs for B600 xxxx SRCs (see “Using the Service Action Log” on page 8 and “Using the Product Activity Log” on page 11). If the B600 xxxx SRCs identify the same I/O processor, this I/O processor may be failing. Use this information to assist in problem analysis. Ask your next level of support for assistance.

This ends the procedure.

32. Is the SRC that sent you to this procedure B600 xxxx?

Yes No

- ↓ Go to step 40 of this procedure.

33. From the Product Activity Log information, record the bus number, card position, frame ID, and board number.

Note: If the bus number is blank, select F4 (Additional information) from the Display Detail Report for Resource display. Record the first 6 digits of SRC word 7 (function 17), the direct select address.

34. Is the SRC that sent you to this procedure B600 6920 or B600 6937?

No Yes

- ↓ This indicates a Licensed Internal Code problem. Ask your next level of support for assistance.

This ends the procedure.

35. Is the SRC that sent you to this procedure one of the following?

- B600 6901
- B600 6902
- B600 6905
- B600 69B8
- B600 69D0
- B600 69D8
- B600 69E0
- B600 69E8
- B600 69F0
- B600 69F8

No Yes

- ↓ Go to “BUS-PIP6” on page 465.

Bus PIPs

This ends the procedure.

36. Is the SRC that sent you to this procedure B600 69C1 or B600 69C5?

No Yes

↓ Go to "BUS-PIP7" on page 477.

This ends the procedure.

37. Is the SRC that sent you to this procedure B600 69xx?

Yes No

↓ Any system bus 1 through 19 failed. Record the SRC and use it as the Entry Point SRC or error in the bus isolation procedure.

Go to step 40 of this procedure.

38. Is the direct select address 0001xxxx, or is the bus number system bus 1?

Yes No

↓ Go to step 42 of this procedure.

39. Go to "BUS-PIP2".

This ends the procedure.

40. Is the SRC that sent you to this procedure B1xx xxxx, C1xx xxxx, or D1xx xxxx?

Yes No

↓ A different SRC occurred.

Go to "Chapter 2. Unit Reference Codes" on page 59.

This ends the procedure.

41. System bus 1 failed.

Record the SRC and use it as the Entry Point SRC or error in the bus isolation procedure.

Go to "BUS-PIP2".

This ends the procedure.

42. Is the expansion tower for the failing bus FC 5044?

No Yes

↓ Go to "BUS-PIP9" on page 483.

This ends the procedure.

43. Go to "BUS-PIP3" on page 455.

This ends the procedure.

BUS-PIP2

Introduction: This procedure isolates a solid failure in the system unit on SPD bus 1. Throughout this procedure, use the system configuration list to verify the configuration information.

Note: Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

On a system that has logical partitions, this procedure will perform service in the Primary partition only. If you came to this procedure from another procedure that was performing service in a secondary partition, move to the primary partition’s console for this procedure.

Refer to the “Overview” on page 442 for a list of Attentions, Dangers and understanding the SRC.

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
Check the power cables to ensure that they are connected and seated correctly.
2. Disconnect the cards at the following card positions (if installed) by sliding them partially out of the card enclosure.

Note: On Models 640 and S30, do not remove the card in position S06. On Models 650, S40, and SB1 do not remove the card in position S09.

Note: Do not remove the multiple function I/O processor (MFIOP) card (card positions 1 and 2 for Models 640, 730 and S30; position 2 and 3 for Models 650, 740, S40, and SB1).

Table 15. Card Positions—Removal

Models 640, 730, S30	Models 650, 740, S40, SB1
S03, S04, S05, S07, S08	S04, S05, S06, S07, S10, S15, S16

3. Power on the system.
Does the SRC or error that sent you to this procedure occur?
Yes No
↓ Go to step 15 of this procedure.
4. Does the MFIOP have adapter cards attached?
No Yes
↓ Go to “BUS-PIP5” on page 459.

Note: If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.
5. Perform the following:
 - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Remove the MFIOP card and install a new MFIOP card (see “Chapter 6. Removal and Installation Procedures” on page 793).
 - c. Power on the system.
 Does the SRC or error that sent you to this procedure occur?
Yes No
↓ The failing item is the MFIOP card, that you have already exchanged. Reconnect any I/O adapters that you removed if you performed BUS-PIP5.

Bus PIPs

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

6. Power off the system.
Remove the MFIOIP card you installed in the previous step of this procedure.
Install the original MFIOIP card (and the attached I/O adapters).
7. Is the system a Model 650, 740, S40, or SB1?
Yes No
↓ Go to step 10 of this procedure.
This ends the procedure.
8. Remove the interposer card in position S08.
Install a new adapter card and power on the system.
Does the SRC or error that sent you to this procedure occur?
Yes No
↓ Go to “BUS-PIP8” on page 481 to verify the repair.
This ends the procedure.
9. Power off the system and remove the adapter card you just installed.
Install the original adapter card.
10. Remove the local bus expansion adapter card. Use the following table to determine the card position.

Table 16. Card Positions—First Local Bus Adapter

Models 640, 730, S30	Models 650, 740, S40, SB1
S06	S09

Install a new local bus expansion adapter card (move the attached SPD optical bus driver or air flow cards to the new local bus expansion adapter) and power on the system.

Does the SRC or error that sent you to this procedure occur?

Yes No

↓ Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

11. Power off the system and remove the local bus expansion adapter card you just installed.
Install the original local bus expansion adapter card and either the the attached SPD optical bus driver or the air flow cards.
12. Go to the unit reference code table for this SRC (see “Chapter 2. Unit Reference Codes” on page 59) and exchange the remaining items in the Failing Item column.
Then return here and continue with the next step of this procedure.
13. Power on the system.
Does the SRC or error that sent you to this procedure occur?
Yes No
↓ Go to “BUS-PIP8” on page 481 to verify the repair.
This ends the procedure.

14. The only failing item remaining in the system unit is the card enclosure.
Perform the following:
 - a. Exchange the system unit card enclosure.
 - b. Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

15. Perform the following:
 - a. Power off the system (before installing each card).
 - b. Install the cards you removed in step 2 of this procedure one at a time in the order that is shown in Table 17.
 - c. Power on the system after you install each card.

Table 17. Card Positions

Models 640, 730, S30	Models 650, 740, S40, SB1
S07, Regulator	S01, Regulator
S08, Regulator	S15, Regulator
S03, I/O Processor	S16, Regulator
S04, I/O Processor or Local Bus Adapter	S04, I/O Processor
S05, I/O Processor or Local Bus Adapter	S05, I/O Processor
	S06, I/O Processor
	S07, Local Bus Adapter
	S10, Local Bus Adapter

Does the SRC or error that sent you to this procedure occur?

Yes No

- ↓ Repeat this step until one of the following occurs:
- The SRC or failure that sent you to this procedure appears.
 - You have installed all the cards that were removed in step 2 of this procedure.
 - A different SRC appears. Go to the unit reference code table for this SRC (see “Chapter 2. Unit Reference Codes” on page 59).
- This ends the procedure.**
- An error does not appear. The problem may be intermittent. Ask your next level of support for assistance.

This ends the procedure.

16. Perform “BUS-PIP5” on page 459 for the last card you reinstalled in step 15 of this procedure.

Note: If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

17. Some MFIOF failures may produce an SRC that changes when all the other I/O processor cards are removed. When one I/O processor card is reinstalled, the original SRC will occur again, making that I/O processor appear to be the cause of the problem.

When you disconnected all the I/O processors, did an SRC occur that was different from the Entry Point SRC or error, and when you reconnected the first I/O processor card listed in Table 17, did the Entry Point SRC or error reoccur?

Bus PIPs

Yes No

↓ Go to step 22 of this procedure.

18. Power off the system.

Remove the card that you just reconnected.

Reconnect the next card in the list in Table 17. For Models 640, 730, and S30, this is the I/O processor card that belongs in slot 3; for Models 650, 740, S40, and SB1, it is the I/O processor card that belongs in slot 4).

19. Power on the system.

Does the SRC or error that sent you to this procedure occur?

No Yes

↓ Go to step 4 of this procedure.

20. Power off the system.

Exchange the first I/O processor card in the list in Table 17 on page 453.

Power on the system.

Does the SRC or error that sent you to this procedure occur?

Yes No

↓ Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

21. Go to step 23 of this procedure.

22. Power off the system.

Exchange the last I/O processor card you reinstalled in step 15 of this procedure.

Power on the system.

Does the SRC or error that sent you to this procedure occur?

Yes No

↓ The failing item is the I/O processor card you already exchanged.

Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

23. Perform the following:

a. Power off the system.

b. Remove the I/O processor card you just exchanged.

c. Check the backplane for bent or broken pins.

d. Install the original I/O processor card and the attached I/O adapter cards.

24. Did you reinstall only one I/O processor card that is listed in Table 17 on page 453 before the Entry Point SRC or error occurred again?

No Yes

↓ Go to step 27 of this procedure.

25. Perform the following:

a. Exchange the remaining I/O processors that are listed in Table 17 on page 453, one at a time.

b. Power on the system after installing each card.

Does the SRC or error that sent you to this procedure occur?

Yes No

- ↓ The failing item is the I/O processor card that you just exchanged. Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

26. Perform the following:
 - a. Power off the system.
 - b. Remove the I/O processor card you installed in the previous step.
 - c. Install the original I/O processor card.
27. The only failing item remaining is the system unit card enclosure. Perform the following:
 - a. Exchange the system unit card enclosure.
 - b. Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

BUS-PIP3

Introduction: This procedure isolates a solid failure in the FC 507x or FC 508x Storage Expansion Towers.

Note: Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Refer to the “Overview” on page 442 for a list of Attentions, Dangers and understanding the SRC.

For this procedure you must perform service in the logical partition which owns the bus on this expansion tower. If you came to this procedure while working in another logical partition, then move to the console of the logical partition which owns this bus and perform this procedure from there.

To determine which logical partition owns the bus see “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 787.

To locate the console of a secondary partition see “Locating a Secondary Partition’s Console” on page 783.

1. Power off the expansion tower. (See “Expansion Tower Power Procedure” on page 766).

Attention: Verify that the expansion tower power indicator is off before you continue to the next step of this procedure. If the power indicator remains on, you may be working on a system that has OS/400–OptiConnect hardware. You may need to power off more than one system unit during this procedure.

2. Disconnect the cards at the following card positions (if installed) by sliding them partially out of the card enclosure:

Note: Do not remove the optical bus receiver card in position 1, the I/O card in position 2, or the air flow cards.

Bus PIPs

Table 18. Card Positions

FC 507x	FC 508x
3 through 14	4

Use the system configuration list to verify the configuration as you work.

3. Did you remove any cards in the previous step?

No **Yes**

↓ Go to step 7 of this procedure.

4. Air flow cards are installed in the positions that are shown in Table 18.

Is there an I/O processor card (not an air flow card) that is installed in the first position on the bus? (Position 2 for FC 507x and position 3 for FC 508x.)

No **Yes**

↓ Go to step 8 of this procedure.

5. Check the printed system configuration list to determine if I/O processors are supposed to be on this bus.

Are I/O processors missing?

Yes **No**

↓ If the Entry Point SRC was B600 6944, this indicates that there is an empty bus and the message can be ignored. If the Entry Point SRC was not B600 6944, ask your next level of support for assistance.

This ends the procedure.

6. Ask your next level of support for assistance.

This ends the procedure.

7. Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes **No**

↓ Go to step 14 of this procedure.

8. Perform the following:

- Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)
- Remove the optical bus receiver and install a new optical bus receiver of the same type (see "Chapter 6. Removal and Installation Procedures" on page 793).
- Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes No

↓ The failing item is the optical bus receiver card, which you have already exchanged.

Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

9. Remove the optical bus receiver you installed in the previous step and install the original optical bus receiver.
10. Perform "BUS-PIP5" on page 459 for the following cards:

Table 19. Card Positions

FC 507x	FC 508x
3 through 14	4

If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

11. Perform the following:
 - a. Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)
 - b. Exchange the I/O processor in the position that is shown in Table 19
 - c. Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes No

↓ The failing unit is the I/O processor card, which you have already exchanged.

Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

12. Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)
Remove the I/O processor you installed in step 11 of this procedure and install the original I/O processor card and the attached adapter cards.
13. The only failing item remaining in the expansion tower is the card enclosure. Perform the following:
 - a. Exchange the expansion tower card enclosure.
 - b. Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

14. Install the cards you removed in step 2 of this procedure one at a time in the order that is shown in Table 20.

Note: Power off the expansion tower before installing each card. After you install each card, power on the expansion tower.

Bus PIPs

Table 20. Install Order

FC 507x	FC 508x
3	4
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes No

↓ Repeat this step until the SRC or failure that sent you to this procedure occurs.

If the error does not occur, the problem may be intermittent. Ask your next level of support for assistance.

This ends the procedure.

15. Perform "BUS-PIP5" on page 459 for the last card you reinstalled in step 14 of this procedure.

Note: If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

16. Perform the following:
- Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)
 - Exchange the I/O processor card you last reinstalled in step 14 of this procedure with a new I/O processor card of the same type.
 - Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes No

- ↓ The failing item is the I/O processor card, which you have just exchanged.

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

17. Perform the following:
 - a. Power off the expansion tower. (See “Expansion Tower Power Procedure” on page 766.)
 - b. Remove the last card that you exchanged.
 - c. Install the original I/O processor card and the attached adapter cards.
18. Perform the following:
 - a. Use the Table 20 on page 458 and the I/O processor card with the position that is one less than the I/O processor card you are working with.
 - b. Exchange this I/O processor card.
 - c. Power on the expansion tower. (See “Expansion Tower Power Procedure” on page 766.)

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes No

- ↓ The failing item is the I/O processor card, which you have already exchanged.

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

19. Perform the following:
 - a. Power off the expansion tower. (See “Expansion Tower Power Procedure” on page 766.)
 - b. Remove the I/O processor card you installed in the previous step.
 - c. Install the original I/O processor card.
20. The only failing item remaining is the expansion tower card enclosure. Perform the following:
 - a. Exchange the expansion tower card enclosure
 - b. Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

BUS-PIP5

Introduction: This procedure isolates a failing I/O adapter card that is controlled by the I/O processor card. This procedure has a section for I/O adapters directly attached to the I/O processor (SPD). This procedure also has a section for I/O adapters that are attached to the backplane where the I/O processor is attached (PCI).

Note: Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps,

Bus PIPs

select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

Refer to the “Overview” on page 442 for a list of Attentions, Dangers and understanding the SRC.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If you came to this procedure from another bus isolation procedure, continue working in the same logical partition. If you did not come here from another bus isolation procedure, then move to the console of the logical partition which owns the input-output processor (IOP) on this bus.

To determine which logical partition owns the IOP see “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 787.

To locate the console of a secondary partition see “Locating a Secondary Partition’s Console” on page 783.

1. If the I/O adapter cards are SPD cards that are physically attached to the I/O processor card, perform “I/O–Direct–Attached”.
2. If the I/O adapter cards are PCI cards that are physically attached to the backplane where the I/O processor card is attached, perform “Backplane-Attached” on page 462.
3. **This ends the procedure.**

I/O–Direct–Attached:

Introduction: This procedure isolates a failing I/O adapter card that is attached to the I/O processor card.

Note: Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

1. If the I/O processor card is located in an expansion tower, then power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 761.)

If the I/O processor card is located in the system unit or the system expansion unit, or an SPD conversion tower then power off the system. (See “Powering Off and Powering On the System or Expansion Tower” on page 761.)

2. Disconnect the I/O processor card and check the backplane for bent or broken pins.

Are any pins damaged?

Yes No

↓ Go to step 4 of this procedure.

3. Exchange the backplane (see “Chapter 6. Removal and Installation Procedures” on page 793).

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

4. Reconnect the I/O processor card you removed in step 2 of this procedure.
5. Does the I/O processor card have any I/O adapters attached?

Notes:

- a. To find out more about the positions of the input/output adapters (IOA) under the IOPs, see “System Unit Locations and Addresses” on page 695 for the System Unit, Expansion Unit, SPD Conversion Tower, or I/O Expansion Tower where the IOP is located.
- b. The cards that are attached to the MSIOP cards (for example, types 6503 and 4700) are not I/O adapter cards.
- c. Some I/O adapters are inside the IOP. If so, the IOP must be removed to access the I/O adapter card.

Yes No

- ↓ The I/O processor does not have any I/O adapter cards attached to it.

Note: The I/O processor may have airflow cards installed.
Return to the procedure that sent you here.

This ends the procedure.

6. Perform the following:
 - a. Disconnect all the I/O adapters that are attached to the I/O processor card by sliding them out of the I/O adapter position.
 - b. Check the adapter connections on the I/O processor card for bent or broken pins.

Are any pins damaged?

No Yes

- ↓ Exchange the I/O processor card.
Reconnect all the I/O adapter cards you disconnected.
Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

- c. Power on the system or tower where the I/O processor card is located.

Does the system reference code (SRC) or failure that sent you to this procedure occur?

Note: If the system has logical partitions when looking for the entry point SRC or failure, check in the logical partition which reported the problem.

No Yes

- ↓ The I/O adapter cards are operational. Reconnect all the I/O adapter cards you disconnected.

Return to the procedure that sent you here.

This ends the procedure.

7. Did a different SRC occur?

No Yes

- ↓ Use the new SRC and go to the “Chapter 2. Unit Reference Codes” on page 59.

Bus PIPs

This ends the procedure.

8. Power off the system or tower where the I/O processor card is located and perform the following:
 - a. Reconnect one of the I/O adapters you disconnected in step 6 of this procedure (starting with the bottom-most card).
 - b. Power on the system or tower.

Does the SRC or failure that sent you to this procedure occur?

Note: If the system has logical partitions, when looking for the SRC or failure, check in the logical partition which reported the problem.

No Yes

↓ Go to step 11 of this procedure.

This ends the procedure.

9. Did a different SRC occur?

No Yes

↓ Use the new SRC and go to the "Chapter 2. Unit Reference Codes" on page 59.

This ends the procedure.

10. Repeat step 8 for each I/O adapter that is attached to the I/O processor card. If you have reconnected all of the I/O adapters and no errors occur, the problem is intermittent.

This ends the procedure.

11. Power off the system or tower where the I/O processor card is located.
12. Check for bent or broken pins between the adapter card that you last inserted and the I/O processor card .

Are any pins damaged?

No Yes

↓ Exchange the I/O processor card.

Reconnect all the I/O adapter cards you disconnected.

Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

13. The I/O adapter card that you just installed is the failing item.

Exchange the I/O adapter card.

14. Reconnect all of the I/O adapter cards you disconnected during this procedure.

Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

Backplane-Attached:

Introduction: This procedure isolates a failing PCI I/O adapter card that is controlled by the I/O processor card.

1. If the I/O processor card is located in an expansion tower, then power off the expansion tower. (See "Powering Off and Powering On the System or Expansion Tower" on page 761.)

If the I/O processor card is located in the system unit or the system unit or the system expansion unit, or an SPD conversion tower, then power off the system. (See "Powering Off and Powering On the System or Expansion Tower" on page 761.)

2. Disconnect the I/O processor card and check the connection between the I/O processor card and the backplane for damage.

Is there any damage?

Yes No

↓ Go to step 4 of this procedure.

3. Exchange either the damaged I/O processor or backplane (see "Chapter 6. Removal and Installation Procedures" on page 793).

Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

4. Reconnect the I/O processor card you removed in step 2 of this procedure.
5. Does the I/O processor card have any I/O adapters that it is controlling?

Note: To find out more about the positions of the IOAs under the IOPs, see "System Unit Locations and Addresses" on page 695 for the System Unit, Expansion Unit, SPD Conversion Tower, or I/O Expansion Tower where the IOP is located.

Yes No

↓ The I/O processor is not controlling any I/O adapter cards. Return to the procedure that sent you here.

This ends the procedure.

6. Perform the following:
 - a. Disconnect all the I/O adapters that are controlled by the I/O processor card by sliding them out of the I/O adapter position.
 - b. Check the adapter connections between the backplane and the I/O adapter cards for damage.

Is there any damage?

No Yes

↓ Exchange either the damaged I/O adapter card or backplane. See "Chapter 6. Removal and Installation Procedures" on page 793.

Reconnect all the I/O adapter cards you disconnected.

Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

- c. Power on the system or tower where the I/O processor card is located.

Does the SRC or failure that sent you to this procedure occur?

Note: If the system has logical partitions when looking for the entry point SRC or failure, check in the logical partition which reported the problem.

No Yes

↓ The I/O adapter cards are operational. Reconnect all the I/O adapter cards you disconnected.

Return to the procedure that sent you here.

Bus PIPs

This ends the procedure.

7. Did a different SRC occur?

No Yes

↓ Use the new SRC and go to the “Chapter 2. Unit Reference Codes” on page 59.

This ends the procedure.

8. Power off the system or tower where the I/O processor card is located and perform the following:
- Reconnect one of the I/O adapters you disconnected in step 6 of this procedure.
 - Power on the system or tower.

Does the SRC or failure that sent you to this procedure occur?

Note: If the system has logical partitions, when looking for the SRC or failure, check in the logical partition which reported the problem.

No Yes

↓ Go to step 11 of this procedure.

This ends the procedure.

9. Repeat step 8 for each I/O adapter that is controlled by the I/O processor card. If you have reconnected all of the I/O adapters and no errors occur, the problem is intermittent.

This ends the procedure.

10. Did a different SRC occur?

No Yes

↓ Use the new SRC and go to the “Chapter 2. Unit Reference Codes” on page 59.

This ends the procedure.

11. Power off the system or tower where the I/O processor card is located.
12. Check the connection between the adapter card that you last inserted and the backplane for damage.

Is there any damage?

No Yes

↓ Exchange either the damaged I/O adapter card or backplane. See “Chapter 6. Removal and Installation Procedures” on page 793.

Reconnect all the I/O adapter cards you disconnected.

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

13. The I/O adapter card that you just installed is the failing item.
Exchange the I/O adapter card.

14. Reconnect all of the I/O adapter cards you disconnected during this procedure.

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

BUS-PIP6

Introduction: This procedure isolates a failure in the hardware that is driving the fiber optics on an SPD optical bus.

Note: Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

If the system has logical partitions, move to the Primary partition and perform this procedure from there.

Refer to the “Overview” on page 442 for a list of Attentions, Dangers and understanding the SRC.

1. Is the SRC that sent you to this procedure B600 6901?

Yes No

↓ Go to step 3 of this procedure.

2. The reference code indicates that the local bus adapter card failed.

Power off the system and exchange the following local bus adapter in the system unit:

- For Models 640, 730, and S30: card position S06.
- For Models 650, 740, S40, and SB1: card position S09.

Ensure that the attached SPD optical bus driver are moved to the new bus adapter card.

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

3. Is the SRC B600 6902 or B600 69E0?

No Yes

↓ The remote SPD optical bus receiver failed.

Perform the following:

- a. Power off the system.
- b. Verify that the power indicator on the expansion tower is off. If the indicator remains on, you *may* need to power off the system unit that is attached through the OS/400–OptiConnect hardware.
- c. Exchange the remote SPD optical bus receiver in the expansion tower for the failing bus (position 2 for FC 508x; position 1 for FC 5044, FC 507x).
- d. Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

4. Is the SRC B600 69D0?

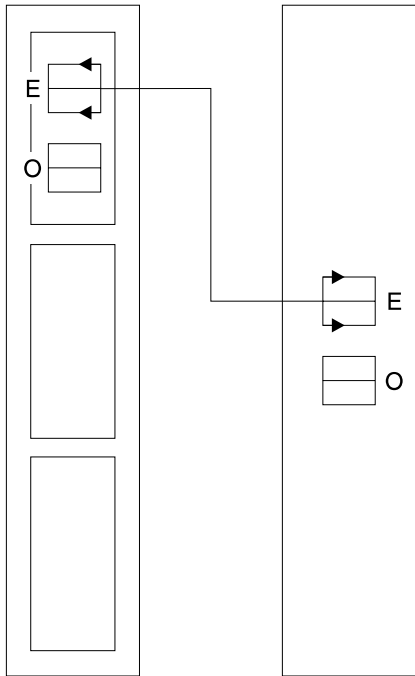
Yes No

Bus PIPs

- ↓ Go to step 6 of this procedure.
5. A local SPD optical bus driver card is failing.
Using the bus number from the DSA in the SRC, or the Service Action Log refer to “Optical Link” on page 705 to determine the location of the SPD optical bus driver card for your system.
Power off the system and exchange the failing local SPD optical bus driver card.
Go to “BUS-PIP8” on page 481 to verify the repair.
This ends the procedure.
6. Is the SRC B600 69B8?
- Yes No**
- ↓ Go to step 8 of this procedure.
7. The SRC indicates a bus configuration problem.
Perform the following:
- Ensure that all optical connections are tight.
 - Ensure that the cable in the top, even-number position (shown in the following figures as **E**) of the SPD optical bus driver card is connected to the top connector (**E**) of the remote SPD optical bus receiver card.
 - Ensure that the cable in the bottom, odd-number position (shown in the following figures as **O**) of the SPD optical bus driver card is connected to the bottom connector **O** of the remote SPD optical bus receiver card.
 - Use the system configuration list and the following configuration examples to identify the correct configuration for your system.

Local Bus Adapter goes to Local Bus Expansion Adapter and Optical Link Card goes to SPD Optical Bus Driver Card

Remote Bus Adapter goes to Remote SPD Optical Bus Receiver



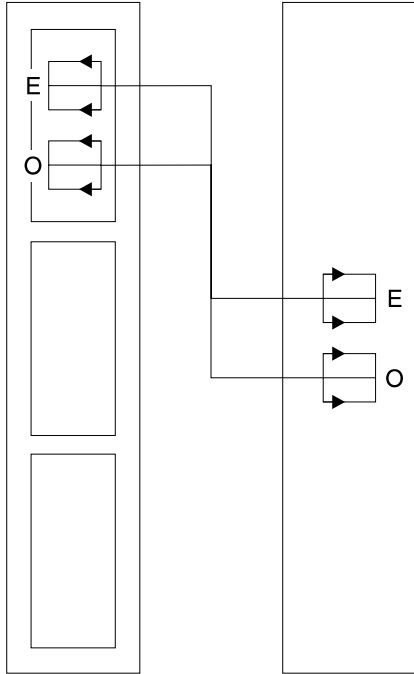
RZAAA520-0

Figure 11. Example Single Bus

Bus PIPs

Local Bus Adapter goes to Local Bus Expansion Adapter and Optical Link Card goes to SPD Optical Bus Driver Card

Remote Bus Adapter goes to Remote SPD Optical Bus Receiver

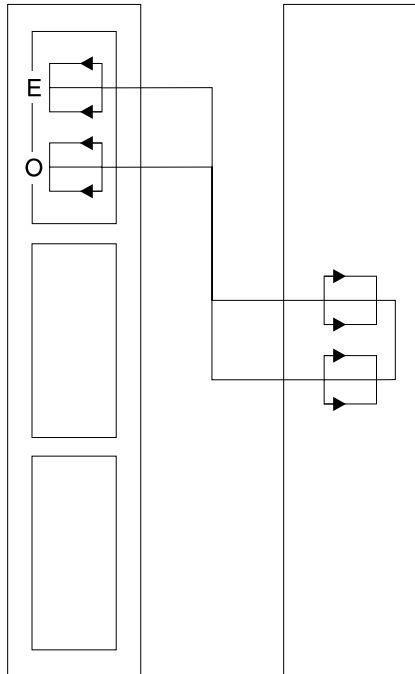


RZAAA521-0

Figure 12. Example Paired Bus

Local Bus Adapter goes to Local Bus Expansion Adapter and Optical Link Card goes to SPD Optical Bus Driver Card

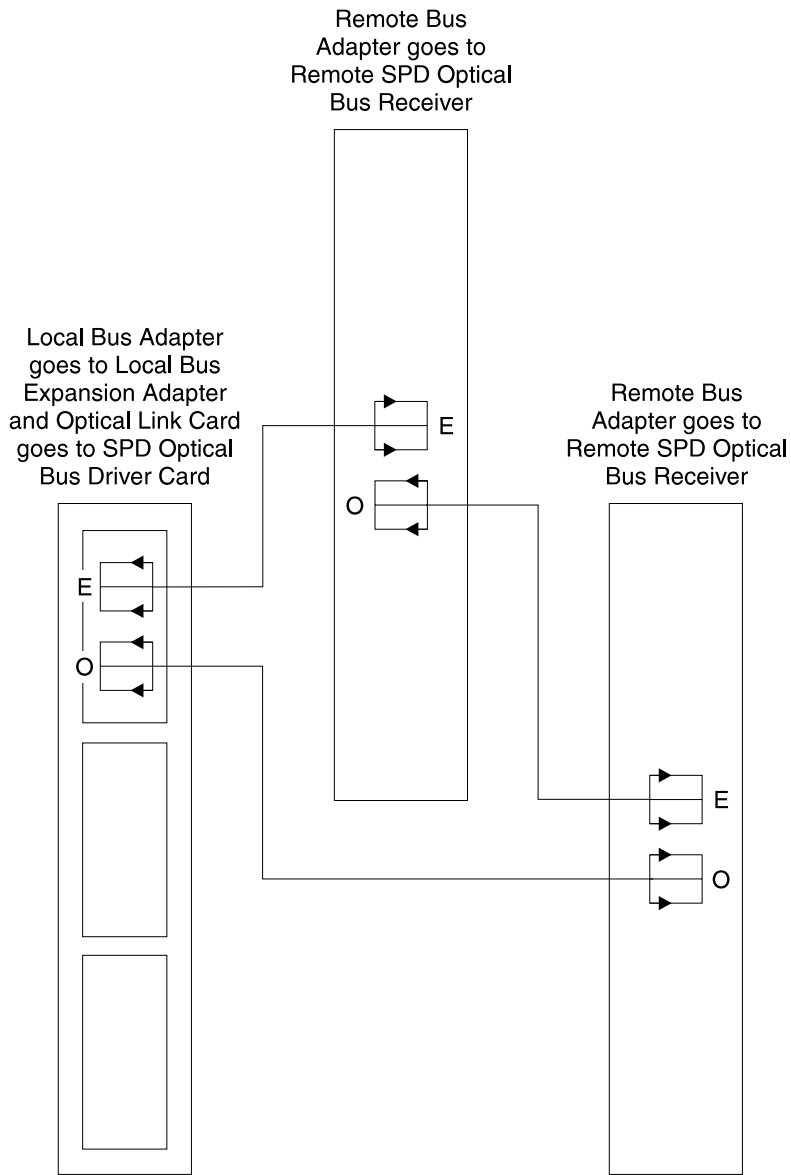
Remote Bus Adapter goes to Remote SPD Optical Bus Receiver



RZAAA522-0

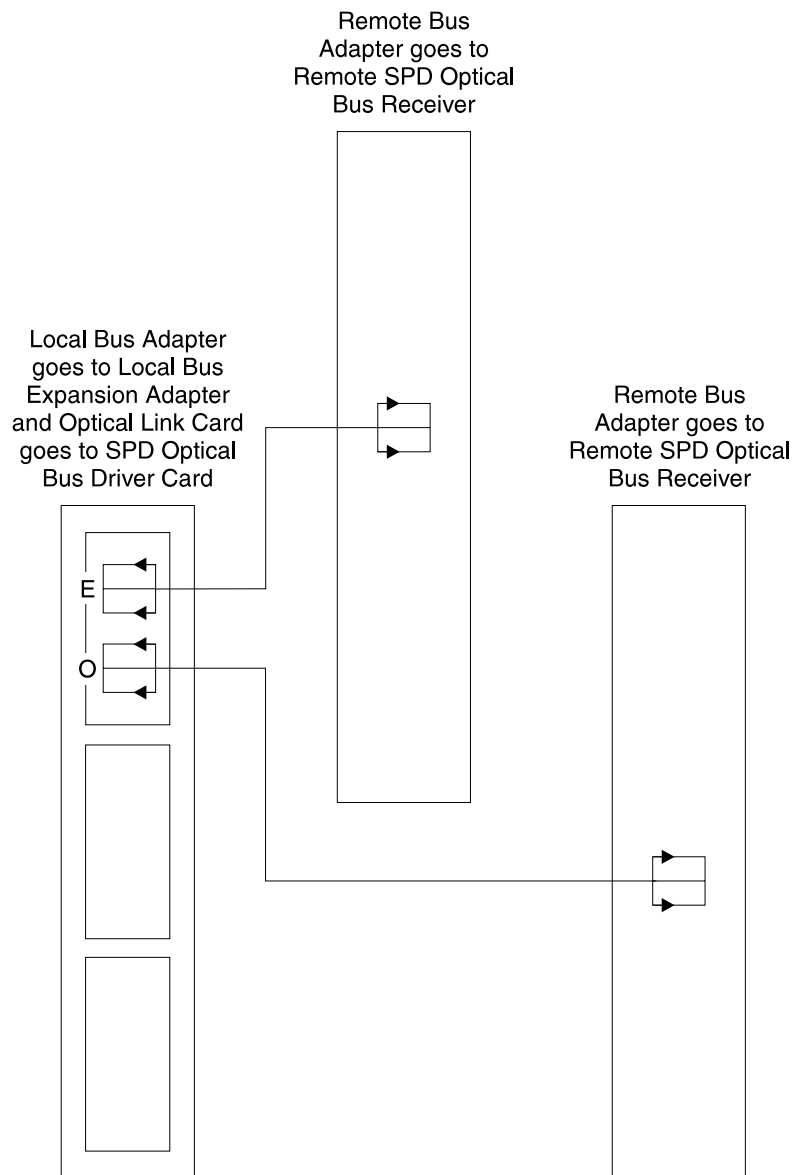
Figure 13. Paired Buses with an Internal Copper Secondary Link

Bus PIPs



RZAAA523-0

Figure 14. Example Paired Buses, Optical Secondary Link



RZAAA524-0

Figure 15. Example Single Bus Connection, No Redundancy

Did you correct the configuration problem?

No **Yes**

↓ Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

8. Find the bus expansion tower for the failing bus.

Is the power indicator light off, or is a power reference code (1xxx xxxx) displayed on the expansion tower control panel?

No **Yes**

↓ Go to step 11 of this procedure.

Bus PIPs

9. Does the remote SPD optical bus receiver card have an optical cable in the bottom-most position that connects to a remote SPD optical bus receiver card in another bus expansion tower?

Yes No

↓ Go to step 12 of this procedure.

10. Find the bus expansion tower for the bus that is paired with the failing bus. Is the power indicator light off, or is a power reference code (1xxx xxxx) displayed on the expansion tower control panel?

Yes No

↓ Go to step 12 of this procedure.

11. Go to “Cannot Power On Secondary Frame (No SRC)” on page 41. If that does not isolate the problem, check the backplane for bent or broken pins. If there are no bent or broken pins, exchange the failing items that are listed in FI00065 one at a time. Only exchange failing items from the list that are located in this expansion tower.

This ends the procedure.

12. Perform the following to verify the configuration of the optical bus hardware:
- Ensure that both ends of all optical cables are tightly connected.
 - Use the system configuration list, and Figure 11 through Figure 15 on page 471 to identify the correct configuration for your system. Verify that the optical bus cable connections are correct. Use the *AS/400e server 170, 250, 6xx, 7xx, and Sxx System Installation and Upgrade* if you need to verify the system configuration rules.
 - Ensure that an optical wrap plug is installed on the local SPD optical bus driver card for all buses that are not used.
 - Use the cleaning kit if you suspect that the optical bus cables are dirty.
 - Ensure that there are no bends in the optical bus cables less than a 2.54 cm (1 in) radius and no coils in the cables less than a 3.05 cm (1.2 in) diameter.

Did you make an adjustment?

Yes No

↓ Go to step 14 of this procedure.

13. Power off the system (if it is not already powered off).

Power the system on.

Does the Entry Point SRC or error occur?

Yes No

↓ Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

14. Is the SRC that sent you to this procedure B600 69E8?

Yes No

↓ Go to step 20 of this procedure.

15. Trace the optical cable of the failing bus from the local SPD optical bus driver card to the remote SPD optical bus receiver card.

Is the remote SPD optical bus receiver card connected to another remote SPD optical bus receiver card through a secondary optical cable?

Yes No

- ↓ Perform the following:
 - a. Power off the system.
 - b. Verify that the power indicator on the expansion tower is off. If the indicator remains on, you *may* need to power off the system unit that is attached through the OS/400–OptiConnect hardware.
 - c. Exchange the remote bus adapter for the failing bus.
 - d. Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

- 16. Perform the following:
 - a. Power off the system and verify that the expansion tower power indicator is off.
 - b. Exchange the remote SPD optical bus receiver card for the failing bus.
 - c. Power on the system.

Does SRC B600 69E8 occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes No

- ↓ Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

- 17. Perform the following:
 - a. Power off the system and verify that the expansion tower power indicator is off.
 - b. Remove the remote SPD optical bus receiver card you just exchanged.
 - c. Reinstall the original remote SPD optical bus receiver card.
 - d. Exchange the remote SPD optical bus receiver card for the bus that is paired with the failing bus.
Refer to Figure 28 on page 705 to view bus pairings on the local SPD optical bus driver card.
 - e. Power on the system.

Does SRC B600 69E8 occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes No

- ↓ Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

- 18. Perform the following:
 - a. Power off the system and verify that the expansion tower power indicator is off.
 - b. Remove the remote SPD optical bus receiver card you just exchanged and install the original.
 - c. Exchange the secondary optical cable that connects the remote SPD optical bus receiver cards of the paired buses together.
 - d. Power on the system.

Does SRC B600 69E8 occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes No

- ↓ Go to “BUS-PIP8” on page 481 to verify the repair.

Bus PIPs

This ends the procedure.

19. Go to step 38 of this procedure.
20. Check the local SPD optical bus driver card of the failing bus.
Is either of the two connectors on this SPD optical bus driver card disconnected?
Yes No
↓ Go to step 26 of this procedure.
21. Power off the system.
Use the system configuration list to determine the bus configuration of the system. If a bus should be connected to this local SPD optical bus driver card and it is not connected, ensure that it is connected. To do this, find the expansion tower for the bus and ensure that a cable is connected between its remote SPD optical bus receiver card and the local SPD optical bus driver card.
Otherwise, if there are no missing buses, ensure that wrap plugs are installed on the unused connectors on the local SPD optical bus driver card.
22. Power on the system.
Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?
Yes No
↓ Go to "BUS-PIP8" on page 481 to verify the repair.
This ends the procedure.
23. Power on the system.
Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?
Yes No
↓ Go to "BUS-PIP8" on page 481 to verify the repair.
This ends the procedure.
24. Is an SPD optical bus driver card terminator (PN 16G5609) available?
Yes No
↓ Go to step 26.
25. Perform the following:
 - a. Power off the system.
 - b. Install the SPD optical bus driver card terminator on the SPD optical bus driver card.
 - c. Power on the system.Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?
Yes No
↓ Go to step 31.
26. Power off the system and exchange the local SPD optical bus driver card for the failing bus.
Power on the system.
Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes No

↓ Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

27. Perform the following:
 - a. Power off the system.
 - b. Verify that the power indicator on the expansion tower is off. If the indicator remains on, you *may* need to power off the system unit that is attached through the OS/400–OptiConnect hardware.
 - c. Exchange the remote SPD optical bus receiver card for the failing bus.
 - d. Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes No

↓ Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

28. Is the SRC that sent you to this procedure B600 69F8?

Yes No

↓ Go to step 32 of this procedure.

29. Perform the following:
 - a. Power off the system and verify that the expansion tower power indicator is off.
 - b. Exchange the optical cable between the SPD optical bus driver card and the remote SPD optical bus receiver card on the even bus of the bus pair you are working with. This is the top position of the SPD optical bus driver card with the failing bus.
 - c. Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes No

↓ Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

30. Go to step 38 of this procedure.
31. Determine if the optical cable is functioning properly. Go to “BUS-PIP11” on page 491. Then return here with the results and continue with this procedure. Is the cable **functioning properly**?

No Yes

↓ Go to step 33 on page 476 of this procedure.

This ends the procedure.

32. Perform the following:
 - a. Power off the system and verify that the expansion tower power indicator is off.
 - b. Disconnect the remote SPD optical bus receiver card you just exchanged and reinstall the original.

Bus PIPs

- c. Exchange both optical cables between the local remote SPD optical bus receiver card and the remote SPD optical bus receiver cards.
- d. Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes **No**

↓ Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

33. Is the SRC that originally sent you to this procedure B600 69F0 or B600 6905?

Yes **No**

↓ The SRC that originally sent you to this procedure is B600 69D8.

Go to step 37 of this procedure.

34. Trace the optical cable of the failing bus from the SPD optical bus driver card to the remote SPD optical bus receiver card.

Is the remote SPD optical bus receiver card connected to another remote SPD optical bus receiver card?

Yes **No**

↓ Go to step 37 of this procedure.

35. Perform the following:

- a. Power off the system.
- b. Verify that the power indicator on the expansion tower is off. If the indicator remains on, you *may* need to power off the system unit that is attached through the OS/400–OptiConnect hardware.
- c. Exchange the remote SPD optical bus receiver card for the paired bus. This is the other bus that is connected to the SPD optical bus driver card with the failing bus.
- d. Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes **No**

↓ Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

36. Perform the following:

- a. Power off the system.
- b. Disconnect the remote SPD optical bus receiver card you just exchanged and reinstall the original bus adapter.
- c. Exchange the secondary optical cable between the remote SPD optical bus receiver cards.
- d. Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes **No**

↓ Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

37. Perform the following:
- Power off the system.
 - Exchange the local bus adapter (see symbolic FRU ""LBUSADP"" on page 401").
 - Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes **No**

↓ Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

38. Perform the following:
- Power off the system and verify that the expansion tower power indicator is off.
 - Exchange all of the parts in the failing item list at the same time. Exchange the SPD optical bus driver card, all remote SPD optical bus receiver cards, and any optical link cables that are in the failing item list.
 - Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes **No**

↓ Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

39. Ask your next level of support for assistance.

This ends the procedure.

BUS-PIP7

Introduction: This procedure isolates a failure in the OS/400–OptiConnect hardware. OS/400–OptiConnect hardware connects AS/400 systems together through SPD optical bus receiver cards. The system that reports the failure does not necessarily have the failure.

The connected systems may vary in system type and model. Ensure that you are in the correct problem analysis book for your system.

Note: Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.

Note: Within this procedure the terms "system" and "logical partition" are interchangeable when used individually.

Perform this procedure from the logical partition or system that is reporting the problem.

Bus PIPs

To determine which logical partition owns the input-output processors (IOP) see “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 787.

To locate the console of a secondary partition see “Locating a Secondary Partition’s Console” on page 783.

Certain conditions may cause the shared SPD optical bus receiver cards to show a status of Failed under system service tools. These include:

- The remote system or logical partition is not powered on, is still powering up, or is experiencing some hang condition where it is not responding.
- The optical cables to the remote system are damaged or not installed.
- The shared SPD optical bus receiver card-optical jumper is installed.
- The shared SPD optical bus receiver card-optical wrap plugs are installed.
- The shared SPD optical bus receiver card is failing.

When a remote system or logical partition powers up late, the UNKNOWN resource with the Failed status may remain as an entry in the resource list. However, this entry is supplemented with an additional entry showing the shared SPD optical bus receiver card as a resource with its card type and a status of Operational. Displaying additional details on these resources shows them at the same card location.

Note: Do not perform this procedure unless you have been trained on OS/400–OptiConnect. If you have **not** been trained on OS/400–OptiConnect, call your next level of support for assistance.

1. Go to “Appendix F. OptiConnect Table” on page 1023.

Does the table contain written information?

Yes **No**

↓ The table was not completed when the system was installed. Call your next level of support for assistance.

This ends the procedure.

2. Record the status of every OS/400–OptiConnect resource on **ALL** systems by using the Work with Hardware resources (WRKHDWRSC *CSA) command.

Note: If any system connected with OS/400–OptiConnect has logical partitions, then record the status of OS/400–OptiConnect resources on all logical partitions which have OS/400–OptiConnect hardware. Each logical partition which owns OS/400–OptiConnect hardware must be considered a separate system in the OS/400–OptiConnect configuration.

Mark the host buses of the network in the table.

Are there any host buses with a status of failed, disabled, or inoperative? (Look at the status beside the host bus, not the IOPs listed under the bus.)

No **Yes**

↓ Go to “BUS-PIP3” on page 455.

Note: If this is a dual host configuration, this machine may still be operational. Check with the customer before proceeding.

3. Do the host bus or buses have one or more IOPs failing?

Yes No

↓ Go to step 8 of this procedure.

4. Is the non-host system, or are the non-host systems powered on?

Note: For any non-host system, or any non-host systems which have logical partitions, check that each logical partition connected with OS/400–OptiConnect hardware is powered on.

Yes No

↓ Ask the customer why the system, or systems, logical partition, or logical partitions are powered off.

This ends the procedure.

5. On the command line, enter DSPOPCLNK (the display-optical link command). Identify the Down Links. Press the display the alternate view function key (F11) to identify the remote system bus.

Check all optical bus cables between failed non-host and host buses. Connect unplugged cables.

Did you fix a problem (example: connect an unplugged cable)?

Yes No

↓ Go to step 9 of this procedure.

6. Wait at least 5 minutes for the link to return to operational.

Does the card become operational?

No Yes

↓ Go to step 18 of this procedure.

7. Go to step 9 of this procedure.

8. Does a non-host bus or any non-host buses have a failed, disabled, or inoperative IOP?

Yes No

↓ Go to step 16 of this procedure.

9. Perform the following:

a. Use the STRSST command to start System Service Tools.

b. Select the *Start a Service Tool* option.

c. Select the *Hardware service manager* option.

d. Select the *Logical Resources* option from the Hardware Service Manager display.

e. Select the *System Bus Resources* option to view the status of the non-host buses on all of the systems.

f. Select the *Display detail* option on the Logical Hardware Resources display.

g. Note the card type/model number and the attached system name/logical partition ID for the failing resource.

10. **Before you continue, read and understand this step.**

This card may still have active connections to other systems. Check with the customer to find a time when an IOP IPL can be performed with minimal or no OS/400–OptiConnect activity on the attached system or logical partition that is identified in step 9 of this procedure.

Do not IPL an IOP from a non-host system or logical partition. This will cause the IPL to fail and may hang the service tool screen until the next IPL.

Bus PIPs

11. From the host system/logical partition, select the *Perform I/O Debug* option for the failed resource. On the *Select IOP Debug Function* display, select the option to IPL the I/O processor.

The IPL may take several minutes to complete.

The IPL may return with a status of failed. However, after several minutes the link may become operational. This can be expected and is a good result.

12. Does the IOP become operational?

No **Yes**

↓ Go to step 18 of this procedure.

13. IPL the non-host system or logical partition.
Does the failed resource become operational?

No **Yes**

↓ Go to step 18 of this procedure.

14. IPL the host system or logical partition.
Does the failed resource become operational?

No **Yes**

↓ Go to step 18 of this procedure.

15. Exchange the following one at a time:

- Shared SPD optical bus receiver card

Note: The card may not show a failed status.

- SPD optical bus driver card
- Cables between the IOPs

If you have not corrected the problem, call your next level of support.

This ends the procedure.

16. Are you here because of a 69C1 reference code?

Note: If you need assistance at this point, call your next level of support.

Yes **No**

↓ Call your next level of support.

This ends the procedure.

17. Ask the customer if there was IPL activity at the time of the error.

Note: If you need assistance at this point, call your next level of support.

Was there IPL activity at the time of the error?

Yes **No**

↓ Call your next level of support.

This ends the procedure.

18. Check all systems/logical partitions (with OS/400–OptiConnect hardware) and verify that all hardware is operational using the `WRKHDWRSC *CSA` command.

Return to step 1 of this procedure if any hardware resource does not report as operational.

This ends the procedure.

BUS-PIP8

Introduction: This procedure will verify an SPD bus repair.

Note: Within this procedure the terms "system" and "logical partition" are interchangeable when used individually.

Perform this procedure from the logical partition you were in when you were sent to this procedure.

To determine which logical partition owns an I/O resource see "Determining Which Logical Partition Owns a FRU or a System I/O Resource" on page 787.

To locate the console of a secondary partition see "Locating a Secondary Partition's Console" on page 783.

Perform the following procedure to ensure that the system functions correctly after you perform a bus isolation procedure. Use this procedure to verify a bus repair.

1. Power off the system or expansion tower where the service action was performed.
2. Install all cards, cables, and hardware. Ensure that all connections are tight. You may use the system configuration list to verify that the cards are installed correctly.
3. Power on the system or expansion tower.

Does the IPL complete successfully to the IPL or Install the System Display **or** does the expansion tower power on complete successfully?

Yes **No**

↓ An SRC occurred.

Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

This ends the procedure.

4. Does the system/logical partition have mirrored protection?

Note: If you do not know the type of protection on your system/logical partition, select **Yes**.

Yes **No**

↓ Go to step 6 of this procedure.

5. From the Dedicated Service Tools (DST) display, select the *Work with disk units* option and resume mirrored protection for all units that have a suspended status. (See "Work with Disk Unit Recovery" in the *AS/400 Service Functions* information).
6. From the Start a Service Tool display, select the *Hardware service manager* option and look for the I/O processors that have a failed or missing status. Are all I/O processor cards operational?

Note: Ignore any IOPs that are listed with a status of *not connected*.

No **Yes**

↓ Go to step 12 of this procedure.

Bus PIPs

7. Display the logical hardware resource information for the non-operational I/O processors.

If more than one I/O processor is failing, record the bus, board, and card information for the card with the lowest logical card address.

8. Perform the following:
 - a. Return to the Dedicated Service Tools (DST) display.
 - b. Display the Product Activity Log.
 - c. Select the *All logs* option and search for an entry with the same bus, board, and card address information as the non-operational I/O processor.

Note: Do not include informational or statistical entries in your search. Use only entries that occurred during the last IPL.

Did you find an entry for the SRC that sent you to this procedure?

No **Yes**

↓ Ask your next level of support for assistance.

This ends the procedure.

9. Did you find a B600 6944 SRC that occurred during the last IPL?

Yes **No**

↓ A different SRC is associated with the non-operational I/O processor. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

This ends the procedure.

10. Is there a B600 xxxx SRC that occurred during the last IPL other than the B600 6944 and informational SRCs?

Yes **No**

↓ You connected an I/O processor in the wrong card position. Use the system configuration list to compare the cards.

When you have corrected the configuration, go to the start of "BUS-PIP8" on page 481 to verify the bus repair.

This ends the procedure.

11. Use the other B600 xxxx SRC to determine the problem.

Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

This ends the procedure.

12. Use the hardware service manager function to print the system configuration list.

Are there any configuration mismatches?

No **Yes**

↓ Ask your next level of support for assistance.

This ends the procedure.

13. You have verified the repair of the system bus.

If only an expansion tower was powered off for this service action, go to step 14 on page 483.

Perform the following to return the system to the customer:

- a. Power off the system/logical partition.

- b. Select the operating mode with which the customer was originally running

If the system was powered off, select the mode on the system control panel. If a secondary partition was powered off, select the mode on the *Work with Partition Status* screen under DST. (See “Selecting IPL Type and Mode for a Secondary Partition” on page 788.)

- c. Power on the system/logical partition.
14. If the system has logical partitions and the entry point SRC was B600xxxx, then check for related problems in other logical partitions that could have been caused by the failing part. (See “Closing Related Problems in Other Logical Partitions” on page 786.)

This ends the procedure.

BUS-PIP9

Introduction: This procedure isolates a solid failure on the FC 5044 Expansion Tower.

FC 5044 Cabling and Bus Numbering Assumption: This procedure assumes that the FC 5044 tower installation instructions were followed and therefore the tower was cabled to the system in the following way:

1. The optical cable port pair on the system unit’s bus driver card for the even bus number connects to the top cable ports on the 2684 bus receiver card in the tower.
2. The optical cable port pair on the system unit’s bus driver card for the odd bus number connects to the bottom port pair on the 2684 bus receiver card in the tower.

Note: Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: This procedure must perform service in the Primary partition. If you came to this procedure while working in another logical partition, then move to the console of the Primary partition. Perform this procedure from there.

Read the “Overview” on page 442 before continuing with this procedure.

Attention: If the expansion unit is connected through OS/400–OptiConnect hardware, you may need to power off more than one system unit during this procedure.

1. Read and understand the “FC 5044 Cabling and Bus Numbering Assumption”. Determine which card positions in the tower you will perform service on using the following procedure.

If the FC 5044 tower is cabled to the system as described in the Cabling and Bus Numbering Assumption:

Bus PIPs

- In V4R4 and earlier system models running any supported software version and release: The even bus number is in tower card positions C02 through C07. The odd bus number is in tower card positions C08 through C13.
- In V4R5 system models which have a migrated 5044 AND the cabling to the 5044 was not altered: The odd bus number is in tower card positions C02 through C07. The even numbered bus is in tower card positions C08 through C13.

If the FC 5044 tower was cabled to the system differently than as described in the Cabling and Bus Numbering Assumption:

- The bus number cabled to the top port pair on the 2684 bus receiver card is in card positions C02 through C07.
 - The bus number cabled to the bottom port pair on the 2684 bus receiver card is in card positions C08 through C13.
2. Power off the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Attention: Verify that the system unit power indicator is off before you continue to the next step of this procedure. If the power indicator remains on, you may be working on a system that has OS/400–OptiConnect hardware. You may need to power off more than one system unit during this procedure.
 3. In the FC 5044 Expansion Unit, **for the bus you are isolating**, disconnect the cards at the following card positions (if installed) by sliding them partially out of the card enclosure:

Table 21. Card Positions

Bus in C02 through C07	Bus in C08 through C13
3	9
4	10
5	11
6	12
7	13
Note: Do not remove the I/O processor cards in positions 2 and 8, or the air flow cards.	

Use the system configuration list to verify the configuration as you work.

4. Did you remove any cards in the previous step?

No **Yes**

↓ Go to step 8 of this procedure.
5. Airflow cards are installed in the positions that are shown in Table 21.

Is an SPD optical bus receiver card (not an airflow card) installed in the first position on the bus? Use the following table to determine the card position.

Table 22. Card Positions

Bus in C02 through C07	Bus in C08 through C13
2	8

- No** **Yes**
- ↓ Go to step 9 of this procedure.

6. Check the printed system configuration list to determine if I/O processors are supposed to be on this bus.

Are any I/O processors missing?

Yes No

↓ If the Entry Point SRC was B600 6944, this indicates that there is an empty bus and the message can be ignored. If the Entry Point SRC was not B600 6944, ask your next level of support for assistance.

This ends the procedure.

7. Ask your next level of support for assistance.

This ends the procedure.

8. Power on the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes No

↓ Go to step 15 of this procedure.

9. Perform the following:

- a. Power off the system unit(see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Exchange the remote SPD optical bus receiver card.
- c. Power on the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes No

↓ The failing item is the remote SPD optical bus receiver card, which you have already exchanged.

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

10. Remove the remote SPD optical bus receiver card you installed in the previous step and install the original remote SPD optical bus receiver card.

11. Perform “BUS-PIP5” on page 459 for the following cards:

Table 23. Card Positions

Bus in C02 through C07	Bus in C08 through C13
2	8

If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

12. Perform the following:

- a. Power off the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Bus PIPs

- b. Exchange the I/O processor card in the position that is shown in Table 23 on page 485.
- c. Power on the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes **No**

- ↓ The failing item is the I/O processor card, which you just exchanged. Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

13. Perform the following:
 - a. Power off the system unit “Powering Off and Powering On the System or Expansion Tower” on page 761.
 - b. Remove the I/O processor you installed in step 12 of this procedure and install the original I/O processor card and the attached adapter cards.
14. The only failing item remaining is the expansion unit card enclosure. Perform the following:
 - a. Exchange the expansion unit card enclosure.
 - b. Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

15. Install the cards you removed in step 3 of this procedure one at a time from the lowest to the highest position.

Note: Power off the system before installing each card. After you install each card, power on the system.

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes **No**

- ↓ Repeat this step until the SRC or failure that sent you to this procedure occurs.

If the error does not occur, the problem may be intermittent. Ask your next level of support for assistance.

This ends the procedure.

16. Perform “BUS-PIP5” on page 459 for the last card you reinstalled in step 15 of this procedure.

Note: If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

17. Perform the following:

- a. Power off the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Exchange the I/O processor card you last reinstalled in step 15 of this procedure with a new I/O processor card of the same type.
- c. Power on the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes No

↓ The failing item is the I/O processor card that you have already exchanged.

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

18. Perform the following:

- a. Power off the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Remove the last card you exchanged.
- c. Install the original I/O processor card and the attached adapter cards.

19. Perform the following:

- a. Find the I/O processor card with the card position that is one less than the I/O processor card you are working with.
- b. Exchange this I/O processor card.
- c. Power on the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes No

↓ The failing item is the I/O processor card that you have already exchanged.

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

20. Perform the following:

- a. Power off the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Remove the I/O processor card you installed in the previous step.
- c. Install the original I/O processor card.

21. The only failing item remaining is the expansion unit card enclosure.

Perform the following:

- a. Exchange the expansion unit card enclosure.

Bus PIPs

b. Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

BUS-PIP10

Introduction: This procedure isolates a solid failure in the FC 5065 or 5066 Expansion Tower.

Note: On a FC 5065 or 5066 expansion tower the SPD IOP cards generate PCI for the I/O adapter cards they control. SPD I/O processor card positions are C03, C08 and C13. Empty SPD I/O processor card positions (between I/O processors) are not allowed on the system SPD bus which drives this I/O expansion tower. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.

For this procedure you must perform service in the logical partition which owns the bus on this expansion tower. If you came to this procedure while working in another logical partition, then move to the console of the logical partition which owns this bus. Perform this procedure from there.

To determine which logical partition owns the bus see "Determining Which Logical Partition Owns a FRU or a System I/O Resource" on page 787.

To locate the console of a secondary partition see "Locating a Secondary Partition's Console" on page 783.

Read the "Overview" on page 442 before continuing with this procedure.

1. Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 766).

Attention: Verify that the expansion unit power indicator is off before you continue to the next step of this procedure. If the power indicator remains on, you may be working on a system that has OptiConnect/400 hardware. You may need to power off more than one system unit during this procedure.

2. Disconnect the cards at the following card positions (if installed) by sliding them partially out of the card enclosure C01 through C15:

Note: Do not remove the bus connection cables.

Use the system configuration list to verify the configuration as you work.

3. Did you remove any cards in the previous step?

No **Yes**

↓ Go to step 6 of this procedure.

4. Check the printed system configuration list to determine if I/O processors are supposed to be on this bus.

Are I/O processors missing?

Yes **No**

↓ If the Entry Point SRC was B600 6944, this indicates that there is an

empty bus and the message can be ignored. If the Entry Point SRC was not B600 6944, ask your next level of support for assistance.

This ends the procedure.

5. Ask your next level of support for assistance.

This ends the procedure.

6. Power on the expansion tower. (See “Expansion Tower Power Procedure” on page 766.)

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions which own I/O processor card resources on the bus.

Yes No

↓ Go to step 9 of this procedure.

7. Perform the following:

- a. Power off the expansion tower. (See “Expansion Tower Power Procedure” on page 766.)

- b. Remove the tower card (see “TWRCARD” on page 425) and install a new one.

- c. Power on the expansion tower. (See “Expansion Tower Power Procedure” on page 766.)

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes No

↓ The failing item is the tower card (TWRCARD), which you have already exchanged.

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

8. Remove the tower card (TWRCARD) that you installed in the previous step and install the original tower card.

9. Install the cards you removed in step 2 of this procedure one card group at a time in the order that is shown in Table 24.

Note: Power off the expansion tower before installing each card group. After you install each card group, power on the expansion tower.

Table 24. Install

FC 5065 or 5066
I/O Processor in C03, I/O Adapters in C01, C02, C04 and C05
I/O Processor in C08, I/O Adapters in C06, C07, C09 and C10
I/O Processor in C13, I/O Adapters in C11, C12, C14 and C15

Does the Entry Point SRC or error occur?

Bus PIPs

Note: If the system has logical partitions when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes **No**

↓ Repeat this step until the SRC or failure that sent you to this procedure occurs.

If the error does not occur, the problem may be intermittent. Ask your next level of support for assistance.

This ends the procedure.

10. Perform "BUS-PIP5" on page 459 for the last card group that you reinstalled in step 9 of this procedure.

Note: If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

11. Perform the following:

- a. Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)
- b. Exchange the I/O processor card you last reinstalled in step 9 of this procedure with a new I/O processor card of the same type.
- c. Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes **No**

↓ The failing item is the I/O processor card, which you have just exchanged.

Go to "BUS-PIP8" on page 481 to verify the repair.

This ends the procedure.

12. Perform the following:

- a. Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)
- b. Remove the last card that you exchanged.
- c. Install the original I/O processor card and the attached adapter cards.

13. Perform the following:

- a. Use the Table 24 on page 489 and the I/O processor card with the position that you previously reinstalled.
- b. Exchange this I/O processor card.
- c. Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 766.)

Does the Entry Point SRC or error occur?

Note: If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

Yes No

↓ The failing item is the I/O processor card, which you have already exchanged.

Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

14. Perform the following:
 - a. Power off the expansion tower. (See “Expansion Tower Power Procedure” on page 766.)
 - b. Remove the I/O processor card you installed in the previous step.
 - c. Install the original I/O processor card.
15. The only failing item remaining is the tower card (TWRCARD).
Perform the following:
 - a. Exchange the tower card (TWRCARD). Go to “TWRCARD” on page 425.
 - b. Go to “BUS-PIP8” on page 481 to verify the repair.

This ends the procedure.

BUS-PIP11

Introduction: This procedure uses the optical cable wrap plug, PN 75G2725, to verify the function of an SPD bus optical cable. **PN 75G2725 can not be used on early optical cables (early 3xx systems, this cable has the optics connector oriented 90 degrees).** In this procedure you will determine and record one of these conditions for the proper function of the optical cable:

- The cable is **functioning properly**.
- The cable is **failing**.
- The proper function of the cable **cannot be determined**.

Procedure:

1. Do you have the optical cable wrap plug, PN 75G2725?

Yes No

↓ You cannot perform this procedure. Record that the proper function of the optical cable **cannot be determined**. Return to the procedure, symbolic FRU or FI that sent you here.

This ends the procedure.

2. Perform the following:
 - a. Power on the system if it is not already powered on.
 - b. Power off the I/O tower for the failing bus. See “Expansion Tower Power Procedure” on page 766.
 - c. Disconnect the optical cable from the remote SPD optical bus receiver card for the failing bus.
 - d. Install the optical cable wrap plug on the optical cable at the end you disconnected.
3. Search the Product Activity Log of the Primary partition for a B600 699C.

Bus PIPs

Note: Search the Primary partition even if the system has multiple partitions.

Does SRC B6xx 699C occur in the Product Activity Log for the bus you are working on at a time that was during the IPL?

No **Yes**

↓ Record that the optical cable is **functioning properly**. Go to step 9 of this procedure.

4. The local SPD optical bus driver card must be tested.

Note: This step requires an SPD optical bus driver card terminator (PN 16G5609). If you do not have a terminator you can use an SPD optical bus driver card terminator from an unused optical bus port by exchanging it with the cable you put the optical cable wrap plug on.

Is an SPD optical bus driver card terminator available?

Yes **No**

↓ Record that the proper function of the optical cable **cannot be determined**. Go to step 8 of this procedure.

5. Install the SPD optical bus driver card terminator on the optical link card for the bus you are working on.
6. Search the Product Activity Log of the Primary partition for a B600 699C.

Note: Search the Primary partition even if the system has multiple partitions.

Does SRC B6xx 699C occur in the Product Activity Log for the bus you are working on at a time that was during the IPL?

Yes **No**

↓ Record that the optical cable is **functioning properly**. Go to step 9 of this procedure.

7. Record that the optical cable is **failing**.
8. Perform the following:
 - a. Reinstall any SPD optical bus driver card terminators that you moved during this procedure.
 - b. Remove the optical cable wrap plug.
 - c. Return to the procedure, symbolic FRU or FI that sent you to this procedure.

This ends the procedure.

9. Perform the following:
 - a. Reinstall any SPD optical bus driver card terminators that you moved during this procedure.
 - b. Remove the optical cable wrap plug.
 - c. Reinstall the optical cable.
 - d. Return to the procedure, symbolic FRU or FI that sent you here.

This ends the procedure.

Communications Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a communications failure.

DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

COMM-PIP1

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. To determine which communications hardware to test, use the SRC from the problem summary form, or the problem log. For details on line description information, see the “Starting a Trace” section of “Work with Communications Trace” in the *AS/400 Service Functions* information.
2. Perform the following:
 - a. Vary off the resources.
 - b. Go to the Start a Service Tool display.
 - c. Select the *Hardware service manager* option.
 - d. Select the *Logical hardware resources* option.
 - e. Select the *System bus resources* option.
 - f. Select the *Resources associated with IOP* option for the attached IOPs in the list until you display the suspected failing hardware.
 - g. Select the *Verify* option on the hardware you want to test.

Note: The *Verify* option may be valid on the IOP, IOA, or port resource. When the *Verify* option is valid on the IOP resource, any replaceable memory will be tested. Communications IOAs are tested by using the

Communications PIPs

Verify option on the port resource. Workstation IOAs are tested by using the *Verify* option on the IOA resource.

3. Run the IOA/IOP test(s). This may include any of the following:

- Adapter internal test.
- Adapter wrap test (requires adapter wrap plug).
- Processor internal test.
- Memory test.
- Serial/parallel port test.

Does the IOA/IOP test(s) complete successfully?

No **Yes**

↓ The IOA/IOP is good. Do NOT replace the IOA/IOP. Go to step 5 of this procedure.

4. The problem is in the IOA or IOP.

If a verify test identified a failing memory module, replace the memory module.

On multiple card combinations, exchange the IOA card before exchanging the IOP card.

Exchange the failing hardware (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

5. Before running tests on modems or network equipment, the remaining local hardware should be verified. Since the IOA/IOP test(s) have completed successfully, the remaining local hardware to be tested is the external cable.

Is the cable wrap test option available as a *Verify* test option for the hardware you are testing?

Yes **No**

↓ Go to step 7 on page 495 of this procedure.

Verify the external cable by running the cable wrap test.

Note: Wrap plug part numbers can be found in the “Chapter 8. Parts Listing” on page 909.

Does the cable wrap test complete successfully?

Yes **No**

↓ The problem is in the cable. Exchange the cable.

This ends the procedure.

6. All the local hardware is good. This completes the local hardware verification. The communications IOA/IOP and/or external cable is not the failing item.

One of the following could be causing the problem:

- The network.
- Any system or device on the network.
- The configuration of any system or device on the network.
- Intermittent problems on the network.
- A new SRC - go to “Starting Point for All Problems” on page 4 or ask your next level of support for assistance.

Work with the customer or your next level of support to correct the problem.

This ends the procedure.

7. The communications IOA/IOP is not the failing item.

One of the following could be causing the problem:

- External cable.
- The network.
- Any system or device on the network.
- The configuration of any system or device on the network.
- Intermittent problems on the network.
- A new SRC - go to "Starting Point for All Problems" or ask your next level of support for assistance.

Work with the customer or your next level of support to correct the problem.

This ends the procedure.

Disk Unit Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure in a disk unit.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see "Powering Off and Powering On the System or Expansion Tower" on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DU-PIP3

Introduction: This procedure determines the system reference code (SRC) to be used to isolate the problem and to determine the failing device.

Note: When exchanging a disk unit, go to "Chapter 7. Recovery Procedures" on page 879.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Perform an IPL to dedicated service tool (DST) (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

Does an SRC appear on the control panel?

No **Yes**

↓ Go to step 6 of this procedure.

2. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

Yes **No**

↓ Go to step 4 of this procedure.

3. Does one of the following messages appear in the list?

Disk Unit PIPs

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode.

No **Yes**

- ↓ Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to "LIC-PIP11" on page 517 and use cause code 0002. If any of the reference codes are not 0000, go to step 6 of this procedure and use the reference code that is not 0000.

Note: Use the characters in the *Type* column to find the correct reference code table.

4. Does the Display Failing System Bus display appear on the console?

No **Yes**

- ↓ Use the reference code that is displayed under *Reference Code* to correct the problem.

This ends the procedure.

5. Look at all the Product Activity Logs by using the *Product activity log* option under DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

Yes **No**

- ↓ You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 341 to help determine part numbers and location in the system.

This ends the procedure.

6. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 1007).

Is the SRC the same one that sent you to this procedure?

Yes **No**

- ↓ Go to "Starting Point for All Problems" on page 4 to correct the problem.

This ends the procedure.

7. Perform the following:

- a. If the input-output processor (IOP), is located in an I/O expansion tower, you are to use bus-level concurrent maintenance under *Hardware Service Manager* to power off the expansion tower. Otherwise, power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
- b. See "Failing Item (FI) Code Table" on page 341 to find the devices identified by FI code FI01106.
- c. Disconnect one of the disk units, (other than the load-source disk unit), the tape units, or the optical storage units that are identified by FI code FI01106. Slide it partially out of the system.

Note: Do not disconnect the load-source disk unit, although FI code FI01106 may identify it.

8. Power on the system or the expansion unit that you powered off.
Does an SRC appear on the control panel?

No **Yes**

↓ Go to step 12 of this procedure.

9. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console with one of the following listed?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode.

Yes **No**

↓ Go to step 11 of this procedure.

10. Select option 5, then press F11, then press the Enter key to display details.
Does an SRC appear in the Reference Code column?

No **Yes**

↓ Go to step 12 of this procedure.

11. Look at all the Product Activity Logs by using the *Product activity log* option under DST.

Is an SRC logged as a result of this IPL?

Yes **No**

↓ The last device you disconnected is the failing item.

Exchange the failing device and reconnect the devices that were disconnected previously.

Note: Before exchanging a disk drive, you should attempt to save customer data (see “Chapter 7. Recovery Procedures” on page 879).

This ends the procedure.

12. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1007).

Is the SRC the same one that sent you to this procedure?

No **Yes**

↓ The last device you disconnected is not the failing item.

- a. Leave the device disconnected and go to step 7 of this procedure to continue isolation.
- b. If you have disconnected all devices that are identified by FI code FI01106 except the load-source disk unit, reconnect all devices. Then go to step 16 of this procedure.

13. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console with one of the following listed?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration

Disk Unit PIPs

- Device parity protected units in exposed mode.

Yes No

↓ Go to step 13 of this procedure.

14. Select option 5 then press F11, then press the Enter key to display details.
Are all the reference codes 0000?

No Yes

↓ The last device you disconnected is the failing item.

- a. Reconnect all devices except the failing item.
- b. Before exchanging a disk unit, go to "Disk Unit" in "Chapter 6. Removal and Installation Procedures" on page 793.

This ends the procedure.

15. Use the reference code to correct the problem.

This ends the procedure.

16. Was disk unit 1 (the load-source disk unit) a failing item that FI code FI01106 identified?

Yes No

↓ The failing items that FI code FI01106 identified are not failing. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 341 to help determine part numbers and location in the system.

This ends the procedure.

17. The failing items that FI code FI01106 identified are not failing. The load-source disk unit may be failing. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 341 to help determine part numbers and location in the system.

This ends the procedure.

Intermittent Problem Isolation Procedures

Introduction

These intermittent problem isolation procedures instruct you to perform procedures to help you correct an intermittent problem.

Use these procedures only if problem analysis steps or tables sent you here.

Perform only the procedures that apply to your system.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see "Powering Off and Powering On the System or Expansion Tower" on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

INT-PIP3 External Noise on AC Voltage Lines

Electrical noise on incoming ac voltage lines can cause various system failures. The most common source of electrical noise is lightning.

DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

1. Ask the customer if an electrical storm was occurring at the time of the failure. This determines if lightning could have caused the failure.

Could lightning have caused the failure?

Yes **No**

↓ Go to step 3 of this procedure.

2. Determine if lightning protection devices are installed on the incoming ac voltage lines where they enter the building.

Note: There must be a dedicated ground wire from the lightning protection devices to earth ground.

Are lightning protection devices installed?

Yes **No**

↓ Lightning may have caused the intermittent problem. Recommend that the customer install lightning protection devices to prevent this problem from occurring again.

This ends the procedure.

3. *An installation planning representative should perform this step.*
 - a. Get a recording ac voltage monitor. Connect it to the incoming ac voltage lines of the units that contain the failing devices with reference to ground.
 - b. Set the voltage monitor to start recording at a voltage slightly higher than the normal incoming ac voltage.

Does the system fail again with the same symptoms?

Yes **No**

↓ **This ends the procedure.**

4. Look at the recording and see if the voltage monitor recorded any noise when the failure occurred.

Did the monitor record any noise when the failure occurred?

Yes **No**

↓ Perform the next INT-PIP listed in the *INT-PIP* column.

Intermittent PIPs

This ends the procedure.

5. Review with the customer what was happening external to the system when the failure occurred. This may help you to determine the source of the noise. Discuss with the customer what to do to remove the noise or to prevent it from affecting the AS/400 system.

This ends the procedure.

INT-PIP5 External Noise on Twinaxial Cables

DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

Electrical noise on twinaxial cables that are not installed correctly may affect the twinaxial workstation I/O processor card. Examples are: Open shields on twinaxial cables and station protectors that are not being installed where necessary.

1. Check for the following on the system:
 - There must be no more than 11 breaks in a twinaxial cable run.
 - Station protectors must be installed (in pairs) where a cable enters or leaves a building.
 - There can be only two station protectors for each twinaxial run.
 - There is a maximum of seven devices (with addresses 0-6) for each cable run.
 - There is a maximum cable length of 1524 meters (5000 feet) for each port.
 - All cable runs must be ended (terminated).
 - Disconnect all twinaxial cables that are not used.
 - Remove any cause of electrical noise in the twinaxial cables.
 - All workstations must be grounded.
2. See chapter 9 in the *AS/400 Technical Information Manual* SY44-0008, and use it to check for any cable problems.
3. For more information, see the *IBM 5250 Information Display Systems — Planning and Site Preparation Guide*, GA21-9337.

This ends the procedure.

INT-PIP7 Electromagnetic Interference (EMI)

This procedure contains actions to lessen the effects of electrical noise on the system.

1. Ensure that air flow cards are installed in all full-size card slots and adapter card slots that are not used.

2. Keep all cables away from sources of electrical interference, such as ac voltage lines, fluorescent lights, arc welding equipment, and radio frequency (RF) induction heaters. These sources of electrical noise can cause the system to become powered off.
3. If you have an expansion unit, ensure that the cables that attach the system unit to the expansion unit are seated correctly.
4. *It is recommended that an installation planning representative perform the following steps.*

If the failures occur when people are close to the system or machines that are attached to the system, the problem may be electrostatic discharge (ESD).
5. Use a radio frequency (RF) field intensity meter to determine if there is an unusual amount of RF noise near the AS/400 system. You can also use it to help determine the source of the noise.

This ends the procedure.

INT-PIP8 Grounding

This procedure contains actions to ensure that the system is electrically grounded correctly.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)

An installation planning representative must perform all of the steps in this procedure.

Notes:

1. Power off the AS/400 system and the power network branch circuits before performing this procedure.
2. The customer may have to get an electrician to perform some of the steps in this procedure.
3. Read *Electrical Safety for IBM Service Representatives*, S229-8124.
4. To ensure the safety of personnel, all electrical wiring in the United States must meet National Electrical Code requirements.
1. Check **ALL** system receptacles to ensure that each one is wired correctly. This includes receptacles for the AS/400 system and all equipment that attaches to the AS/400 system-including workstations. Do this to determine if a wire with primary voltage on it is swapped with the ground wire, causing an electrical shock hazard. Use the procedures for checking receptacles in *Electrical Safety for IBM Service Representatives*, S229-8124.
2. For each unit, check continuity from a conductive area on the frame to the ground pin on the plug. Do this at the end of the mainline ac power cable. The resistance must be 0.1 ohm or less.
3. Ground continuity must be present from each unit receptacle to an effective ground. Therefore, check the following:
 - The ac voltage receptacle for each unit must have a ground wire connected from the ground terminal on the receptacle to the ground bar in the power panel.
 - The ground bars in all branch circuit panels must be connected with an insulated ground wire to a **ground point**, which is defined as follows:

Intermittent PIPs

- The nearest available metal cold water pipe, only if the pipe is effectively grounded to the earth (see *National Electric Code* Section 250-81, in the United States).
- The nearest available steel beams in the building structure, only if the beam is effectively grounded to the earth.
- Steel bars in the base of the building or a metal ground ring that is around the building under the surface of the earth.
- A ground rod in the earth (see *National Electric Code* Section 250-83, in the United States).

Note: For installations in the United States only, by National Electrical Code standard, if more than one of the preceding grounding methods are used, they must be connected together electrically. See *National Electric Code* Section 250, for more information on grounding.

- The grounds of all separately derived sources (uninterruptible power supply, service entrance transformer, system power module, motor generator) must be connected to a **ground point** as defined above.
- The service entrance ground bar must connect to a **ground point** as defined above.
- All ground connections **must be tight**.
- Check continuity of the ground path for each unit that is using an ECOS tester, Model 1023-100. Check continuity at each unit receptacle, and measure to the **ground point** as defined above. The total resistance of each ground path must be 1.0 ohm or less. If you cannot meet this requirement, check for faults in the ground path.
- Conduit is sometimes used to meet wiring code requirements. If conduit is used, the branch circuits must still have a green (or green and yellow) wire for grounding as stated above.

Note: The ground bar and the neutral bar must never be connected together in branch circuit power panels.

The ground bar and the neutral bar in the power panels that make up the electrical power network for the AS/400 system must be connected together. This applies to the first electrically isolating unit that is found in the path of electrical wiring from the AS/400 system to the service entrance power panel. This isolating unit is sometimes referred to as a **separately derived source**. It can be an uninterruptible power supply, the system power module for the system, or the service entrance transformer. If the building has none of the above isolating units, the ground bar and the neutral bar must be connected together in the service entrance power panel.

4. Look inside all power panels to ensure the following:
 - There is a separate ground wire for each unit.
 - The green (or green and yellow) ground wires are connected only to the ground bar.
 - The ground bar inside each power panel is connected to the frame of the panel.
 - The neutral wires are connected only to the neutral bar.
 - The ground bar and the neutral bar are not connected together, except as stated in step 3 of this procedure.

5. For systems with more than one unit, the ground wire for each must not be connected from one receptacle to the next in a string. Each unit must have its own ground wire, which goes to the power source.
6. The grounding wires must be insulated with green (or green and yellow) wire at least equal in size to the phase wires. The grounding wires also should be as short as possible.
7. If extension-mainline power cables or multiple-outlet power strips are used, they must have a three-wire cable. One of the wires must be a ground conductor. The ground connector on the plug must not be removed. This applies to any extension mainline power cables or multiple-outlet power strips that are used on the AS/400 system. It also applies for attaching devices such as personal computers, workstations, and modems.

Note: Check all extension-mainline power cables and multiple-outlet power strips with an ECOS tester and with power that is applied. Ensure that no wires are crossed (for example, a ground wire crossed with a wire that has voltage on it).

8. For a diagram of grounding in a typical power distribution system, see "Appendix C" in the *Physical Planning Reference*.

This ends the procedure.

INT-PIP9 Utility Power and Battery Power Units

This procedure contains actions to check the ac electrical power for the system.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)

An installation planning representative must perform all of the steps in this procedure.

Notes:

1. Power off the AS/400 system and the power network branch circuits before performing this procedure.
2. The customer may have to get an electrician to perform some of the steps in this procedure.
3. Read *Electrical Safety for IBM Service Representatives*, S229-8124.
4. To ensure the safety of personnel, all electrical wiring in the United States must meet National Electrical Code requirements.
 1. Check **ALL** system receptacles to ensure that each is wired correctly. This includes receptacles for the AS/400 system and all equipment that attaches to the AS/400 system-including workstations. Do this to determine if a wire with primary voltage on it has been swapped with the ground wire, causing an electrical shock hazard. Use the procedures for checking receptacles in *Electrical Safety for IBM Service Representatives*, S229-8124.
 2. When three-phase voltage is used to provide power to the AS/400 system, correct balancing of the load on each phase is important. Each unit in the AS/400 system uses only two of the three phases. Therefore, the units should be connected so that all three phases are used equally. Use the following as a guide to help balance the phases:
 - Connect a unit across phases A and B

Intermittent PIPs

- Connect a unit across phases B and C
 - Connect a unit across phases A and C
 - Continue in this sequence for additional units
3. The power distribution neutral must return to the “separately derived source” through an insulated wire that is the same size as the phase wire or larger.

Note: “Separately derived source” is defined in INT-PIP8 Grounding, step 4 on page 502.

4. The AS/400 system and its attached equipment should be the only units that are connected to the power distribution network that the system gets its power.
5. The equipment that is attached to the AS/400 system, such as workstations and printers, must be attached to the power distribution network for the system when possible.
6. Each unit in the AS/400 system must have a circuit breaker that controls only the ac voltage to that unit. No other equipment may get its ac voltage from the same circuit breaker.
7. Check all circuit breakers in the network that supply ac power to the AS/400 system as follows:
- Ensure that the circuit breakers are installed tightly in the power panel and are not loose.
 - Feel the front surface of each circuit breaker to detect if it is warm. A warm circuit breaker may be caused by:
 - The circuit breaker that is not installed tightly in the power panel
 - The contacts on the circuit breaker that is not making a good electrical connection with the contacts in the power panel.
 - A defective circuit breaker.
 - A circuit breaker of a smaller current rating than the current load which is going through it.
 - Devices on the branch circuit which are using more current than their rating.
8. Equipment that uses a large amount of current, such as: Air conditioners, copiers, and FAX machines, should not receive power from the same branch circuits as the system or its workstations. Also, the wiring that provides ac voltage for this equipment should not be placed in the same conduit as the ac voltage wiring for the AS/400 system. The reason for this is that this equipment generates ac noise pulses. These pulses can get into the ac voltage for the AS/400 system and cause intermittent problems.
9. Measure the ac voltage to each unit to ensure that it is in the normal range. Is the voltage outside the normal range?
- | | |
|-----------|--|
| No | Yes |
| ↓ | Contact the customer to have the voltage source returned to within the normal voltage range. |
10. *The remainder of this procedure is only for an AS/400 system that is attached to a separately derived source.*

Some examples of separately derived sources are an uninterruptible power supply, a motor generator, a service entrance transformer, and a system power module.

The ac voltage system must meet all the requirements that are stated in this procedure and also all of the following:

Notes:

- a. The following applies to an uninterruptible power supply, but it can be used for any separately derived source.
- b. System upgrades **must not** exceed the power requirements of your derived source.

The uninterruptible power supply must be able to supply the peak repetitive current that is used by the system and the devices that attach to it. The uninterruptible power supply can be used over its maximum capacity if it has a low peak repetitive current specification, and the uninterruptible power supply is already fully loaded. Therefore, a derating factor for the uninterruptible power supply must be calculated to allow for the peak-repetitive current of the complete system. To help you determine the derating factor for an uninterruptible power supply, use the following:

Note: The peak-repetitive current is different from the “surge” current that occurs when the AS/400 system is powered on.

The derating factor equals the crest factor multiplied by the RMS load current divided by the peak load current where the:

- Crest factor is the peak-repetitive current rating of the uninterruptible power supply that is divided by the RMS current rating of the uninterruptible power supply.

Note: If you do not know the crest factor of the uninterruptible power supply, assume that it is 1.414.

- RMS load current is the steady state RMS current of the AS/400 system as determined by the power profile.
- Peak load current is the steady state peak current of the AS/400 system as determined by the power profile.

For example, if the derating factor of the uninterruptible power supply is calculated to be 0.707, then the uninterruptible power supply must not be used more than 70.7% of its kVA-rated capacity. If the kVA rating of the uninterruptible power supply is 50 kVA, then the maximum allowable load on it is 35.35 kVA (50 kVA multiplied by 0.707).

When a three-phase separately derived source is used, correct balancing of the load as specified in step 2 of this procedure is *critical*. If the load on any one phase of an uninterruptible power supply is more than the load on the other phases, the voltage on all phases may be reduced.

11. If the system is attached to an uninterruptible power supply or motor generator, then check for the following:
 - The system and the attached equipment should be the only items that are attached to the uninterruptible power supply or motor generator. Equipment such as air conditioners, copiers, and FAX machines should not be attached to the same uninterruptible power supply, or motor generator that the system is attached.
 - The system unit console and the Electronic Customer Support modem must get ac voltage from the same uninterruptible power supply or motor generator to which the system is attached.

This ends the procedure.

Intermittent PIPs

INT-PIP14 Station Protectors

Station protectors must be installed on all twinaxial cables that leave the building in which the AS/400 system is located. This applies even if the cables go underground, through a tunnel, through a covered outside hallway, or through a skyway. Station protectors help prevent electrical noise on these cables from affecting the AS/400 system.

1. Look at the Product Activity Log to determine what workstations are associated with the failure.
2. Determine if station protectors are installed on the twinaxial cables to the failing workstations.

Are station protectors installed on the twinaxial cables to the failing workstations?

No **Yes**

↓ Perform the next INT-PIP listed in the *INT-PIP* column.

This ends the procedure.

3. You may need to install station protectors on the twinaxial cables to the failing workstations. See chapter 9, section F in the *AS/400 Technical Information Manual*, SY44-0008, for additional information on station protectors.

This ends the procedure.

INT-PIP16 Licensed Internal Code

Sometimes a dump of main storage is needed to analyze the problem. The data on the dump is analyzed at the AS/400 system factory to determine the cause of the problem and how to correct it.

1. Copy the main storage dump to tape (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
2. Ask your next level of support to determine if a Licensed Internal Code trouble report (LICTR) needs to be written.

This ends the procedure.

INT-PIP18 PTFs Not Installed

One or more PTFs may be available to correct this specific problem.

1. Ensure that all PTFs that relate to the problem have been installed.

Note: Ensure that the latest IOP PTF has been installed before you exchange an IOP card.

2. Ask your next level of support for more information.

This ends the procedure.

INT-PIP20 Performance Problems

This procedure analyzes system performance problems.

1. Look at the Product Activity Log and determine if any hardware errors occurred at the same time that the performance problem occurred.

Did any hardware problems occur at the same time that the performance problem occurred?

No **Yes**

↓ Correct the hardware errors.

This ends the procedure.

2. The performance problems are not related to hardware.
3. Perform the following:

- a. Ask the customer if they have asked software level one support for any software PTFs that relate to this problem.
- b. Recommend that the customer install a cumulative PTF package if they have not done so in the past three months.
- c. Inform the customer that performance could possibly be improved by having a system engineer analyze the conditions.
- d. Inform the customer that IBM has a Performance Tools Licensed Program Product (5728-PT1) for sale. This helps determine the areas of the system that need tuning.

This ends the procedure.

INT-PIP24 Service Processor Data Collection

The service processor reported a suspected intermittent problem. It is important that you collect data for this problem so that the problem can be corrected. This procedure tells you how to collect the data.

Note: Do not perform an IPL until you perform an IOP dump of the service processor.

To get an IOP dump of the service processor, perform the following:

1. Record the complete system reference code (SRC) (functions 11-3 through 20-3) on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 1007).
2. To start an IOP dump of the service processor, do the following:
 - a. Select function 25 and press the Enter key.
 - b. Select function 26 and press the Enter key to enable functions 54 through 70.
 - c. Select function 70 (MFIOP Storage Dump) on the control panel and press the Enter key.
 - d. Wait for the completion SRC, 11-3 B100 8ABF, or 11-3 A1xx 8ABF, to appear on the control panel.

The data is now written to disk. The following steps explain how to collect the storage dump from disk.

3. Perform the following:
 - a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
 - b. Power on the system in Manual mode.
 - c. Wait for the system to complete the IPL to dedicated service tool (DST) (the control panel SRCs go beyond C6xx 4103).

Is a display shown on the console?

Yes **No**

↓ The problem is not intermittent.

If you were sent here from Chapter 2. Unit Reference Codes, return there and follow the procedure for a problem that is not intermittent.

Note: You may collect the storage dump data by performing "Low Level Debug and Data Collecting Procedures" in the *AS/400 Service Functions* information.

This ends the procedure.

Intermittent PIPs

4. The problem is intermittent.
Save the IOP dump to tape (see “Copying the IOP Storage Dump to Removable Media” in the *AS/400 Service Functions* information).
5. Complete the IPL.
6. Go to the General Intermittent Problem Checklist in “Analyzing Intermittent Problems” on page 13 to find available PTFs for this problem. Follow the steps to find and apply a program temporary fix (PTF) for this problem (see the PTF summary list to find PTFs with this SRC symptom).
Then return here and answer the following question.
Did you find and apply a PTF for this problem?
No Yes
↓ This ends the procedure.
7. Ask your next level of support for assistance and provide the following:
 - The complete SRC you recorded in this procedure
 - The IOP dump to tape you obtained in step 4 of this procedure
 - All known system symptoms:
 - How often the intermittent problem occurs
 - System environment (IPL, certain applications)
 - If necessary, other SRCs that you suspect relate to the problem
 - Information needed to write an LICTR (see “APAR or LICTR” in the *AS/400 Service Functions* information)**This ends the procedure.**

Licensed Internal Code (LIC) Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate Licensed Internal Code reference code problems.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 761

LIC-PIP1**Introduction:**

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

LIC detected an IOP programming problem. Data must be gathered to determine the cause of the problem. **If using OptiConnect and the IOP is connected to another system, then collect this information from both systems.**

1. Is the system operational (did the SRC come from the Service Action Log, Product Activity Log, problem log, or system operator message)?

Yes No

↓ Go to step 9 of this procedure.

2. Is this a x6xx5121 SRC?

No Yes

↓ Go to step 4 of this procedure.

3. If the IOP has DASD attached to it, then the IOP dump is in SID87 (or SID187 if the DASD is mirrored). Copy the IOP dump (see “Copying the IOP Storage Dump to Removable Media” in the *AS/400 Service Functions* information).
4. Print the Product Activity Log, including any IOP dumps, to removable media for the day which the problem occurred. Select the option to obtain HEX data.
5. Use the “Licensed Internal Code log” service function under DST/SST to copy the LIC log entries to removable media for the day that the problem occurred.
6. Copy the system configuration list (see “Hardware Service Manager, Printing the System Configuration List” in the *AS/400 Service Functions* information).
7. Provide the dumps to IBM Service Support.
8. Check the Logical Hardware Resource STATUS field using Hardware Service Manager. If the status is not *Operational* then IPL the IOP using the I/O Debug option (Ignore resources with a status of *not connected*).

To IPL a failed IOP, the following command can be used: VRYCFG CFGOBJ(XXXX) CFGTYPE(*CTL) STATUS(*RESET) or use DST/SST Hardware Service Manager.

If the IPL does not work:

- Check the Service Action Log for new SRC entries (see “Using the Service Action Log” on page 8). Use the new SRC and go to “Chapter 2. Unit Reference Codes” on page 59.

LIC PIPs

- If there are no new SRCs in the Service Action Log, go to “BUS-PIP1” on page 443.

This ends the procedure.

9. Has the system stopped but the DST console is still active (Did the SRC come from the Main Storage Dump manager screen on the DST console)?

Yes No

↓ Go to step 15 of this procedure.

10. Complete a Problem Summary Form using the information from functions 11 through 20 on the control panel, or from the DST Main Storage Dump screen (see “Error Recovery for Dumps, Reporting the Error” in the *AS/400 Service Functions* information).
11. The system has already taken a partial main storage dump for this SRC and automatically re-IPLed to DST (see “Automatic Main Storage Dump” in the *AS/400 Service Functions* information).
12. Copy the main storage dump to tape (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
13. When the dump is completed, the system will re-IPL automatically. Sign on to DST or SST. Obtain the data in steps 3, 4, 5, and 6 of this procedure.
14. Provide the dumps to IBM Service Support.

This ends the procedure.

15. Has the system stopped with an SRC at the control panel?

Yes No

↓ Go to step 1 of this procedure.

16. Complete a Problem Summary Form using the information from functions 11 through 20 on the control panel, or from the DST Main storage dump screen (see “Error Recovery for Dumps, Reporting the Error” in the *AS/400 Service Functions* information).
17. IPL to DST and start the Main storage dump manager service function.
18. Copy the main storage dump to tape (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
19. Obtain the data in steps 3, 4, 5, and 6 of this procedure.
20. Re-IPL the system.
21. Has the system stopped with an SRC at the control panel?

Yes No

↓ Provide the dumps to IBM Service Support.

This ends the procedure.

22. Use the new SRC and go to “Chapter 2. Unit Reference Codes” on page 59.

This ends the procedure.

LIC-PIP3

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Dedicated service tools (DST) found a permanent program error, or a hardware failure occurred.

Read the “Overview” on page 508 before continuing with this procedure.

1. Does URC 50FF occur?

No **Yes**

↓ Go to step 3 of this procedure.

2. Perform a main storage dump, then perform an IPL by doing the following:

- a. Perform a main storage dump (see “Perform a Main Storage Dump to Disk” in the *AS/400 Service Functions* information).
- b. Select manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
- c. When the IPL has completed, the system console should be at the DST display. If the DST display does not appear on the system console, go to “BUS-PIP1” on page 443. Otherwise, go to step 6 of this procedure.

3. Perform a main storage dump, then perform an IPL by doing the following:

- a. Perform a main storage dump (see “Perform a Main Storage Dump to Disk” in the *AS/400 Service Functions* information).
- b. Select manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does a display appear?

No **Yes**

↓ Go to step 6 of this procedure.

4. If the problem is in the Primary partition exchange the first workstation I/O processor card on bus 1 (see “Chapter 6. Removal and Installation Procedures” on page 793). If the problem is in the secondary partition, exchange the I/O processor card for the console of the secondary partition. To locate a secondary partition’s console and workstation I/O processor, see “Locating a Secondary Partition’s Console” on page 783.

5. Select manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Is the IPL or Install the System display shown?

Yes **No**

↓ Ask your next level of support for assistance and report the problem.

This ends the procedure.

6. Copy the main storage dump to removable media (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).

7. Report a Licensed Internal Code problem to your next level of support.

This ends the procedure.

LIC-PIP4

Introduction: The IPL service function ended. Dedicated service tools (DST) was in the disconnected status or lost communications with the IPL console because of a console failure and could not communicate with the user.

LIC PIPs

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 508 before continuing with this procedure.

1. Select function 21 (Make DST Available) on the control panel and press the Enter key to start DST again.

Does the DST Sign On display appear?

Yes No

↓ Go to step 3 of this procedure.

2. Use the full-authority password to sign on to DST. Perform the following (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information):
 - a. Select the *Start a Service Tool* option.
 - b. Select the *Licensed Internal Code log* option.
 - c. Perform a dump of the Licensed Internal Code log to tape (see “Work with Licensed Internal Code Log” in the *AS/400 Service Functions* information).
 - d. Return here and continue with the next step of this procedure.
3. Perform a main storage dump (see “Perform a Main Storage Dump to Disk” in the *AS/400 Service Functions* information).
4. Copy the main storage dump to removable media (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
5. Report a Licensed Internal Code problem to your next level of support.

This ends the procedure.

LIC-PIP7

Introduction: The system detected a problem while communicating with a specific I/O processor. The problem could be caused by Licensed Internal Code, the I/O processor card, or by bus hardware.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 508 before continuing with this procedure.

1. Did a previous procedure have you power off the system then perform an IPL in Manual mode, **and** is the system in Manual mode now?

No Yes

↓ Go to step 3 of this procedure.

2. Perform the following:
 - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Ensure keystick is inserted and select Manual mode on the control panel.
 - c. Power on the system.

3. Does the SRC that sent you to this procedure appear on the control panel?

No **Yes**

- ↓ Use the information in the SRC to determine the card direct select address. If the SRC is B6006910, you can use control panel function 17 to find the direct select address. Function 17 contains the information in the BBBBCCbb format:

BBBB Bus number

CC Card direct select address

bb board address

Go to step 14 of this procedure.

4. Does the console display indicate a problem with missing disks?

Yes **No**

- ↓ Go to step 7 of this procedure.

5. Perform the following:

- a. Go to the DST main menu.
- b. On the DST sign-on display, enter the DST full authority user ID and password (see "Accessing Dedicated Service Tools" in the *AS/400 Service Functions* information).
- c. Select the Start a service tool option.
- d. Select the Hardware service manager option.
- e. Check for the SRC in the service action log (see "Using the Service Action Log" on page 8).
- f. Did you find the same SRC that sent you to this procedure?

No **Yes**

- ↓ Note the date and time for that SRC. Go to the Product Activity Log and search all logs to find the same SRC.

When you have found the SRC, go to step 12 of this procedure.

6. Perform the following:

- a. Return to the DST main menu.
- b. Perform an IPL and return to the Display Missing Disk Units display.
- c. Go to "LIC-PIP11" on page 517.

This ends the procedure.

7. Does the SRC that sent you to this procedure appear on the console or on the alternative console?

No **Yes**

- ↓ Go to step 9 of this procedure.

8. Does the IPL complete successfully to the IPL or Install the System display?

Yes **No**

- ↓ A different SRC occurred. Go to "Chapter 2. Unit Reference Codes" on page 59 and use the new SRC to correct the problem.

This ends the procedure.

9. Perform the following:

- a. Use the full-authority password to sign on to DST.

LIC PIPs

- b. Search *All logs* in the product activity log looking for references of SRC B600 5209 and the SRC that sent you to this procedure.

Note: Search only for SRCs that occurred during the last IPL.

Did you find B600 5209 or the same SRC that sent you to this procedure?

No **Yes**

↓ Go to step 13.

10. Did you find a different SRC than the one that sent you to this procedure?

Yes **No**

↓ The problem appears to be intermittent. Ask your next level of support for assistance.

This ends the procedure.

11. Use the new SRC to correct the problem. See “Chapter 2. Unit Reference Codes” on page 59.

This ends the procedure.

12. Use F11 to move through alternative views of the log analysis displays until you find the card position and frame ID of the failing IOP associated with the SRC.

Was the card position and frame ID available, **and** did this information help you find the IOP?

No **Yes**

↓ Go to step 15 of this procedure.

13. Perform the following:

- a. Display the report for the log entry of the SRC that sent you to this procedure.
- b. Display the additional information for the entry.
- c. If the SRC is B600 6910, use word 17 of the System Reference Code Data to find the card direct select address. Function 17 contains the information in the BBBBCCbb format:

BBBB Bus number

CC Card direct select address

bb board address

14. Use the BBBBCCbb information and refer to “System Unit Locations and Addresses” on page 695 to determine the failing IOP and its location.
15. Go to “BUS-PIP5” on page 459 to isolate an I/O adapter problem on the IOP you just identified.
If that procedure fails to isolate the problem, return here and continue with the next step of this procedure.
16. Is the I/O processor card you identified in step 12 or step 14 of this procedure the MFIOP?

No **Yes**

↓ Exchange the failing MFIOP card (see “Chapter 6. Removal and Installation Procedures” on page 793).

Note: You will be prompted for the system serial number. Ignore any error messages regarding system configuration that appear during the IPL.

Go to step 19 of this procedure.

17. Perform the following:
 - a. Power off the system.
 - b. Remove the IOP card.
 - c. Power on the system.

Does the SRC that sent you to this procedure appear on the control panel or appear as a new entry in the Service Action Log or Product Activity Log?

No Yes

- ↓ Perform the following:
- a. Power off the system.
 - b. Install the IOP card you just removed.
 - c. Go to "BUS-PIP1" on page 443

This ends the procedure.

18. Perform the following:
 - a. Power off the system.
 - b. Exchange the failing IOP card.
19. Power on the system.

Does the SRC that sent you to this procedure appear on the control panel, on the console, or on the alternative console?

No Yes

- ↓ Go to step 22 of this procedure.

20. Does a different SRC appear on the control panel, on the console, or on the alternative console?

No Yes

- ↓ Go to "Chapter 2. Unit Reference Codes" on page 59 and use the new SRC to correct the problem.

This ends the procedure.

21. The IPL or Install the System display is on the console.
Check for the SRC in the Service Action Log (see "Using the Service Action Log" on page 8).
Did you find the same SRC that sent you to this procedure?

Yes No

- ↓ Go to "BUS-PIP8" on page 481.

This ends the procedure.

22. Perform the following:
 - a. Power off the system.
 - b. Remove the IOP card you just exchanged and install the original card.
 - c. Go to "BUS-PIP1" on page 443.

This ends the procedure.

LIC PIPs

23. Ask your next level of support for assistance and report a Licensed Internal Code problem.

You may be asked to verify that all PTFs have been applied.

If you are asked to perform the following, see the *AS/400 Service Functions* information:

- Copy the main storage dump from disk to tape or diskette.
- Print the Product Activity Log.
- Copy the IOP storage dump to removable media.

This ends the procedure.

LIC-PIP8

Introduction: Licensed Internal Code detected an operating system program problem.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 508 before continuing with this procedure.

1. Select manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does the same SRC occur?

No **Yes**

↓ Go to step 6 of this procedure.

2. Does the same URC appear on the console?

No **Yes**

↓ Go to step 5 of this procedure.

3. Does a different SRC occur, or does a different URC appear on the console?

No **Yes**

↓ Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59). If the procedure for the new SRC sends you back to this procedure, go to step 5.

This ends the procedure.

4. Select the *Perform an IPL* option on the IPL or Install the System display to complete the IPL.

Is the problem intermittent?

Yes **No**

↓ If a different SRC occurs, or a different URC appears on the console, use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59). If the procedure for the new SRC sends you back to this procedure, go to 5.

This ends the procedure.

5. Copy the main storage dump to removable media (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).

- Report a Licensed Internal Code problem to your next level of support.

This ends the procedure.

LIC-PIP11

Introduction: This procedure isolates a system STARTUP failure in the initial program load (IPL) mode.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 508 before continuing with this procedure.

How to Find the Cause Code:

- Were you given a cause code by another procedure?

No Yes

↓ Use the cause code given by the other procedure.

Go to step 3 of this procedure.

- Look at the Data display characters for function 13. You can find these Data display characters by either:
 - Looking at the information for function 13 on the Problem Summary Form that was filled out earlier.
 - Selecting function 13 on the control panel and pressing the Enter key. The 8 characters of the SRC are displayed.

Refer to the 4 leftmost Data display characters for function 13. The 4 leftmost characters are the **cause code**.

- If the **cause code** is:

0001: Disk configuration is missing.

- Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does the Disk Configuration Error Report display appear?

Yes No

↓ The IPL completed successfully.

This ends the procedure.

- Is Missing Disk Configuration information displayed?

Yes No

↓ Go to step 1 on page 518 for cause code 0002.

- Select option 5 on the *Missing Disk Configuration* display.

Select the *Display Detailed Report* option and follow the instructions to:

- Select the *Work with disk units* option.
- Select the *Work with disk unit recovery* option.
- Select the *Recover Configuration* option and follow the instructions on the display.

Note: After the disk configuration is recovered, the system automatically performs an IPL.

This ends the procedure.

0002: Disk units are missing from the disk configuration.

Data from the control panel can be used to find information about the missing disk unit. See "Hardware SRC Formats" in the *AS/400 Service Functions*.

1. Did you enter this procedure because all the devices listed on the Display Missing Units display (reached from the Disk Configuration Error Report or the Disk Configuration Warning Report display) have a reference code of 0000?

No **Yes**

↓ Go to step 20 of this procedure.

2. Have you installed a new disk enclosure in a disk unit and not restored the data to the disk unit?

No **Yes**

↓ Ignore SRC A600 5090.

Continue with the disk unit exchange recovery procedure (see "Disk Service Support" in "Chapter 7. Recovery Procedures" on page 879).

This ends the procedure.

3. Use the function 11 through 20 information recorded on the Problem Summary Form to determine the disk unit that stopped communicating with the system:

- Function 14 contains the IOP direct select address.
- Function 16 contains the disk unit type, level and model number.
- Function 17 contains the disk unit serial number.

Note: For 9337 Disk Units, the 5 rightmost characters contain the disk unit serial number.

- Function 18 contains the number of missing disk units.

Are the problem disk units 660x or 671x Disk Units?

No **Yes**

↓ Go to step 5 of this procedure.

4. Attempt to get all devices attached to the MSIOP to Ready status by performing the following:
 - a. The MSIOP address (MSIOP Direct Select Address) to use is the value in function 14.
 - b. Verify the following and correct if necessary before continuing with step 11 of this procedure:
 - All cable connections are made correctly and are tight.
 - All storage devices have the correct signal bus address, as indicated in the system configuration list.
 - All storage devices are powered on and ready.
5. Did you enter this procedure because there was an entry in the Service Action Log which has the reference code B6005090?

Yes **No**

- ↓ Go to step 11 of this procedure.
6. Are customer jobs running on the system now?
- Yes No**
- ↓ **Attention:** Ensure that the customer is not running any jobs before continuing with this procedure.
- Go to step 11 of this procedure.
7. Perform the following:
- Select System Service Tools (SST).
 - Select the *Work with disk units* option.
 - Select the *Display disk configuration* option.
 - Select the *Display disk configuration status* option.
- Are any disk units missing from the configuration?
- Note:** Missing disk units are indicated by an asterisk (*).
- Yes No**
- ↓ **This ends the procedure.**
8. Do all of the disk units that are missing from the configuration have a status of "Suspended"?
- Yes No**
- ↓ **Attention:** Ensure that the customer is not running any jobs before continuing with this procedure.
- Go to step 11 of this procedure.
9. Use the Service Action Log to determine if there are any entries for the missing disk units (see "Using the Service Action Log" on page 8).
- Are there any entries in the Service Action Log for the missing disk units that were logged since the last IPL?
- Yes No**
- ↓ Go to step 21 of this procedure.
10. Use the information in the Service Action Log and go to the SRC information for the specific disk unit in "Chapter 2. Unit Reference Codes" on page 59.
- Perform the action indicated for the unit reference code.
- This ends the procedure.**
11. Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).
- Does the Disk Configuration Error Report or the Disk Configuration Warning Report display appear?
- Yes No**
- ↓ The IPL completed successfully.
- This ends the procedure.**
12. Does one of the following messages appear in the list?
- Missing disk units in the configuration
 - Missing mirror protected disk units in the configuration
- Yes No**

LIC PIPs

- ↓ Go to step 16 of this procedure.
13. Select option 5, then press F11, then press the Enter key to display the details.
Do all of the disk units listed on the display have a reference code of 0000?
- Yes No**
- ↓ Use the disk unit reference code shown on the display and go to the SRC information for the specific disk unit in “Chapter 2. Unit Reference Codes” on page 59. Perform the action indicated for the unit reference code.
- This ends the procedure.**
14. Do all of the IOPs or devices listed on the display have a reference code of 0000?
- No Yes**
- ↓ Go to step 20 of this procedure.
15. Use the IOP reference code shown on the display and go to “Chapter 2. Unit Reference Codes” on page 59. Perform the action indicated for the reference code.
- This ends the procedure.**
16. Does the following message appear in the list?
- Unknown load-source status
- Yes No**
- ↓ Go to step 18 of this procedure.
17. Select option 5 then press F11, then press the Enter key to display the details.
Does the *Assign Missing Load Source Disk* display appear?
- No Yes**
- ↓ Press the Enter key to assign the missing load-source disk unit.
- This ends the procedure.**
18. Does the following message appear in the list?
- Load source failure
- Yes No**
- ↓ The IPL completed successfully.
- This ends the procedure.**
19. Select option 5, then press F11, then press the Enter key to display the details.
20. The number of failing disk unit facilities (actuators) is the number of disk units displayed. A disk unit has a *Unit* number greater than zero.
Find the failing disk unit by type, model, serial number, or address displayed on the console.
21. Is the failing disk unit a 9337?
- No Yes**
- ↓ Go to step 26 of this procedure.
22. Is there more than one failing disk device attached to the MSIOP?
- Yes No**
- ↓ Go to step 24 of this procedure.
23. Are all the disk devices that are attached to the MSIOP failing?

Note: If the disk units are using mirrored protection, you may need to use *Display Disk Status* to answer the question.

No Yes

↓ Go to step 25 of this procedure.

24. Go to the service information for the specific disk unit listed below and perform the action indicated. Then return here and answer the following question.
- 9337 Disk Unit: go to the “Starting Problem Analysis” section of the 9337 Service Information.
 - 660x, 671x Disk Units: Use SRC 3002 in “(660x, 671x, 673x) Disk Unit Reference Codes” on page 250 and exchange the FRUs shown one at a time.

Did the disk unit service information correct the problem?

No Yes

↓ **This ends the procedure.**

25. Exchange the MSIOP (see “Chapter 6. Removal and Installation Procedures” on page 793).

If exchanging the MSIOP did not correct the problem, use the original SRC and exchange the failing items, starting with the highest probable cause of failure. If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 341 to help determine parts and locations.

This ends the procedure.

26. Use Hardware Service Manager to display logical resources connected to the MSIOP (see Hardware Service Manager in the *AS/400 Service Functions*).
27. Are all the disk devices that are attached to the MSIOP failing?

Yes No

↓ Go to step 30 of this procedure.

28. Is there more than one controller attached to the MSIOP?

Yes No

↓ Go to step 24 of this procedure.

29. Go to step 25 of this procedure.

30. Are all disk units attached to one controller missing?

Yes No

↓ Go to step 24 of this procedure.

31. Use the device documentation to correct the problem. Exchange the disk unit controller.

This ends the procedure.

0004: Some disk units are unprotected but configured into a mirrored ASP. These units were originally DPY protected but protection was disabled.

Perform the following:

1. Select DST using Function 21 (see “Control Panel Functions” in the *AS/400 Service Functions* information).
2. Select the *Work with disk units* option and take the actions to protect the system. If you do not know what actions to take, select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

LIC PIPs

- When the *Disk configuration error report* appears, the recovery actions are listed in the "Help" text for the error message "Unprotected disk units in a mirrored ASP".

This ends the procedure.

0005: A disk unit using parity protection is operating in exposed mode.

Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

If the same reference code appears, ask your next level of support for assistance.

If no reference code appears and the IPL completes successfully, the problem is corrected.

If a different reference code appears, use it to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

This ends the procedure.

0006: There are new devices attached to the system that do not have Licensed Internal Code installed.

Ask your next level of support for assistance.

This ends the procedure.

0007: Some of the configured disk units have device parity protection disabled when the system expected device parity protection to be enabled.

Are the disk units part of a 9337 subsystem?

No **Yes**

- ↓ If the protection was stopped without using the *Stop device parity protection* option of DST, use the 9337 device documentation and follow the manual process to enable device parity protection.

Select DST using Function 21 (see "Control Panel Functions" in the *AS/400 Service Functions* information).

Correct the problem by doing the following:

1. Select the *Work with disk units* option.
2. Select the *Work with disk unit recovery* option.
3. Select the *Correct device parity protection* option.
4. Follow the online instructions.

This ends the procedure.

0008: A disk unit has no more alternate sectors to assign.

1. Determine the failing unit by type, model, serial number, or address given in functions 14 through 17 (see "Hardware SRC Formats" in the *AS/400 Service Functions*).
2. See the service information for the specific storage device. Use the disk unit reference code listed below for service information entry.

660x 102E, 671x 102E (see Chapter 2. Unit Reference Codes)
9337 7xx0, 8xx0, Dxx0, Exx0 (x can be a number from 0 through 8)

This ends the procedure.

0009: The procedure to restore a disk unit from the tape unit did not complete.

Continue with the disk unit exchange recovery procedure (see “Disk Service Support” in “Chapter 7. Recovery Procedures” on page 879).

This ends the procedure.

000A: There is a problem with a disk unit subsystem. As a result, there are missing disk units in the system.

Perform the following:

1. Select DST using Function 21 (see “Control Panel Functions” in the *AS/400 Service Functions* information).
2. On the Service Tools display, select the *Start a Service Tool* option (see the *AS/400 Service Functions*).
3. Select the *Product activity log* option on the Start a Service Tool display.
4. Select the *Analyze log* option on the Product Activity Log display.
5. On the Select Subsystem Data display, select the option to view All Logs.

Note: You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

6. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.
7. Search the entries on the Log Analysis Report display for system reference codes associated with the missing disk units.
8. Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

This ends the procedure.

000B: Some system IOPs require cache storage be reclaimed.

Select DST using Function 21 (see “Control Panel Functions” in the *AS/400 Service Functions* information).

Reclaim the cache adapter card storage (see “Reclaim IOP Cache Storage” on page 745).

Note: The system operator may want to restore data from the most recent saved tape after you complete the repair.

This ends the procedure.

000C: One of the mirror protected disk units has no more alternate sectors to assign.

1. Determine the failing unit by type, model, serial number, or address given in functions 14 through 17 (see “Hardware SRC Formats” in the *AS/400 Service Functions*).

LIC PIPs

2. See the service information for the specific storage device. Use the disk unit reference code listed below for service information entry.
660x 102E, 671x 102E (see Chapter 2. Unit Reference Codes)
9337 7xx0, 8xx0, Dxx0, Exx0 (x can be a number from 0 through 8)

This ends the procedure.

000D: The system disk capacity has been exceeded.

For more information about disk capacity, see *AS/400e Handbook*, GA19-5486-18 .

This ends the procedure.

0010: The disk configuration has changed.

The operating system must be installed again and all customer data must be restored.

Select Manual mode on the control panel (see “Selecting IPL Type, Mode, and Speed” on page 765). Perform an IPL to reinstall the operating system.

Note: The customer must restore all data from the latest system backup.

This ends the procedure.

0011: The serial number of the control panel does not match the system serial number.

Select Manual mode on the control panel (see “Selecting IPL Type, Mode, and Speed” on page 765). Perform an IPL. You will be prompted for the system serial number.

This ends the procedure.

0012: The operation to write the vital product data (VPD) to the control panel failed.

Exchange the multiple function I/O processor card (see “Chapter 6. Removal and Installation Procedures” on page 793). For the location of the card, see “System Unit Locations and Addresses” on page 695.

This ends the procedure.

0015: The mirrored load-source disk unit is missing from the disk configuration.

Go to step 1 for cause code 0002.

0016: A mirrored protected disk unit is missing.

Wait 6 minutes. If the same reference code appears, go to step 1 for cause code 0002.

0017: One or more disk units have a lower level of mirrored protection than originally configured.

Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

The detailed display shows the new and the previous levels of mirrored protection.

This ends the procedure.

0018: Load-source configuration problem.

The load-source disk unit is using mirrored protection and is configured at an incorrect address.

Ensure that the load-source disk unit is in device location 1.

This ends the procedure.

0019: One or more disk units were formatted incorrectly.

The system will continue to operate normally. However, it will not operate at optimum performance. To repair the problem, perform the following:

1. Record the unit number and serial number of the disk unit that is formatted incorrectly.
2. Sign on to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
3. Select the *Work with disk units* option.
4. Select the *Work with disk unit configuration* option.
5. Select the *Remove unit from configuration* option.
6. Select the disk unit you recorded earlier in this procedure.
7. Confirm the option to remove data from the disk unit. This step may take a long time because the data must be moved to other disk units in the auxiliary storage pool (ASP)
8. When the remove function is complete, select the *Add unit to configuration* option.
9. Select the disk unit you recorded earlier in this procedure.
10. Confirm the add. The disk unit is formatted during functional operation.

This ends the procedure.

001A: The loadsource disk unit data is down-level.

The loadsource disk unit is mirror protected. The system is using the loadsource disk unit that does not have the current level of data.

1. Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does the Disk Configuration Error Report display appear?

Yes No

↓ The system is now using the correct loadsource.

This ends the procedure.

2. Does a *Load source failure* message appear in the list?

Yes No

↓ The system is now using the correct loadsource.

This ends the procedure.

3. Select option 5, then press F11, then press the Enter key to display details.

LIC PIPs

The loadsource type, model, and serial number information that the system needs is displayed on the console.

Is the loadsource disk unit (displayed on the console) attached to an MSIOP that cannot be used for a loadsource?

Yes No

↓ The loadsource disk unit is missing. Go to step 1 for cause code 0002.

4. Is the system configured for remote loadsource protection?

No Yes

↓ Go to "Recover Remote Loadsource" on page 906.

5. Move the loadsource disk unit to the loadsource MSIOP.

This ends the procedure.

001C: The disk units that are needed to update the system configuration are missing.

Perform an IPL by doing the following:

1. Select Manual mode on the control panel.
2. Perform an IPL (see "Initial Program Load (IPL) Information" in the *AS/400 Service Functions* information) to determine the cause of the problem.

This ends the procedure.

001D:

1. Is the Disk Configuration Warning Report displayed?

Yes No

↓ Ask your next level of support for assistance.

This ends the procedure.

2. Select option 5 on the *Bad Load Source Configuration* message line. Press Enter to rebuild the load-source configuration information.

If there are other types of warnings, select option 5 on the warnings and correct the problem.

This ends the procedure.

001E: The load-source data must be restored.

Go to "Disk Service Support" on page 879.

This ends the procedure.

001F: Licensed Internal Code was installed on the wrong disk unit of the load-source mirrored pair.

The system performed an IPL on a load source that may not contain the same level of Licensed Internal Code that was installed on the other load source. The type, model, and address of the active device are displayed in functions 14 through 17 of the SRC.

If the load-source disk unit in position 1 contains the correct level of Licensed Internal Code, perform the following:

1. Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
2. Is the Disk Configuration Warning Report displayed?

Yes No

↓ The system is now using the correct load source.

This ends the procedure.

3. Select option 5 on the Incorrect Licensed Internal Code Install message line. When the Display Incorrect Licensed Internal Code Install display appears on the console, press the Enter key.

If the load-source disk unit in position 1 of the system unit does not contain the correct level of Licensed Internal Code, restore the Licensed Internal Code to the disk unit in position 1 of the system unit (see “Restoring Licensed Internal Code” in the *AS/400 Service Functions* information).

This ends the procedure.

0020: The system appears to be a one disk unit system.

Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

This ends the procedure.

0021: The system password verification failed.

Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). You will be prompted for the correct system password.

Enter the correct system password. If the correct system password is not available:

- Select the *Bypass the system password* option from the prompt.
- Have the customer contact the marketing representative immediately to order a new system password from IBM.

This ends the procedure.

0022: A different compression status was expected on a reporting disk unit.

Accept the warning. The reported compression status will be used as the current compression status.

This ends the procedure.

0023: There is a problem with a disk unit subsystem. As a result, there are missing disk units in the system.

The system is capable of IPLing in this state.

Perform the following:

1. Select DST using Function 21 (see “Control Panel Functions” in the *AS/400 Service Functions* information).

LIC PIPs

2. On the Service Tools display, select the *Start a Service Tool* option (see the *AS/400 Service Functions*).
3. Select the *Product activity log* option on the Start a Service Tool display.
4. Select the *Analyze log* option on the Product Activity Log display.
5. On the Select Subsystem Data display, select the option to view All Logs.

Note: You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

6. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.
7. Search the entries on the Log Analysis Report display for system reference codes associated with the missing disk units.
8. Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

This ends the procedure.

0024: The system type or system unique ID needs to be entered.

Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

You will be prompted for the correct system type or system unique ID.

This ends the procedure.

0025: Hardware Resource Information Persistence disabled.

Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Contact your next level of support for instructions on how to enable the Hardware Resource Information Persistence function.

This ends the procedure.

0026: A Disk Unit is incorrectly configured for an LPAR system.

1. Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
2. On the Service Tools display, select the *Start a Service Tool* option (see the *AS/400 Service Functions*).
3. Select the *Product activity log* option on the Start a Service Tool display.
4. Select the *Analyze log* option on the Product Activity Log display.
5. On the Select Subsystem Data display, select the option to view All Logs.

Note: You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

6. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.
7. Search the entries on the Log Analysis Report display for system reference codes (B6xx 53xx) that are associated with the error.

8. Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

This ends the procedure.

0031: A problem was detected with the installation of Licensed Internal Code service displays. The cause may be defective media, the installation media being removed too early, a device problem or a Licensed Internal Code problem.

Ask your next level of support for assistance. The 4 rightmost characters of function 13 contain information regarding the install error. For more information about the install error, see the “LIC Install Debug Information” chapter in the *AS/400 Licensed Internal Code Diagnostic Aids - Volume 1*. If the customer does not require the service displays to be in the national language, you may be able to continue by doing another system IPL.

This ends the procedure.

0099: A Licensed Internal Code program error occurred.

Ask your next level of support for assistance.

This ends the procedure.

LIC-PIP13

Introduction:

Note: Do not power off the system when performing this procedure.

A disk unit seems to have stopped communicating with the system. The system has stopped normal operation until the cause of the disk unit failure can be found and corrected.

If the disk unit that stopped communicating with the system has mirrored protection active, normal operation of the system stops for 1 to 2 minutes. Then the system suspends mirrored protection for the disk unit that stopped communicating and continues normal operation. See “Disk Service Support” on page 879 for more information on systems with mirrored protection.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 508 before continuing with this procedure.

1. Was a Problem Summary Form completed for this problem?

No **Yes**

↓ Use the Problem Summary Form information and go to step 3 of this procedure.

2. Fill out a Problem Summary Form using the information from function 11 through 19 on the control panel. It is important that all the words of the SRC be written on the Problem Summary Form.

LIC PIPs

3. Recovery from a device command time out may have caused the communications loss condition (indicated by an SRC on the control panel). This communications loss condition has the following symptoms:
 - The A6xx SRC does not increment within 2 minutes.
 - The system continues to run normally after it recovers from the communications loss condition and the SRC is cleared from the control panel.

Does the communication loss condition have these symptoms?

Yes No

↓ Go to step 6 of this procedure.

4. Verify that all Licensed Internal Code PTFs have been applied to the system. Apply any Licensed Internal Code PTFs that have not been applied to the system.

Does the intermittent condition continue?

Yes No

↓ **This ends the procedure.**

5. Print all Product Activity Logs. Print the LIC LOGs with a major code of 1000. Provide your next level of support with this information.

This ends the procedure.

6. Are the 2 rightmost characters of function 12 on the Problem Summary Form equal to 13 or 17?

Yes No

↓ Go to step 11 of this procedure.

7. Use the function 11 through 20 information recorded on the Problem Summary Form to determine the disk unit that stopped communicating with the system:
 - Function 13 contains the IOP direct select address.
 - Function 14 contains the unit address.
 - Function 16 may contain the disk unit type, level and model number.
 - Function 17 four rightmost characters may contain the disk unit reference code.
 - Function 18 may contain the disk unit serial number.

Note: For 9337 Disk Units, the 5 rightmost characters contain the disk unit serial number.

8. Is the disk unit a 9337?

No Yes

↓ Go to step 24 of this procedure.

9. Is the disk unit reference code 0000?

Yes No

↓ Using the information from step 7, find the table for the indicated disk unit type in "Chapter 2. Unit Reference Codes" on page 59. Perform problem analysis for the disk unit reference code.

This ends the procedure.

10. Find the table for the IOP type (the 4 leftmost characters of function 19) in "Chapter 2. Unit Reference Codes" on page 59. Perform problem analysis for the unit reference code found in function 19.

This ends the procedure.

11. Are the 2 rightmost characters of function 12 on the Problem Summary Form equal to 27?

Yes No

↓ Go to step 16 of this procedure.

12. Use the function 11 through function 19 information recorded on the Problem Summary Form to determine the disk unit that stopped communicating with the system:

- Function 13 contains the IOP direct select address.
- Function 14 contains the disk unit address.
- Function 15 contains the disk unit type, level, and model number.
- Function 18 contains the disk unit serial number.

Note: For 9337 Disk Units, the 5 rightmost characters contain the disk unit serial number.

- Function 19 four rightmost characters contain the disk unit reference code.

13. Is the disk unit a 9337?

No Yes

↓ Go to step 24 of this procedure.

14. Is the disk unit reference code 0000?

Yes No

↓ Using the information from step 12, find the table for the indicated disk unit type in “Chapter 2. Unit Reference Codes” on page 59. Perform problem analysis for the disk unit reference code.

This ends the procedure.

15. Find the table for the indicated disk unit type in “Chapter 2. Unit Reference Codes” on page 59.

Find unit reference code (URC) 3002 in the table and exchange the FRUs for that URC, one at a time.

Note: Do not perform any other PIPs that are associated with URC 3002.

This ends the procedure.

16. Are the 2 rightmost characters of function 12 on the Problem Summary Form equal to 62?

Yes No

↓ Use the information in function 19 and go to “Chapter 2. Unit Reference Codes” on page 59. Use the information in function 19 instead of the information in function 11 for the reference code.

This ends the procedure.

17. Is function 13 equal to 00010004?

Yes No

↓ Go to step 21 of this procedure.

18. Are the 4 rightmost characters of function 15 equal to 0000?

No Yes

LIC PIPs

↓ Go to step 22 of this procedure.

19. Disk information available in this step is:
- Function 15 four rightmost characters contain the disk unit reference code.
 - Function 16 contains the disk unit address.
 - Function 17 contains the IOP direct select address.
 - Function 18 contains the disk unit type, level, and model number.

Are the 4 leftmost characters of function 18 9337?

No **Yes**

↓ Go to step 24 of this procedure.

20. Find the table for the disk unit type (the 4 leftmost characters of function 18) in “Chapter 2. Unit Reference Codes” on page 59 and use the 4 rightmost characters of function 15 as the unit reference code.

This ends the procedure.

21. Is function 13 equal to 0002000D?

Yes **No**

↓ Use the information in function 19 and go to “Chapter 2. Unit Reference Codes” on page 59. Use the information in function 19 instead of the information in function 11 for the reference code.

Note:

- Function 16 may contain the disk unit address.
- Function 17 may contain the IOP direct select address.
- Function 18 may contain the disk unit type, level, and model number.

This ends the procedure.

22. Disk information available in this step is:
- Function 16 contains the disk unit address.
 - Function 17 contains the IOP direct select address.
 - Function 18 contains the disk unit type, level, and model number.

Are the 4 leftmost characters of function 18 9337?

No **Yes**

↓ Go to step 24 of this procedure.

23. Find the table for the disk unit type (the 4 leftmost characters of function 18) in “Chapter 2. Unit Reference Codes” on page 59 and use 3002 as the unit reference code. Exchange the FRUs for URC 3002 one at a time.

This ends the procedure.

24. The disk unit that stopped communicating with the system is a 9337 Disk Unit.
25. Locate the IOP using the IOP address (see “System Unit Locations and Addresses” on page 695).

Note: If the IOP is located in a 504x rack, see *FC 504x Problem Analysis and Repair and Parts*.

Using the IOP type (identified by the label on the IOP), and the device address, find the location of the device (see “System Unit Locations and Addresses” on page 695).

Does the 9337 Disk Unit Data display contain the value 9337 xxxx?

Note: xxxx can be any hexadecimal value from 0000 to FFFF.

No Yes

↓ Use the service information for the specific disk unit to analyze the status of the failing unit.

This ends the procedure.

26. Set the power switch on the failing 9337 disk unit to the Off position, then to the On position.

After 4 minutes, does the 9337 Data display contain the value *xxx?

Yes No

↓ Go to step 29 of this procedure.

27. Does the system continue normal operation in 3 to 4 minutes?

No Yes

↓ Go to step 33 of this procedure.

28. Go to step 30 of this procedure.

29. When the 9337 Disk Unit Data display contains the value B000, the disk unit has reached a ready status, but the system has not taken the ready status messages.

Does the 9337 Disk Unit Data display contain the value B000 in less than 4 minutes?

Yes No

↓ Use the service information for the specific disk unit to analyze the status of the failing unit.

This ends the procedure.

30. Perform the following:

- a. Check the cable connections between all of the units on the storage device I/O processor card that is connected to the failing unit.

Correct any loose connections and ensure that the terminating plug is installed tightly.

- b. Check the address switches on the backs of all of the units connected to the magnetic storage I/O processor card that is connected to the failing disk unit.

Notes:

- 1) If the device does not have address switches, continue with the next step of this procedure if you are servicing one of these units.
 - 2) Ensure that each address switch displays the correct number. See the system configuration list. The latest level printout should be stored in the back of the *Basic System Operation, Administration, and Problem Handling* binder.
- c. If two or more address switches display the same number, change the address number of one or more units so that each address switch displays the correct number (see the system configuration list).
- d. For each unit that had its address switch changed, set the unit Power switch off, then on again.

31. Does the system continue normal operation in 3 to 4 minutes?

No Yes

LIC PIPs

- ↓ Go to step 33 of this procedure.
32. Set the Power switch on the disk unit to the Off position, then to the On position.
Does the system continue normal operation in 3 to 4 minutes?
- Yes No**
- ↓ Go to step 34 of this procedure.
33. Intermittent equipment checks may have caused this problem.
Display the system Product Activity Log and look for entries that contain unit reference codes or IOP reference codes that may need action.
You can read a unit reference code history from the disk controller service panel.
This ends the procedure.
34. Fill out a Problem Summary Form using the information from functions 11 through 20 on the control panel.
Are the 4 rightmost characters in function 11 on the Problem Summary Form the same as on the Problem Summary Form filled out in step 2 of this procedure?
- Yes No**
- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).
This ends the procedure.
35. Are functions 13 through 19 on the Problem Summary Form the same as on the Problem Summary Form filled out in step 2 of this procedure?
- Yes No**
- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).
This ends the procedure.
36. Are the 4 rightmost characters in function 19 on the Problem Summary Form you filled out in step 34 of this procedure equal to 0000?
- Yes No**
- ↓ Return to “Chapter 2. Unit Reference Codes” on page 59. Analyze the problem using the data in function 19 on the Problem Summary Form in place of the data in function 11, which originally sent you to this procedure.
This ends the procedure.
37. Go to the analyzing problems procedures in the service information for the specific disk unit to analyze the status of the failing unit. Then return here and answer the following question.
Did the service information for the specific disk unit correct the problem?
- No Yes**
- ↓ **This ends the procedure.**
38. A manual reset of the IOP may clear the attention SRC. Perform the steps in the following table:

Primary Partition Steps	Secondary Partition Steps
<ul style="list-style-type: none"> a. Select Manual mode on the control panel. b. Select Function 25 and press Enter. c. Select Function 26 and press Enter. d. Select Function 67 and press Enter to reset the IOP. e. Select Function 25 and press Enter to disable the service functions on the control panel. f. 	<ul style="list-style-type: none"> a. From the DST screen select <i>Work With Partitions</i>. b. Select <i>Work With Partition Status</i>. c. Select Function 23 <i>More Options</i>. d. Select option 59 for the logical partition that you are working in. e. Select the IOP for debug. f. Select <i>Reset I/O Processor</i>. g. Return to the <i>Partition Status</i> screen.

Does an SRC occur?

Yes No

↓ **This ends the procedure.**

39. Force a dump of main storage, then perform an IPL by doing the following:
- a. Select Manual mode on the control panel.
 - b. Select function 22 (Main Storage Dump) on the control panel.
 - c. Press the Enter key to force a dump of main storage to the load-source disk unit.
 - d. When SRC A100 300x occurs, the dump is complete.
 - e. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does a different SRC occur, or does a display appear on the console showing reference codes.

No Yes

↓ Use the new SRC or the URC displayed on the console and go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

40. Does the same SRC occur?

No Yes

↓ Use the SRC information from the original failure and return to “Chapter 2. Unit Reference Codes” on page 59. Analyze the problem using the data in function 19 on the Problem Summary Form in place of the data in function 11.

This ends the procedure.

41. The problem is intermittent.

- a. Print the system Product Activity Log for the magnetic storage subsystem and print the LICLOGs with a major code of 1000.
- b. Copy the main storage dump to removable media (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
- c. Provide your next level of support with this information.

This ends the procedure.

Logical Partition (LPAR) Problem Isolation Procedures

LPAR-PIP01

This procedure identifies some Logical Partition (LPAR) configuration conditions and their associated corrective actions.

1. Is there **only one** B6005311 error logged, and is it against the load source device for the partition, in either the Primary or a secondary partition?

Yes No

↓ Go to step 8 on page 537 of this procedure.

2. Is the reporting partition the Primary partition?

Yes No

↓ Go to step 6 of this procedure.

3. Was the load source disk unit migrated from another partition within the same system?

Yes No

↓ The load source disk unit has not changed. Contact your next level of support.

This ends the procedure.

4. Is this load source device intended to be the load source for the Primary partition?

Yes No

↓ Power off the system. Return the original load source disk to the Primary partition and perform a system IPL.

This ends the procedure.

5. Use the *"Accept load source disk unit"* option to accept the new load source into the current partition.
 - a. Go to SST/DST in the current partition and select option *"Work with system partitions"*.
 - b. From the *"Work with system partitions"* screen select option *"Recover configuration data"*.
 - c. From the *"Recover configuration data"* screen select option *"Accept load source disk unit"*.

This ends the procedure.

6. The reporting partition is a secondary partition.

Since the last IPL of the reporting partition, have one of the following occurred?

- Has the Primary partition time/date been moved backward to a time/date earlier than the previous setting?
- Has the system serial number been changed?
- Was the load source disk unit in this secondary partition, replaced intentionally with a load source from another system or another partition from the same system?

Yes No

↓ Contact your next level of support.

This ends the procedure.

7. Use the "Accept load source disk unit" option to accept the new load source into the current partition.
 - a. Go to SST/DST in the current partition and select option "Work with system partitions".
 - b. From the "Work with system partitions" screen select option "Recover configuration data".
 - c. From the "Recover configuration data" screen select option "Accept load source disk unit".

This ends the procedure.

8. Are there **multiple** B600 5311 SRCs logged in the same partition?

Yes No

↓ None of the conditions in this procedure have been met, call your next level of support.

This ends the procedure.

9. Is the resource for **one** of the B600 5311 SRCs the load source device and are **all** of the other B600 5311 entries for resources which are non-configured disk units?

Note: To determine if a disk unit is a non-configured disk unit, refer to the "Work with disk unit options" section in the "DST options" section of the "DST chapter" in the *AS/400 Service Functions* information.

Yes No

↓ Go to step 16 on page 538 of this procedure.

10. Is the partition that is reporting the error the **Primary** partition?

Yes No

↓ Go to step 14 on page 538 of this procedure.

11. Was the load source disk unit migrated from another partition within the same system?

Yes No

↓ The load source disk unit has not changed. Contact your next level of support.

This ends the procedure.

12. Is this load source device intended to be the load source for the Primary partition?

Yes No

↓ Power off the system. Return the original load source disk to the Primary partition and perform a system IPL.

This ends the procedure.

13. Use the "Accept load source disk unit" option to accept the new load source into the current partition.
 - a. Go to SST/DST in the current partition and select option "Work with system partitions".
 - b. From the "Work with system partitions" screen select option "Recover configuration data".
 - c. From the "Recover configuration data" screen select option "Accept load source disk unit".

This ends the procedure.

14. The reporting partition is a secondary partition.
 Since the last IPL of the reporting partition, have one of the following occurred:
- Has the Primary partition time/date been moved backward to a time/date earlier than the previous setting?
 - Has the system serial number been changed?
 - Was the load source disk unit in this secondary partition, replaced intentionally with a load source from another system or another partition from the same system?

Yes No

↓ Contact your next level of support.

This ends the procedure.

15. Use the "Accept load source disk unit" option to accept the new load source into the current partition.
- a. Go to SST/DST in the current partition and select option "Work with system partitions".
 - b. From the "Work with system partitions" screen select option "Recover configuration data".
 - c. From the "Recover configuration data" screen select option "Accept load source disk unit".

This ends the procedure.

16. One or more B600 5311 SRCs have been logged in the same partition.
 Do all of the B600 5311 errors have a resource which is a non-configured disk unit in the partition?

Note: To determine if a disk unit is a non-configured disk unit, refer to the "Work with disk unit options" section in the "DST options" section of the "DST chapter" in the *AS/400 Service Functions* information.

Yes No

↓ None of the conditions in this procedure have been met, call your next level of support.

This ends the procedure.

17. Were any disk unit resources associated with the B600 5311 SRCs added to the partition, since the last IPL of this partition?

No Yes

↓ Use the "Clear non-configured disk unit configuration data" option to clear old configuration data from each new disk unit device.

- a. Go to SST/DST in the partition and select option "Work with system partitions".
- b. From "Work with system partitions" screen select "Recover configuration data".
- c. From the "Recover configuration data" screen select option "Clear non-configured disk unit configuration data".
- d. Select each unit in the list which is new to the system. Press enter.
- e. Continue the system IPL.

This ends the procedure.

18. None of the resources that are associated with the B600 5311 SRCs are disk units that were added to the partition, since the last IPL of the partition.
Has a scratch install recently been performed on the partition that is reporting the error(s)?

No Yes

↓ Go to step 21 of this procedure.

19. A scratch install was not performed.
Was the "*Clear configuration data*" option recently used to discontinue LPAR use?

Yes No

↓ The "*Clear configuration data*" option was not used. Contact your next level of support.

This ends the procedure.

20. Use the "*Clear non-configured disk unit configuration data*" option to clear old configuration data, from the old partition load source disk device(s).
- a. Go to SST/DST in the partition, select option "*Work with system partitions*".
 - b. From the "*Work with system partitions*" screen select option "*Recover configuration data*".
 - c. From the "*Recover configuration data*" screen select the option "*Clear non-configured disk unit configuration data*".
 - d. Select each former load source in the list. Press enter.
 - e. Continue the system IPL.

This ends the procedure.

21. Was the load source device previously mirrored before the scratch install?

Yes No

↓ Go to step 23 of this procedure.

22. Use the "*Clear non-configured disk unit configuration data*" option. Clear the old configuration data from the disk unit that was mirroring the old load source disk.
- a. Go to SST/DST in the partition that is reporting the SRC and select the "*Work with system partitions*" option .
 - b. From the "*Work with system partitions*" screen select the "*Recover configuration data*" option.
 - c. From the "*Recover configuration data*" screen select the "*Clear non-configured disk unit configuration data*" option.
 - d. Select the former load source mirror in the list. Press enter.

23. Is the Primary partition reporting the B600 5311 error(s)?

Yes No

↓ **This ends the procedure.**

24. Does the customer want multiple partitions on the system?

Yes No

↓ **This ends the procedure.**

25. Use the "*Recover primary partition configuration data*" option to retrieve the LPAR configuration data from other devices in the system.

LPAR PIPs

- a. Go to SST/DST in the primary partition and select the *"Work with system partitions"* option .
- b. From the *"Work with system partitions"* screen select option *"Recover configuration data"*.
- c. From the *"Recover configuration data"* screen select the *"Recover primary partition configuration data"* option.
- d. Verify the information that is presented on the screen. The device should be a former load source device from a secondary partition. The time and date should reflect a time when that partition was active. It should be more recent than the last change to the logical partition configuration.

Note: The system will perform an automatic IPL during this step.

This ends the procedure.

Magnetic Storage I/O Processor (MSIOP) Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure detected by the magnetic storage I/O processor (MSIOP).

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see "Powering Off and Powering On the System or Expansion Tower" on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- "Powering Off and Powering On the System or Expansion Tower" on page 761
- "System Unit Locations and Addresses" on page 695

MSIOP-PIP1

Introduction: This procedure runs the basic assurance tests (BATs) of the MSIOP card to see if the same reference code occurs. If a new reference code occurs, more analysis may be possible with the new reference code.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 563 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 566).

2. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.

Does an SRC or reference code occur after running the MSIOP test?

Yes No

↓ Go to “MSIOP-PIP12” on page 552.

This ends the procedure.

3. Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

Yes No

↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

4. To isolate the failing storage device, signal cable, or terminating plug, go to MSIOP-PIP2, step 5.

This ends the procedure.

MSIOP-PIP2

Introduction: This procedure isolates problems on the MSIOP, storage device, signal cables, or the terminating plug. It also instructs you on how to find the MSIOP, the storage devices, signal cables, and the terminating plug. After verifying that the cables are correct, an isolation procedure is used to determine the failing part.

The isolation is performed by moving the terminating plug from the end of the storage device string toward the MSIOP, one unit at a time, until the failing unit is

MSIOP PIPs

removed from the string. The MSIOP test is run each time the terminating plug is moved to the next unit to determine if the error occurs again.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 563 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 566).

2. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.

Does the test run successfully (without an SRC or reference code)?

No **Yes**

↓ **This ends the procedure.**

3. Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

Yes **No**

↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

4. Is the terminating plug connected directly into the MSIOP card?

No **Yes**

↓ You have isolated the problem to either the MSIOP card (80% probability) or the terminating plug (20% probability).

This ends the procedure.

5. Disconnect the last storage device from the signal bus by doing the following:
 - a. Disconnect both the terminating plug and the signal cable from the last storage device.
 - b. Connect the signal cable and terminating plug together directly.

Note: If you disconnected a signal cable connection from this storage device in an earlier step, reconnect the cable now.

6. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.

Does the same SRC or reference code occur?

Yes **No**

- ↓ You have isolated the problem to the storage device you disconnected from the signal cable in step 5 of this procedure.
- Perform the following:
- a. Reconnect the signal cable you disconnected in step 5 of this procedure.
 - b. Connect the terminating plug to the device it was connected to when you started this procedure.
 - c. Go to step 10 of this procedure.
7. Disconnect the last length of signal cable from the signal bus by doing the following:
- a. Disconnect the terminating plug from the signal cable.
 - b. Reconnect the signal cable to the storage device you disconnected it from in step 5 of this procedure.
 - c. Follow the same signal cable to the next storage device (or to the MSIOP card).
 - d. Disconnect the signal cable at this connection and connect the terminating plug in its place.
8. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.
- Does the same SRC or reference code occur?
- No Yes**
- ↓ Go to step 4 of this procedure.
9. You have isolated the problem to the length of signal cable you disconnected from the signal bus in step 7 of this procedure.
- Exchange the signal cable.
- This ends the procedure.**
10. Was the original URC 2000 or 2010?
- No Yes**
- ↓ Go to the service information for the specific storage device with URC FFD2.
- This ends the procedure.**
11. Go to the service information for the specific storage device with URC FFD5.
- This ends the procedure.**

MSIOP-PIP3

Introduction: This procedure isolates a fault that is causing communications problems between a storage device and the MSIOP that it is attached to.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 563 to find the MSIOP, signal cables, storage devices, and terminating plug.

MSIOP PIPs

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 566).

2. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.

Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

Yes No

- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

3. The switch-addressed storage device is failing.
 - a. See “MSIOP Parts Location” on page 563 to find the MSIOP and the switch-addressed storage device.
 - b. Go to the service information for the specific storage device with URC FFD0.

Note: If the URC is 2030, the problem can be caused by a failure on the disk or tape where the MSIOP Licensed Internal Code is stored. If the failure was from disk, restore the Licensed Internal Code (see “Restoring Licensed Internal Code” in the *AS/400 Service Functions* information). If the failure was from tape, the tape must be exchanged with a new one.

This ends the procedure.

MSIOP-PIP4

Introduction: This procedure isolates a failing storage device attached to the MSIOP that is causing errors on the signal bus.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 563 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.

- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 566).
2. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.
Does the test run successfully (without an SRC or reference code)?
No Yes
↓ **This ends the procedure.**
 3. Power off one of the storage devices attached to the signal cable.
 4. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.
Does an SRC or reference code occur after running the MSIOP test?
Yes No
↓ The storage device you just powered off is causing the failure.

Power on all of the storage devices attached to the signal cable. Then go to the correct storage device service information with URC FFD1.
This ends the procedure.
 5. Is the SRC xxxx 1800?
No Yes
↓ The storage device you just powered off is causing the failure.

Power on all of the storage devices attached to the signal cable. Then go to the correct storage device service information with URC FFD1.
This ends the procedure.
 6. Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?
Yes No
↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

Note: Leave powered off the units you have powered off in this procedure.

This ends the procedure.
 7. Have you powered off all of the storage devices attached to the signal cable?
Yes No
↓ Go to step 3 of this procedure.
 8. Perform the following:
 - a. Power on all of the storage devices attached to the signal cable.
 - b. Find the storage device on the signal cable with the terminating plug and disconnect the terminating plug.
 - c. Find the MSIOP card on the signal cable and disconnect the signal cable.
 - d. Connect the terminating plug to the MSIOP card.
 - e. Perform “MSIOP Test Procedure” on page 561.
 - f. Return here and answer the following question.
Does the test run successfully (without an SRC or reference code)?

MSIOP PIPs

No **Yes**

- ↓ Perform the following:
- Disconnect the terminating plug from the MSIOP card.
 - Reconnect the signal cable you disconnected in this step.
 - Go to MSIOP-PIP2, step 5 on page 542 to continue analyzing the problem.

This ends the procedure.

9. The MSIOP card is the failing item.

Perform the following:

- Exchange the MSIOP card (see “Chapter 6. Removal and Installation Procedures” on page 793).
- Power on all of the storage devices attached to the MSIOP card. Go to “Verifying the Repair” on page 778.

This ends the procedure.

MSIOP-PIP5

Introduction: This procedure isolates a problem on the signal cable of an MSIOP.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

- See “MSIOP Parts Location” on page 563 to find the MSIOP, signal cables, storage devices, and terminating plug.
Verify the following and correct if necessary before continuing with the next step of this procedure:
 - All cable connections are made correctly and are tight.
 - All storage devices have the correct switch address as indicated in the system configuration list.
 - All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 566).
- Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.
Does the test run successfully (without an SRC or reference code)?

No **Yes**

↓ **This ends the procedure.**

- Disconnect the signal cable from the MSIOP card.
- Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.
Does the same SRC or reference code occur that occurred in step 2 of this procedure?

No **Yes**

↓ The MSIOP card is the failing item.

Perform the following:

- a. Exchange the MSIOP card (see “Chapter 6. Removal and Installation Procedures” on page 793).
- b. Reconnect the signal cable to the MSIOP card.
- c. Go to “Verifying the Repair” on page 778.

This ends the procedure.

5. Perform the following:

- a. Reconnect the signal cable to the MSIOP card.
- b. Go to MSIOP-PIP2, step 4 to continue analyzing the problem.

Note: If MSIOP-PIP2 isolates the problem to either the MSIOP card or the terminating plug, exchange the terminating plug.

This ends the procedure.

MSIOP-PIP6

Introduction: This procedure finds configuration errors of the MSIOP card and the storage devices attached to it. The locations of the MSIOP card and the storage devices are found on a Problem Summary Form or a Product Activity Log record. Then the given list of possible problems is used to find and correct the problem.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 563 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 566).

Note: If a storage device is not powered on, go to “Analyzing Power Problems” on page 36 to correct the problem.

2. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.

Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

Yes No

- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

MSIOP PIPs

3. Is the original reference code 3010?

Yes No

↓ Go to step 5 of this procedure.

4. The addressed storage device sent a response to the MSIOP that was either not expected or not valid. This usually means the device was not successful in getting its own Licensed Internal Code load.

Go to the service information for the specific storage device with URC FFD5 to continue analyzing the problem.

Note: This reference code could be the result of a configuration that is not valid. If the I/O processor number (the second digit of the unit address) is a 0 or a 1, ensure that the device is not a diskette or tape drive.

This ends the procedure.

5. This reference code indicates a configuration error. If there has been a recent change to the system configuration, review the installation procedures. Otherwise, use the table below to help isolate the problem.

Reference Code

Cause

6001 The addressed storage device has a block size that is not valid (block size must be 520 bytes).

See the following procedures:

- “9337 Procedure 4 - Problem Recovery” in the *FC 504x Problem Analysis and Repair and Parts* information

6005 More than 16 facilities have been detected by the MSIOP.

6006 The addressed storage device has a type number that is not valid, or the device needs an upgrade.

This ends the procedure.

MSIOP-PIP7

Introduction: This procedure determines why a storage device attached to an MSIOP stopped working.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 563 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.

- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 566).
2. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.

Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

Yes No

- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

3. Go to the service information for the specific storage device with URC FFD5.
This ends the procedure.

MSIOP-PIP8

Introduction: This procedure isolates a failure that occurred on the interface between the MSIOP and a storage device.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 563 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 566).

2. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.

Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

Yes No

- ↓ A new SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

3. Go to the service information for the specific storage device with URC FFD3.
This ends the procedure.

MSIOP-PIP9

Introduction: This procedure gets the error data for an addressed storage device from an error detected by the MSIOP.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. Go to “MSIOP Parts Location” on page 563 and determine the following information:
 - MSIOP location
 - Switch-addressed storage device location
 - Switch-addressed storage device type (on the device front panel)
 - Switch-addressed storage device model (on the device front panel)

Also, get the unit reference code (URC) from the Problem Summary Form.

Note: If the URC is not listed or is not valid for the device, use URC FFD5.

When you have the information, return here and continue with the next step of this procedure.

2. Using the unit type, unit model, and unit reference code information you found in step 1 of this procedure, go to the service information for the specific storage device to correct the problem.

This ends the procedure.

MSIOP-PIP10

Introduction: This procedure isolates a failure that occurred on the interface between the MSIOP and a storage device.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 563 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 566).

2. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.

Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

Yes No

- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

3. Go to the *Analyzing Problems* manual for the storage device and perform the action indicated by URC FFF8.

This ends the procedure.

MSIOP-PIP11

Introduction: This procedure runs a MSIOP diagnostic test that checks for intermittent storage errors. The MSIOP has the ability to run an extended storage loop test and to correct problems when they are found.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. Perform “MSIOP Test Procedure” on page 561. Then return here and answer the following question.

Does the test run successfully (without an SRC or reference code)?

Yes No

- ↓ There is a solid (not intermittent) failure in the MSIOP. Go to step 8 of this procedure.

2. Perform the following:

- a. From the AS/400 Main Menu, select the *Work with dedicated service tools (DST)* option.
- b. Log on the system.
- c. Select the *Work with disk units* option.
- d. Select the *Analyze disk device problem* option.

3. For this step, you need to know the address of the MSIOP to test. To get the address, see “MSIOP Parts Location” on page 563.

Select the MSIOP to be tested by doing the following:

- a. Select the *Select storage device to test* option and press the Enter key.
- b. Enter 1 on the line next to the MSIOP with the correct address.

Note: This selection process needs to be performed only once for this procedure, or you can wait until the next initial Licensed Internal Code load.

Did you get a message that said you attempted to select the load-source MSIOP?

MSIOP PIPs

No **Yes**

↓ This test cannot be run on the load-source MSIOP. Go to step 7 of this procedure.

4. Run the test on the MSIOP by doing the following:
 - a. Select the *Select and run tests* option and press the Enter key.
 - b. Select the *Controller storage test* option and press the Enter key.
 - c. Verify that the data displayed is correct and press the Enter key to start the test.

Note: Let this test run for 15 minutes or until a reference code occurs. Press the function key indicated on the display to end the test.

Does a reference code occur?

Yes **No**

↓ Go to step 7 of this procedure.

5. Is the reference code 1020 or 1030?

Yes **No**

↓ Go to step 8 of this procedure.

6. The problem was corrected. Return to normal operation.

This ends the procedure.

7. Check the reference codes in the Product Activity Log (see the *AS/400 Service Functions* information) by doing the following:
 - a. Return to the Analyze Disk Device Problem display.
 - b. Write down the type, model, address, reference code, date, and time.

Has the original reference code at this MSIOP address occurred again in the last 24 hours?

Yes **No**

↓ The MSIOP recovered from the intermittent error.

This ends the procedure.

8. Exchange the MSIOP card (see “Chapter 6. Removal and Installation Procedures” on page 793).

Go to “Verifying the Repair” on page 778.

This ends the procedure.

MSIOP-PIP12

Introduction: This procedure isolates intermittent problems that are recorded in the Product Activity Log. It looks for repeated errors occurring at one or more addresses of the MSIOP, storage device, or the storage I/O processor.

Note: For unit reference code (URC) 6007, a hardware or software failure can cause the errors. Software failures can occur in the storage device, the MSIOP, or in the Licensed Internal Code.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. Look at the Product Activity Log for repeated entries of SRC type 6112 with a common reference code (see “Product Activity Log” in the *AS/400 Service Functions* information).
2. Do you have repeated 6112 entries with common reference codes or common error descriptions?

Yes No

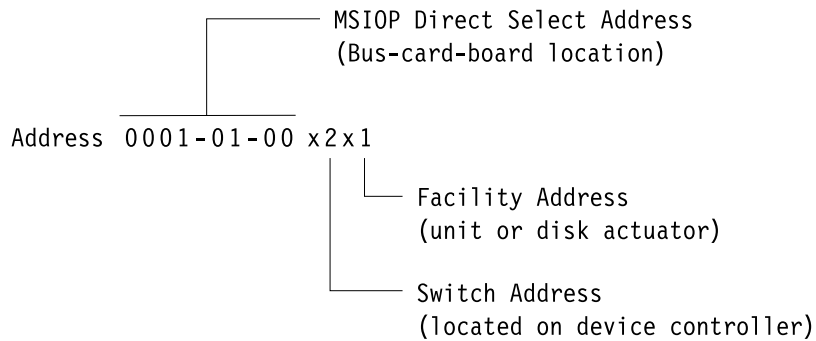
↓ Use the failing items associated with the original reference code and see “MSIOP (Type 611x) Failing Items” on page 564 to find the parts. Perform the necessary repair action and return to normal operation.

Note: For URC 6007, take no more action.

This ends the procedure.

3. Are all repeated errors occurring on the same MSIOP Direct Select Switch and Facility Address?

Example Address:



RZAG5501-1

No Yes

↓ You have isolated the problem to a single storage device. To determine the correct FRU to exchange, go to the service information for that device with URC:

- FFD3 for 9331
- FFD5 for 9347

Note: The error condition may be two storage devices responding to the same MSIOP at the same time. This condition could be caused by one of the following:

- A device address switch set to the wrong address
- A failing device address switch
- A failing, loose, or disconnected device address cable

This ends the procedure.

4. Are all repeated errors occurring on the same MSIOP Direct Select Addresses, and are the Switch Addresses different?

No Yes

MSIOP PIPs

↓ You have isolated the problem to either the MSIOP card or the attachment cables. Go to “MSIOP Parts Location” on page 563 to determine the correct FRU to exchange.

This ends the procedure.

5. Are all repeated errors occurring on the same MSIOP Direct Select Addresses and Switch Addresses, and are the Facility Addresses different?

No **Yes**

↓ You have isolated the problem to a device controller. Go to the service information for the specific storage device with URC FFF4 to determine the correct FRU to exchange.

This ends the procedure.

6. If the same error is occurring on different MSIOP Direct Select addresses and a common reference code is logged against different MSIOPs, this indicates a Licensed Internal Code problem or a power supply problem. Ask your next level of support for assistance.

This ends the procedure.

MSIOP-PIP13

Introduction: This procedure copies the dump to tape or diskette and asks you to send it to your next level of support.

When Licensed Internal Code errors that cannot be recovered occur, Licensed Internal Code attempts to dump the MSIOP to address 000087000000.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. Access DST on the system console (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
2. Copy the IOP dump from disk to tape or diskette. Use the instructions for the dump to tape or diskette function (see “Copying the IOP Storage Dump to Removable Media” in the *AS/400 Service Functions* information).

Note: Label the tape or diskette (for example, volid=SID87, file=DUMP).

3. Select all recent storage I/O processor Product Activity Log entries and copy them to a diskette, tape, or printer. That is, spool the data and copy the spool file to a diskette, tape, or printer (see the *AS/400 Service Functions* information).

Note: Printer output is preferable for log data.

4. The loadable code group for the MSIOP is:
 - AJER101 for the type 6112 IOP

Ensure that the latest level of code for the MSIOP is loaded (see “Licensed Internal Code Information” in the *AS/400 Service Functions* information). Ask your next level of support for the code level.

5. For more error analysis, go to “MSIOP-PIP1” on page 541.

This ends the procedure.

MSIOP-PIP14

Introduction: This procedure isolates a failure in the MSIOP (type 650x) subsystem. This subsystem consists of:

- The MSIOP (type 650x)
- The 9337 Disk Units, the signal cables from the MSIOP to the 9337 Disk Units, and the terminating plugs on the 9337 Disk Units
- The SCSI tape units, the signal cables from the MSIOP to the tape units, and the terminating plugs on the tape units

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. Use the list of “MSIOP (Type 650x) Failing Items” on page 565 to:
 - Get address information for the failing item.
 - Physically find the failing item.

Note: If the Problem Summary Form is not available, use the Product Activity Log to gather the data. Select the entry for the reference code that sent you here and use the hexadecimal information to find the following:

- The direct select address (DSA)- BBBB-Cc-bb.
 - BBBB = hexadecimal offsets 4C and 4D.
 - Cc = hexadecimal offset 51.
 - bb = hexadecimal offset 4F.
- The unit address (UA)– hexadecimal offsets 18C through 18F.
- The device unit reference code (URC)– hexadecimal offsets 194 and 195.

See *AS/400 Service Functions* for more information on how to find address information in the Product Activity Log.

2. Ensure that the cable connections between the MSIOP and the device are made correctly and are tight.
3. Ensure that both ends of the signal cable between the MSIOP and the device do not show any visible damage, such as bent or broken pins or a cracked connector.
4. Perform the following:
 - a. Go to “Storage Device Ready Conditions for MSIOP Devices” on page 566 and determine if there is a device ready problem.
 - b. If necessary, correct the problem using the device service information.
 - c. Return here and continue with the next step of this procedure.
5. Did you find and correct a device ready problem?

No Yes

↓ **This ends the procedure.**

6. Is the problem intermittent?

MSIOP PIPs

No Yes

↓ Go to “Correcting Intermittent Problems” on page 14.

This ends the procedure.

7. Exchange the FRUs in the failing item list for the reference code that sent you to this procedure (see “Chapter 6. Removal and Installation Procedures” on page 793).
8. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

9. Go to “Starting Point for All Problems” on page 4 to correct the problem.
This ends the procedure.

MSIOP-PIP15

Introduction: This procedure isolates a failure in the SCSI bus.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. Were you performing an IPL from tape (type D) when the error occurred?

No Yes

↓ Go to “MSIOP-PIP17” on page 560 to continue problem isolation.

This ends the procedure.

2. Is the system available, and can you enter commands at the console?

No Yes

↓ Exchange the FRUs in the failing item list for the reference code that sent you to this procedure (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

3. Is the attached device a 9337 that is connected to the IOP with a **20-meter cable**?

Yes No

↓ Go to step 5 of this procedure.

4. Perform the following:

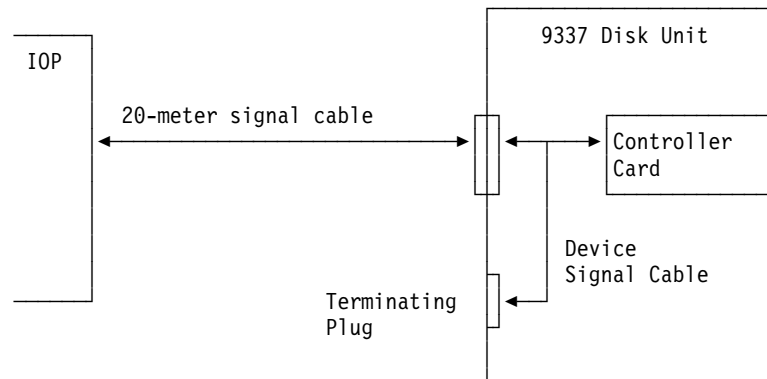
a.

If the MSIOP is located in an I/O expansion tower, use bus level concurrent maintenance under *Hardware Service Manager* to power off the expansion tower. Otherwise, power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

b. Disconnect the 9337 controller card (inside the 9337) from the signal cable.

Notes:

- 1) To disconnect the card, see the *9337 Disk Array Service Information*
- 2) It is easier to disconnect the card than to disconnect the cable.
- 3) See the following diagram to help understand this step.
- 4) If the signal cable is isolated as the failing item, this failing item now includes the signal cable inside the 9337.



- c. Go to step 6 of this procedure.
5. Perform the following:
 - a.

If the MSIOP is located in an I/O expansion tower, use bus level concurrent maintenance under *Hardware Service Manager* to power off the expansion tower. Otherwise, power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Disconnect the IOP signal cable from the attached device.
6. If you powered off an I/O expansion tower the power on the expansion tower. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does the Missing Disk Unit display appear on the console, and is the unit reference code 0000?

No	Yes
↓	Exchange the FRUs in the failing item list for the reference code that sent you to this procedure (see “Chapter 6. Removal and Installation Procedures” on page 793).
This ends the procedure.	
7. Does the same SRC or reference code that sent you to this procedure occur?

Yes	No
↓	Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.
This ends the procedure.	
8. The attached device and its terminating plug are not failing.

Perform the following:

 - a.

If the MSIOP is located in an I/O expansion tower, use bus level concurrent maintenance under *Hardware Service Manager* to power off the expansion tower. Otherwise, power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

MSIOP PIPs

- b. Disconnect the signal cable from the magnetic storage I/O processor (MSIOP) (type 650x).
- c. Power on the system or expansion tower that you powered off.

Does the same SRC or reference code that sent you to this procedure occur?

Yes **No**

↓ Exchange the signal cable.

This ends the procedure.

9. Exchange the MSIOP (type 650x) (see “Chapter 6. Removal and Installation Procedures” on page 793).

Go to “Verifying the Repair” on page 778.

This ends the procedure.

MSIOP-PIP16

Introduction: This procedure determines the device unit reference code (URC), then sends you to the reference code table in the device service information.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. Were you performing an IPL from tape (type D) when the error occurred?

No **Yes**

↓ Go to the device service information to solve the problem.

2. Use the list of “MSIOP (Type 650x) Failing Items” on page 565 to:

- Get address information for the failing item.
- Physically find the failing item.

Note: If the Problem Summary Form is not available, use the Product Activity Log to gather the data. Select the entry for the reference code that sent you here and use the hexadecimal information to find the following:

- The direct select address (DSA)- BBBB-Cc-bb.
 - BBBB = hexadecimal offsets 4C and 4D.
 - Cc = hexadecimal offset 51.
 - bb = hexadecimal offset 4F.
- The unit address (UA)– hexadecimal offsets 18C through 18F.
- The device unit reference code (URC)– hexadecimal offsets 194 and 195.

See *AS/400 Service Functions* for more information on how to find address information in the Product Activity Log.

3. Ensure that the cable connections between the MSIOP and the device are made correctly and are tight.
4. Ensure that both ends of the signal cable between the MSIOP and the device do not show any visible damage, such as bent or broken pins or a cracked connector.

5. From step 2 of this procedure, find the type and model information and the URC for the attached storage device.

If you are using the Problem Summary Form to analyze this problem:

- Determine the storage device type and model from information on the device.
- The attached storage device URC is in function 17.

If the Problem Summary Form is not available, use the device unit reference code that you found in step 2.

Is the device URC 3020 or 3021?

Yes No

↓ Go to step 8 of this procedure.

6. A device URC of 3020 or 3021 means that a device attached to the addressed MSIOP is not given support or does not follow the system configuration rules (for example, too many devices are attached to the bus or a tape unit and a disk unit are attached to the same IOP).

Find the system configuration information from the last IPL and compare it to the present system configuration.

Note: To help in the comparison, look at the 4 leftmost characters of function 14 (the unit address of the device). Determine the physical address (see "System Unit Locations and Addresses" on page 695). Find this location in the system and get the device type and model number.

Do the system configurations match?

No Yes

↓ A device on the SCSI bus may be failing. Go to the failing item list for the reference code that sent you to this procedure and exchange the FRUs listed (see "Chapter 6. Removal and Installation Procedures" on page 793). See "MSIOP Parts Location" on page 563 to find the failing item.

This ends the procedure.

7. Go to "Hardware Service Manager" in the *AS/400 Service Functions* information to correct the mismatch between the two configurations.

This ends the procedure.

8. Use the device type and model you found in step 5 of this procedure and go to the storage device service information to determine the reference code table ID.

Did you find a storage device URC in step 5 of this procedure?

No Yes

↓ In the storage device service information, go to the reference code table and failing item list. Use the device URC from step 5 of this procedure to correct the problem.

This ends the procedure.

9. Go to the failing item list for the reference code that sent you to this procedure and exchange the FRUs listed (see "Chapter 6. Removal and Installation Procedures" on page 793).

This ends the procedure.

MSIOP-PIP17

Introduction: This procedure isolates a failure in the MSIOP (type 650x) subsystem during an IPL from tape (type D). This subsystem consists of:

- The MSIOP (type 650x)
- The tape units, the signal cables from the MSIOP to the tape units, and the terminating plugs on the tape units

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 540 before continuing with this procedure.

1. Use the list of “MSIOP (Type 650x) Failing Items” on page 565 to:
 - Get address information for the failing item.
 - Physically find the failing item.
2. Ensure that the cable connections between the MSIOP and the device are made correctly and are tight.
3. Ensure that both ends of the signal cable between the MSIOP and the device do not show any visible damage, such as bent or broken pins or a cracked connector.
4. Perform the following:
 - a. Go to “Storage Device Ready Conditions for MSIOP Devices” on page 566 and determine if there is a device ready problem.
 - b. If necessary, correct the problem using the device service information.
 - c. Return here and continue with the next step of this procedure.
5. Did you find and correct a device ready problem?
No Yes
↓ **This ends the procedure.**
6. Perform an IPL from tape by doing the following:
 - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Select IPL type D, In manual mode (see “Selecting IPL Type, Mode, and Speed” on page 765).
 - c. Power on the system.Does the IPL complete successfully?
No Yes
↓ **This ends the procedure.**
7. Does the same SRC or reference code occur that sent you to this procedure?
Yes No
↓ Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.
This ends the procedure.
8. Is the problem intermittent?

No Yes

↓ Go to “Correcting Intermittent Problems” on page 14.

This ends the procedure.

9. Exchange the FRUs in the failing item list for the reference code that sent you to this procedure (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

MSIOP Test Procedure

Introduction: This procedure runs the basic assurance tests (BATs) of the MSIOP card.

After running the test, make a note of the resulting reference code data (if any) on the Problem Summary Form or in a notebook. Then return to the problem isolation procedure step that sent you here.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Does the IPL or Install the System display appear on the operator’s console, or is DST available on the console (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information)?

Yes No

↓ Go to step 6 of this procedure.

2. Access the Logical Hardware Resources on System Bus display:
 - a. From the IPL or Install the System display, select the *Use dedicated service tools (DST)* option.
 - b. Enter the password. You need the customer password to get to the Use Dedicated Service Tools (DST) display.
 - c. Select the *Start a Service Tool* option.
 - d. Select the *Hardware Service Manager* option.
 - e. Select the *Logical Hardware Resources (buses, IOPs, controllers,...)* option.
 - f. Select the *System Bus Resources* option.
3. On the Logical Hardware Resources on System Bus display, perform the following:
 - a. Change the *Subset by* field to *STG and press the Enter key.
 - b. Select the *I/O Debug* option for the type 6112 IOP that has the same resource name, serial number and address as the IOP that reported the problem.

MSIOP PIPs

```

Logical Hardware Resources on System Bus

System bus(es) to work with . . . . . *ALL *ALL, 1- 7
Subset by . . . . . *STG *ALL, *STG, *WS, *CMN

Type options, press Enter.
2=Change detail 4=Remove 5=Display detail 6=I/O Debug
8=Associated packaging resource(s) 9=Resources associated with IOP

Resource
Opt Description Type-Model Status Name
- System Bus - Operational BUS01
- Multiple Function IOP * 9162-001 Operational CMB01
6 Storage IOP 6112-001 Operational SI03
- Storage IOP 6112-001 Operational SI04
- System Bus - Operational BUS02
- Storage IOP 6512-001 Operational SI01
- Storage IOP 6512-001 Operational SI02
More...

F3=Exit F5=Refresh F6=Print F9=Failed resources
F10=Non-reporting resources F11=Display serial/part numbers F12=Cancel
  
```

Figure 16. Example Logical Hardware Resources on System Bus Display

4. On the Select IOP Debug Function display, select the *IPL I/O processor* option and press the Enter key.

Note: Make a note of the time you select the *IPL I/O processor* option so that you can determine which Product Activity Log entries occurred during the I/O processor IPL.

When the I/O processor completes the IPL, return to the Start a Service Tool display.

5. Look for Product Activity Log entries that occurred during the I/O processor IPL by performing the following:
 - a. From the Start a Service Tool display, select the *Product activity log* option.
 - b. Select the *Analyze log* option.
 - c. Enter the date and time that corresponds with the I/O processor IPL.
 - d. If a new entry appears for the I/O processor IPL, write down the type, model, address, reference code, date, and time.
 - e. Return to the problem isolation procedure that sent you here.

This ends the procedure.

6. Perform an IPL by doing the following:
 - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Power on the system in manual mode.

Does an SRC occur on the control panel?

No Yes

↓ Record the reference code data on the Problem Summary Form. Then return to the problem isolation procedure step that sent you here.

This ends the procedure.

7. Look at the console.

Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

No Yes

- ↓ Record the MSIOP reference code. Then return to the problem isolation procedure step that sent you here.

This ends the procedure.

8. Look for Product Activity Log entries that occurred during the I/O processor IPL by performing the following:
 - a. Go to the Product Activity Log display in DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
 - b. Select the *Analyze log* option.
 - c. Enter the date and time that corresponds with the I/O processor IPL.
 - d. If a new entry appears for the I/O processor IPL, write down the type, model, address, reference code, date, and time.
 - e. Return to the problem isolation procedure that sent you here.

This ends the procedure.

This ends the procedure.

MSIOP Parts Location

Introduction: This procedure describes the following:

- Storage subsystem parts
- How to get address data from the Product Activity Log or a Problem Summary Form
- How to use the system configuration list to physically find parts in the system

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Are you working on a type 611x MSIOP?

Yes No

- ↓ Go to step 4 of this procedure.

2. Use the list of “MSIOP (Type 611x) Failing Items” on page 564 to:

- Get address information for the failing item.
- Physically find the failing item.

Note: If the Problem Summary Form is not available, use the Product Activity Log to gather the data. In the Product Activity Log, go to the reference code that sent you here and use the hexadecimal information to find the following:

- The direct select address (DSA)- BBBB-Cc-bb.
 - BBBB = hexadecimal offsets 4C and 4D.
 - Cc = hexadecimal offset 51.
 - bb = hexadecimal offset 4F.
- The unit address (UA)– hexadecimal offsets 18C through 18F.
- The device unit reference code (URC)– hexadecimal offsets 194 and 195.

MSIOP PIPs

See *AS/400 Service Functions* for more information on how to find address information in the Product Activity Log.

- Return to the problem isolation procedure step that sent you here.

This ends the procedure.

- You are working on a type 650x MSIOP.

Use the list of “MSIOP (Type 650x) Failing Items” on page 565 to:

- Get address information for the failing item.
- Physically find the failing item.

Note: If the Problem Summary Form is not available, use the Product Activity Log to gather the data. In the Product Activity Log, go to the reference code that sent you here and use the hexadecimal information to find the following:

- The direct select address (DSA)- BBBB-Cc-bb.
 - BBBB = hexadecimal offsets 4C and 4D.
 - Cc = hexadecimal offset 51.
 - bb = hexadecimal offset 4F.
- The unit address (UA)– hexadecimal offsets 18C through 18F.
- The device unit reference code (URC)– hexadecimal offsets 194 and 195.

See *AS/400 Service Functions* for more information on how to find address information in the Product Activity Log.

- Return to the problem isolation procedure step that sent you here.

This ends the procedure.

MSIOP (Type 611x) Failing Items

Table 25. MSIOP (Type 611x) Failing Items

Item Description	Location Procedure
Magnetic storage I/O processor (MSIOP)	<ol style="list-style-type: none"> 1. Read the direct select address of the failing MSIOP from the Product Activity Log record or from the Problem Summary Form. 2. If needed, use the system configuration list with this address to physically find the MSIOP.
Signal cables	<ol style="list-style-type: none"> 1. Read the direct select address of the failing MSIOP from the Product Activity Log record or from the Problem Summary Form. 2. If needed, use the system configuration list with this address to physically find the MSIOP. 3. The signal cables connect the MSIOP to all the devices attached to it. You can find a list of signal cable part numbers in FI00500 in the “Failing Item (FI) Code Table” on page 341.

Table 25. MSIOP (Type 611x) Failing Items (continued)

Item Description	Location Procedure
All attached storage devices	<ol style="list-style-type: none"> 1. Read the direct select address of the failing MSIOP from the Product Activity Log record or from the Problem Summary Form. 2. If needed, use the system configuration list with this address to physically find the MSIOP. 3. Follow the cables from the MSIOP to find all attached storage devices. <p>Note: Any one of the storage devices attached to the MSIOP may be the failing item.</p>
Switch-addressed storage devices	<ol style="list-style-type: none"> 1. Read the direct select address of the failing MSIOP from the Product Activity Log record or from the Problem Summary Form. 2. Read the switch address of the failing storage device from the Product Activity Log record or from the Problem Summary Form. 3. If needed, use the system configuration list with these addresses to physically find the MSIOP. 4. Follow the cables from the MSIOP to find the failing storage device with a switch address that compares to the Product Activity Log or the Problem Summary Form. 5. More problem analysis may be possible by going to the service information for the specific storage device.
Terminating plug	<ol style="list-style-type: none"> 1. Read the direct select address of the failing MSIOP from the Product Activity Log record or from the Problem Summary Form. 2. If needed, use the system configuration list with this address to physically find the MSIOP. 3. Follow the cables from the MSIOP to find all attached storage devices. 4. Find the last device attached to the signal cable. The terminating plug is installed on that device.

MSIOP (Type 650x) Failing Items

Table 26. MSIOP (Type 650x) Failing Items

Item Description	Location Procedure
Magnetic storage I/O processor (MSIOP)	<ol style="list-style-type: none"> 1. Read the direct select address of the failing MSIOP from the Product Activity Log record or from the Problem Summary Form. 2. If needed, use the system configuration list with this address to physically find the MSIOP.
Signal cable	<ol style="list-style-type: none"> 1. Read the direct select address of the failing MSIOP from the Product Activity Log record or from the Problem Summary Form. 2. If needed, use the system configuration list with this address to physically find the MSIOP. <p>You can find the signal cable part numbers refer to "EXTSCSI" on page 396.</p> <p>Note: For 3490 Tape Units, 35xx Tape Units, and 7208 Tape Drives, find the signal cable part numbers in FI00830.</p>

MSIOP PIPs

Table 26. MSIOP (Type 650x) Failing Items (continued)

Item Description	Location Procedure
Device	<ol style="list-style-type: none">1. Read the direct select address of the failing MSIOP from the Product Activity Log record or from the Problem Summary Form.2. If needed, use the system configuration list with this address to physically find the MSIOP.3. Use the storage device service information to exchange the failing device.
Device controller card	<ol style="list-style-type: none">1. Read the direct select address of the failing MSIOP from the Product Activity Log record or from the Problem Summary Form.2. If needed, use the system configuration list with this address to physically find the MSIOP.3. Follow the cable from the MSIOP to find the attached storage device.4. The failing device controller card is installed in the device connected to the MSIOP by the cable you followed.5. Use the storage device service information to exchange the failing device controller card.
Device internal cable	<ol style="list-style-type: none">1. Read the direct select address of the failing MSIOP from the Product Activity Log record or from the Problem Summary Form.2. If needed, use the system configuration list with this address to physically find the MSIOP.3. Follow the cable from the MSIOP to find the attached storage device.4. The failing device internal cable is installed in the device connected to the MSIOP by the cable you followed.5. Use the storage device service information to exchange the failing device internal cable.
Terminating plug	<ol style="list-style-type: none">1. Read the direct select address of the failing MSIOP from the Product Activity Log record or from the Problem Summary Form.2. If needed, use the system configuration list with this address to physically find the MSIOP.3. Follow the cable from the MSIOP to find the attached storage device.4. The terminating plug is installed on the device connected to the MSIOP by the cable you followed.

Storage Device Ready Conditions for MSIOP Devices

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Use Table 27 on page 567 to determine the ready conditions for storage devices. All the conditions listed for each device must be correct for the device to be ready.

Note: If the device is not ready, look at the Power Ready light on the frame control panel. If the device is not ready and it does not seem to be a primary power problem, use the unit reference code or other instructions in the *Action* column and go to the service information for the specific storage device.

Table 27. Storage Device Ready Conditions

Storage Device	Ready Description	Action
3490, 3570, 3590	<ul style="list-style-type: none"> Power switch is set to the On position. Tape is loaded. Tape unit displays Ready. Tape unit SCSI address is set to 0 (zero). This setting is functionally the same as address 7. 	<p>See the tape unit operator information for instructions on how to make the tape unit ready.</p> <p>If you cannot make the tape unit ready, see the tape unit service information.</p>
63A0	<ul style="list-style-type: none"> Tape is loaded. 	<p>See the tape unit operator instructions on how to make the tape unit ready.</p> <p>If you cannot make the tape unit ready, see the tape unit service information.</p>
7208	<ul style="list-style-type: none"> Power switch is on (pressed). Power light is on. Data cartridge is inserted. Ready light is on. System external signal cable is connected to the MSIOP and to the 7208 Tape Drive. <p>Note: The SCSI I/O bus terminating plug for the system external signal cable is connected internally in the 7208 Tape Drive. The 7208 Tape Drive does not need, and must not have, an external terminating plug.</p>	<p>See the <i>7208 8 mm Tape Drive Operator's Manual</i> for instructions on making the tape drive ready. If you cannot make the tape drive ready, go to "TU-PIP2" on page 659</p>
9331	<ul style="list-style-type: none"> Power switch is set to the On position. Power light is on. Unit Ready light is on. 	<p>See the <i>9331 Diskette Unit Service Information</i> for instructions on making the diskette unit ready.</p>
9337	<ul style="list-style-type: none"> Power switch is set to the On position. Unit Ready light is on. Unit Attention light is off. Device data display contains either *xxx, where x is any hexadecimal character, or B000. 	<p>Use the contents of the Data display and go to the "Analyzing Problems" section of the <i>9337 Disk Array Service Information</i></p>

Power Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure in the system power.

Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read "Important Cryptographic I/O Processor Information" on page 757 before disconnecting or removing the cryptographic I/O processor.

Power PIPs

The following safety notices apply throughout this section.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

POW-PIP3

Introduction: This procedure tests the battery power unit for correct operation.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

1. Ensure that the battery power unit is installed and that there was no system power loss for the last 8 hours by checking the message log for CPF1816.

Note: If the message log shows that a power loss occurred in the last 8 hours, the battery may not be at full charge and the test may fail.

To check the message log, perform the following:

- a. Enter the command DSPLOG QHST
- b. Press F4 (prompt).

Note: The *time date* parameter that you use should be for the last 8-hour period.

- c. Fill in the time and date.
For the United States, the format is:
hhmmss mmddyy

Note: The output may be printed (*PRINT) or displayed. The default (*) is to display.

2. Ensure that all user programs are ended.
3. Perform the following:
 - a. Ensure keystick is inserted and select Manual mode on the control panel.
 - b. Select function 21 (Make DST Available) on the control panel.
 - c. Press the Enter key.
 - d. Enter the password on the DST Sign On display. You need the customer password to get to the Use Dedicated Service Tools (DST) display.
4. Select the *Start a Service Tool* option.
5. Select the *System Power Control Network* option.
6. Press the Enter key to continue.
7. Select the *Test Battery Interface* option by entering 7 under the *OPT* column on the line for the correct unit (**not** the line for the frame).
8. Press the Enter key to confirm your selection.

Does the battery test complete with no problems found?

Yes	No	
↓		Exchange the following, one at a time (see “Removal and Installation Procedures” in the <i>Repair and Parts</i> information for the system): <ol style="list-style-type: none"> a. Battery power unit (see FI00251 in “Failing Item (FI) Code Table” on page 341) b. In a system unit, exchange the SPCN card (BKSPCN). In a secondary frame except FC 5065 or 5066, exchange the ac module (ACMODUL). In a FC 5065 or 5066 frame exchange the tower card (TWRCARD). c. Backplane <p style="text-align: center;">This ends the procedure.</p>
9. Approximately 24 hours from now, the system will perform a battery capacity test. When the battery capacity test completes successfully, the battery power unit test is complete.

This ends the procedure.

Remote Operations Console Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure in the Remote Operations Console (ROC).

The following symptoms can be caused by a defective Remote Control Panel cable:

- Remote Control panel (hung) System Control Panel Functions.
- SRC 0000–DDDD with attention light on the system panel blinking.
- Remote Control Panel accepts mode selections, however the system does not respond
- The Remote Control Panel does not function.
- AS/400 Operations Console status is “Remote Control Panel Unavailable”

Note: This may also be caused by a problem with the internal SIG2 signal cable.

ROC PIPs

The following AS/400 Operations Console Status screen messages can be caused by not powering on the AS/400:

- Connecting Console/Remote Control Panel Unavailable
- Remote Control Panel connection to [configuration name of the AS/400] failed. Do you want to try again?
- Remote Control Panel connection failed. Do you want to try again?

Note: A problem with the Remote Control Panel cable may also cause this symptom.

The following symptoms can be caused by a defective Operations Console cable:

- The Operations Console display is displayed, but it is not functioning while the Remote Control Panel is functioning.
- The Operations Console display is blank.

The following safety notices apply throughout this section.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent the system from powering on automatically during service procedures, select Manual or Secure mode on the system unit control panel. (RSFTD214)

ROC-PIP3

Introduction: This procedure will help isolate an Operations Console failure.

The following symptoms can be caused by a defective Operations Console cable:

- The Operations Console display is displayed, but it is not functioning while the Remote Control Panel is functioning.
- The Operations Console session display is blank.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Procedure: The Operations Console cable, P/N 97H7556, from the system unit to the system unit console.

The Remote Control Panel cable, P/N 97H7584.

1. Ensure that the 2699 IOA is installed into position B of the MFIOF.
2. Ensure the Operations Console cable is connected to **port 1** (lower connector) on the adapter card in position **B**. Push in the cable connector and tighten the thumbscrews.
3. Verify the other end of the Operations Console cable is connected to the system unit console (PC) serial port. Push in the cable connector and tighten the thumbscrews.

Note: If the PC has a 9-pin connector, you need to use the 9 to 25 pin adapter, **part number 46G0298**, that was shipped with the system.

4. If there is a Remote Control Panel cable, P/N 97H7584, ensure it is connected to the **MI** connector on the front of the system unit. The other end should be connected to port 2 on the system unit console (PC).
5. Are the PC and AS/400 powered on?

No **Yes**

↓

- a. Click on the system name.
- b. Click on the disconnect icon.
- c. Wait for the status light to indicate disconnected.
- d. Click on the system name.
- e. Click on the connect icon.
- f. Go to step 14 on page 572.

6. Power on the PC (if not already powered on) that is being used as the system unit console.
7. Is the AS/400 powered on?

No **Yes**

↓ Go to step 13 on page 572.

8. Enter **BM** into the Function/Data display.
9. Press the power button that is located on the AS/400 control panel. The IPL may take from 5 to 10 minutes.
10. Is the reference code **B6004501** shown in the Function/Data display?

No **Yes**

↓ Go to step 13 on page 572.

11. Is the Attention light lit?

Yes **No**

↓ If the system shows no activity for more than 10 minutes, go to the "Handling and Reporting System Problems" section of the *Basic System Operation, Administration, and Problem Handling*, which was shipped with the system. Then return here and continue.

12. Does a SRC of **x6xx500x** appear on the Function/Data display?

ROC PIPs

Yes No

↓ Go to the "Handling and Reporting System Problems" section of the *Basic System Operation, Administration, and Problem Handling*, which was shipped with the system. Then return here and continue.

13. Open the Operations Console icon by doing the following:

- a. Click on **Start**.
- b. Click on **Programs**.
- c. Click on **IBM AS/400 Client Access**.
- d. Click on **AS/400 Operations Console**.

14. Did the *AS/400 DST Sign On* appear?

Yes No

↓ Go to "ROC-PIP5" on page 573 to determine if the cable is defective. If the cable is not defective call your next level of support.

15. Sign on using the system default values:

- In the *DST User ID* field, type **QSECOFR**.
- In the *DST Password* field, type **QSECOFR**.

Note: If the system default values for User ID and Password were not valid the Customer may have changed the DST password, obtain the new password from the Customer.

Then click on **OK**.

16. Did the Operations Console start?

No Yes

↓ You should see the IPL or Install the system menu. Select *Use Dedicated Service Tools (DST)*. Go to step 17.

17. Did you get the display prompting you for a DST user id and password?

Yes No

↓ Call your next level of support.

18. Sign in on the DST display.

- In the *User ID* field, type **QSECOFR**.
- In the *Password* field, type **QSECOFR**.

Note: If the system default values for User ID and Password were not valid the Customer may have changed the DST password, obtain the new password from the Customer.

19. Select Work with DST environment.

20. Select system devices.

21. Select console mode.

22. Select Operations Console.

23. Press F3.

24. If the Operations Console was not previously selected continue with the next step. If the Operations Console had been previously selected, select the option to IPL the system.

25. Select Start a Service Tool.

26. Select Power the system down.

27. Wait for the power light to turn off.

This ends the Procedure.

ROC-PIP5

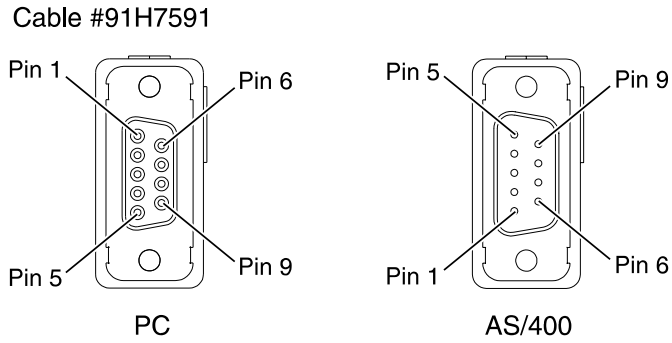
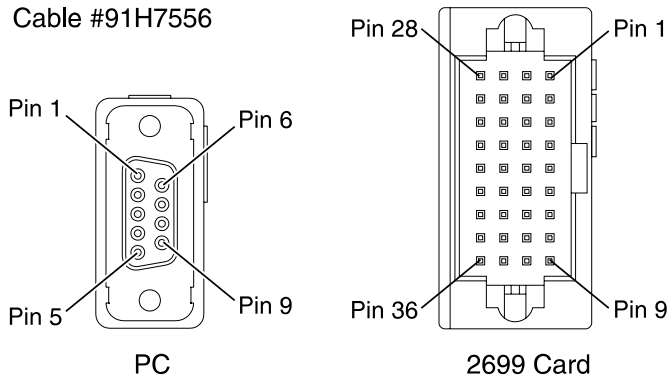
Introduction: This problem isolation procedure will isolate a failure in the Operations Console cable or the Remote Control Panel cable.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Procedure: Use the following tables and diagrams to check the pins on the Operations Console cable or the Remote Control Panel cable. Replace the defective cables. The part numbers are:

- Operations Console cable — 97H7556
- Remote Control Panel cable — 97H7584



RV4B516-0

Table 28. Pin out for the Operations Console cable

Body Color	Lead Number	"From" end Data Set Connection	"To" end I/O Connection	Signal Name
		Position Number	Position Number	
Black	1	2	21	RD - TD
Red	2	3	24	TD - RD

ROC PIPs

Table 28. Pin out for the Operations Console cable (continued)

Body Color	Lead Number	"From" end Data Set Connection	"To" end I/O Connection	Signal Name
		Position Number	Position Number	
White	3	6	26	DSR - DTR
Green	4	8	30	CTS - RTS
Orange	5	7	32	RTS - CTS
Blue	6	1, 4	19	DTR/CD - DSR
Drain Wires		5	7, 10, 27	Signal Ground
Jacket, Foil, Braid				Frame Ground

Table 29. Pin out for the Remote Control Panel cable

Body Color	Lead Number	"From" end Data Set Connection	"To" end I/O Connection	Signal Name
		Position Number	Position Number	
Black	1	2	2	RD - TD
Red	2	3	3	TD - RD
White	3	7	7	RTS - CTS
Green	4	8	8	CTS - RTS
Orange	5	5	5	Signal Ground
Blue	6	5	5	Signal Ground
Jacket, Foil, Braid				Frame Ground

ROC-PIP7

Introduction: This procedure isolates a Remote Control Panel communications problem between the system unit and the system unit PC.

Note: The SRC 0000-DDDD may indicate a temporary communications failure between the AS/400 control panel and the PC running the Operations Console program. This SRC normally clears when the RCP cable is connected to both the AS/400 and the PC, the PC is powered on, and the Operations Console program is started.

The following symptoms can be caused by a defective Remote Control Panel cable:

- Remote Control panel (hung) System Control Panel Functions.
- SRC 0000-DDDD with attention light on the system panel blinking.
- Remote Control Panel accepts mode selections, however the system does not respond
- The Remote Control Panel does not function.
- AS/400 Operations Console status is "Remote Control Panel Unavailable"

Note: This may also be caused by a problem with the internal SIG2 signal cable.

The following AS/400 Operations Console Status screen messages can be caused by not powering on the AS/400:

- Connecting Console/Remote Control Panel Unavailable
- Remote Control Panel connection to [configuration name of the AS/400] failed. Do you want to try again?
- Remote Control Panel connection failed. Do you want to try again?

Note: A problem with the Remote Control Panel cable may also cause this symptom.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Procedure:

1. Is the Remote Control Panel cable attached to the connector labeled MI on the back of the AS/400 system.

Yes No

- ↓ Attach the Remote Control Panel cable, P/N 97H7584, to the connector labeled **MI** on the back of the system unit. The other end should be connected to port 2 on the system unit console (PC).

Note: If the PC has a 9-pin connector, you need to use the 9 to 25 pin adapter, **part number 46G0298**, that was shipped with the system.

2. Is the PC powered on?

No Yes

- ↓
- a. Click on the system name.
 - b. Click on the disconnect icon.
 - c. Wait for the status light to indicate disconnected.
 - d. Click on the system name.
 - e. Click on the connect icon.
 - f. Go to step 5.

3. Power on the PC that is being used as the system unit console.

4. Open the Operations Console icon by doing the following:

- a. Click on **Start**.
- b. Click on **Programs**.
- c. Click on **IBM AS/400 Client Access**.
- d. Click on **AS/400 Operations Console**.

5. Does the AS/400 Remote Control Panel Display appear on the system unit console PC?

Yes No

- ↓ Go to “ROC-PIP5” on page 573 to determine if the cable is defective. If the cable is not defective, call your next level of support.

ROC PIPs

6. Verify manual and normal modes are selectable.
7. Select function 4, lamp test.
8. Verify scroll up and wrap around for IPL modes function properly.
9. Did the verification tests function properly?

Yes	No
↓	Call your next level of support.
10. This ends the Procedure.

Storage Device I/O Processor (SDIOP) Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure in the multiple function I/O card.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Warning: Disconnecting the J15 and J16 cables will not prevent the system unit from powering on.

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 761
- “Initial Program Load (IPL) Information” in the *AS/400 Service Functions* information.
- “Determining the Load-Source Disk and Alternate IPL Device” on page 759.

SDIOP-PIP1

Introduction: This procedure performs an IPL to dedicated service tool (DST) to determine if the same reference code occurs. If a new reference code occurs, more analysis may be possible with the new reference code. If the same reference code occurs, you are instructed to exchange the failing items.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Was the IPL performed from disk (Type A or Type B)?

No Yes

↓ Go to step 6 of this procedure.

2. Perform the following:

- a. Ensure that the IPL media is the correct version and level that are needed for the system model.
- b. Ensure that the media is not physically damaged.
- c. If the IPL media is cartridge type optical media (e.g. DVD), do not attempt to clean the media.

If the IPL media is non-cartridge type media (e.g. CD-ROM), wipe the disc in a straight line from the inner hub to the outer rim. Use a soft, lint-free cloth or lens tissue. Always handle the disc by the edges to avoid finger prints.

If the IPL media is tape, clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit.

3. Perform a Type D IPL in Manual mode.

Does a system reference code (SRC) appear on the control panel?

Yes No

↓ Go to step 9 of this procedure.

4. Is the SRC the same one that sent you to this procedure?

Yes No

↓ A different SRC occurred. Use the new SRC to correct the problem (see “Starting Point for All Problems” on page 4).

This ends the procedure.

5. You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 341 to help determine part numbers and location in the system.

This ends the procedure.

6. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does an SRC appear on the control panel?

No Yes

SDIOP PIPs

- ↓ Go to step 11 of this procedure.
7. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?
- No Yes**
- ↓ Select option 5, then press F11, then press the Enter key to display the details.
- If all of the reference codes are 0000, go to "LIC-PIP11" on page 517 and use cause code 0002. If any of the reference codes are not 0000, go to step 11 of this procedure and use the reference code that is not 0000.
- Note:** Use the characters in the *Type* column to find the correct reference code table.
8. Look at the product activity log (see "Product Activity Log" in the *AS/400 Service Functions* information).
- Is an SRC logged as a result of this IPL?
- Yes No**
- ↓ The problem cannot be isolated any more. Use the original SRC and exchange the failing items. Start with the highest probable cause of failure (see the failing item list for this reference code in "Chapter 2. Unit Reference Codes" on page 59 and "Chapter 6. Removal and Installation Procedures" on page 793). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 341 to help determine part numbers and location in the system.
- This ends the procedure.**
9. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?
- No Yes**
- ↓ Select option 5, then press F11, then press the Enter key to display the details.
- If all of the reference codes are 0000, go to "LIC-PIP11" on page 517 and use cause code 0002. If any of the reference codes are not 0000, go to step 11 of this procedure and use the reference code that is not 0000.
- Note:** Use the characters in the *Type* column to find the correct reference code table.
10. Look at the product activity log (see "Product Activity Log" in the *AS/400 Service Functions* information).
- Is an SRC logged as a result of this IPL?
- Yes No**
- ↓ The problem is corrected.
- This ends the procedure.**
11. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 1007).
- Are the SRC and unit reference code (URC) the same ones that sent you to this procedure?

Yes No

- ↓ Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

12. Perform the following:
- Power off the system.
 - Exchange the FRUs in the failing item list for the SRC you have now. Start with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59 and “Chapter 6. Removal and Installation Procedures” on page 793). Perform steps 13 through 18 of this procedure after you exchange each FRU until you determine the failing FRU.

Note: If you exchange a disk unit, do not attempt to save customer data until instructed to do so in this procedure.

13. Power on the system.

Does an SRC appear on the control panel?

No Yes

- ↓ Go to step 16 of this procedure.

14. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

No Yes

- ↓ Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to “LIC-PIP11” on page 517 and use cause code 0002. If any of the reference codes are not 0000, go to step 11 of this procedure and use the reference code that is not 0000.

Note: Use the characters in the *Type* column to find the correct reference code table.

15. Look at the product activity log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

Yes No

- ↓ The last FRU you exchanged was failing.

Note: Before exchanging a disk unit, you should attempt to save customer data. Go to “Disk Unit” under “Chapter 6. Removal and Installation Procedures” on page 793 before exchanging a disk unit.

This ends the procedure.

16. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1007).

Is the SRC the same one that sent you to this procedure?

No Yes

SDIOP PIPs

↓ The last FRU you exchanged is not the failing FRU. Go to step 12 of this procedure to continue FRU isolation.

17. Is the SRC B100 4504 or B100 4505 and have you exchanged disk unit 1 in the system unit, or are all the reference codes on the console 0000?

Yes No

↓ Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

18. The last FRU you exchanged was failing.

Note: Before exchanging a disk unit, you should attempt to save customer data. Go to “Disk Unit” under “Chapter 6. Removal and Installation Procedures” on page 793 before exchanging a disk unit.

This ends the procedure.

SDIOP-PIP3

Introduction: This procedure isolates problems on the interface between the storage device I/O card and the storage devices when the I/O card is the most probable failing item.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Perform an IPL to dedicated service tool (DST) (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does a system reference code (SRC) appear on the control panel?

No Yes

↓ Go to step 5 of this procedure.

2. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

Yes No

↓ Go to step 4 of this procedure.

3. Does one of the following messages appear in the list?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode.

No Yes

↓ Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to “LIC-PIP11” on page 517 and use cause code 0002. If any of the reference codes are not 0000, go to step 5 of this procedure and use the reference code that is not 0000.

Note: Use the characters in the *Type* column to find the correct reference code table.

4. Look at the product activity log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

Yes **No**

- ↓ You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 341 to help determine part numbers and location in the system.

This ends the procedure.

5. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1007).

Is the SRC the same one that sent you to this procedure?

Yes **No**

- ↓ A different SRC occurred. Use the new SRC to correct the problem (see “Starting Point for All Problems” on page 4).

This ends the procedure.

6. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Disconnect one of the devices that are identified by FI code FI01107 (see “Failing Item (FI) Code Table” on page 341).
- c. Power on the system.

Does an SRC appear on the control panel?

No **Yes**

- ↓ Go to step 9 of this procedure.

7. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

No **Yes**

- ↓ Go to step 9 of this procedure.

8. Look at the product activity log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

Yes **No**

- ↓ The last FRU you disconnected is the failing FRU.

Exchange it and reconnect any other devices you disconnected in this procedure.

Note: Before exchanging a disk drive, you should attempt to save customer data. Go to “Start Disk Service Here” on page 879.

This ends the procedure.

SDIOP PIPs

9. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1007).

Is the SRC the same one that sent you to this procedure?

Yes **No**

↓ Go to step 12 of this procedure.

10. The last device you disconnected is not failing.

Have you disconnected the last device that is identified by FI01107?

Yes **No**

↓ Leave the device disconnected and go to step 6 of this procedure.

11. Reconnect all the devices you disconnected in this procedure. Then go to step 15 of this procedure.

12. Are you working in the system unit, is the SRC B1xx 4504, and has the load-source disk drive been disconnected?

No **Yes**

↓ Go to step 14 of this procedure.

13. Is the SRC A600 5090, and are the 4 leftmost characters of function 13 one of the following: 0002, 0006, 0008, or 0013, or does one of the following displays appear on the console:

- Disk Configuration Error Report (with all reference codes 0000)
- Disk Configuration Warning Report (with all reference codes 0000)
- Display Missing Load-Source Disk
- Display Unknown Load-Source Disk
- Display Active Mirrored Load-Source Disk

Yes **No**

↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Starting Point for All Problems” on page 4).

This ends the procedure.

14. Perform the following:

- a. Exchange the following parts:

- 1) The last device you disconnected.

Reconnect any other devices you disconnected in this procedure.

Note: Before exchanging a disk drive, you should attempt to save customer data. Go to “Start Disk Service Here” on page 879.

- 2) The parts listed in FI00096 (see “Failing Item (FI) Code Table” on page 341).

- b. Reconnect all the devices you disconnected in step 6 of this procedure.

This ends the procedure.

15. FI code FI01107 is not the failing part. Exchange the remaining FRUs in the failing item list one at a time.

This ends the procedure.

SDIOP-PIP13

Introduction: This procedure isolates problems on the interface between the I/O card and the storage devices when the I/O card is the most probable failing item.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Note: The unit reference code (part of the SRC that sent you to this procedure) indicates the SCSI bus that has the problem:

URC	SCSI Bus
3100	0
3101	1
3102	2

1. Were you performing an IPL from removable media (IPL type D) when the error occurred?

No **Yes**

↓ Exchange the FRUs in the failing item list for the reference code that sent you to this procedure.

2. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does an SRC appear on the control panel?

No **Yes**

↓ Go to step 7 of this procedure.

3. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure

Yes **No**

↓ Go to step 6 of this procedure.

4. On some of the displays that are listed in step 3 of this procedure, you must press F11 to display reference codes.

Are all of the reference codes 0000?

No **Yes**

↓ Go to “LIC-PIP11” on page 517 and use cause code 0002.

This ends the procedure.

5. Go to step 7 of this procedure and use the reference code that is not 0000.

6. Look at the product activity log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

Yes **No**

↓ You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59). If the failing item list contains FI

codes, see “Failing Item (FI) Code Table” on page 341 to help determine part numbers and location in the system.

This ends the procedure.

7. Is the SRC the same one that sent you to this procedure?

Yes No

↓ Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1007). Then go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

8. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Find the I/O card identified in the failing item list.
- c. Remove the I/O card and install a new I/O card (see “Chapter 6. Removal and Installation Procedures” on page 793). This item has the highest probability of being the failing item.
- d. Power on the system.

Does an SRC appear on the control panel?

No Yes

↓ Go to step 16 of this procedure.

9. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure

Yes No

↓ Go to step 15 of this procedure.

10. Does the Display Unknown Mirrored Load-Source Status display appear on the console?

Yes No

↓ Go to step 13 of this procedure.

11. Is the reference code the same one that sent you to this procedure?

No Yes

↓ Go to step 17 of this procedure.

12. Either a new reference code occurred, or the reference code is 0000. There may be more than one problem.

The original I/O card may be failing, but it must be installed in the system to continue problem isolation.

Install the original I/O card by doing the following:

- a. Power off the system.
- b. Remove the I/O card you installed in step 8 of this procedure and install the original I/O card.

Note: Do not power on the system now.

A device connected to the I/O card could be the failing item.

Go to SDIOP-PIP16, step 7 to continue isolating the problem.

This ends the procedure.

13. On some of the displays that are listed in step 9 of this procedure, you must press F11 to display reference codes.

Are all of the reference codes 0000?

No **Yes**

↓ Go to "LIC-PIP11" on page 517 and use cause code 0002.

This ends the procedure.

14. Go to step 16 of this procedure and use the reference code that is not 0000.
15. Look at the product activity log (see "Product Activity Log" in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

Yes **No**

↓ The I/O card, which you removed in step 8 of this procedure, is the failing item.

This ends the procedure.

16. Is the SRC or reference code the same one that sent you to this procedure?

Yes **No**

↓ Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 1007). Then go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

This ends the procedure.

17. The original I/O card is not the failing item.

Install the original I/O card by doing the following:

- a. Power off the system.
- b. Remove the I/O card you installed in step 8 of this procedure and install the original I/O card.

Note: Do not power on the system now.

A device connected to the I/O card could be the failing item.

Go to SDIOP-PIP16, step 7 on page 587 to continue isolating the problem.

This ends the procedure.

SDIOP-PIP16

Introduction: This procedure isolates failing devices that are identified by FI codes FI01105, FI01106, and FI01107. In this procedure, you will remove devices that are identified by the FI code. Then you will perform an IPL to determine if the symptoms of the failure have disappeared, or changed. You should not remove the load-source disk until you have shown that the other devices are not failing. Removing the load-source disk can change the symptom of failure, although it is not the failing unit.

SDIOP PIPs

Note: If the system has logical partitions, then refer to “Information About Logical Partitions” on page 781.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does an SRC appear on the control panel?

No **Yes**

↓ Go to step 6 of this procedure.

2. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure

Note: On the Disk Configuration Error Report display, the characters under *Type* are the same as the 4 leftmost characters of function 11-3. The characters under *Reference Code* are the same as the 4 rightmost characters of function 11-3.

Yes **No**

↓ Go to step 5 of this procedure.

3. On some of the displays that are listed in step 2 of this procedure, you must press F11 to display reference codes.

Are all of the reference codes 0000?

No **Yes**

↓ Go to “LIC-PIP11” on page 517 and use cause code 0002.

This ends the procedure.

4. Go to step 6 of this procedure and use the reference code that is not 0000.
5. Look at the Product Activity Log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is a reference code logged as a result of this IPL?

Yes **No**

↓ You cannot continue isolating the problem. Use the original reference code and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 341 to help determine part numbers and location in the system.

This ends the procedure.

6. Is the SRC or reference code the same one that sent you to this procedure?

Yes **No**

↓ Record the SRC or reference code on the Problem Summary Form. Then go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

7. Isolate the failing device by doing the following:
 - a. Power off the system if it is powered on (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Go to “Failing Item (FI) Code Table” on page 341 to find the devices identified by FI code FI01105, FI01106, or FI01107 in the failing item list.
 - c. Disconnect one of the devices that are identified by the FI code, other than the load-source disk unit.

Note: The tape, or optical units should be the first devices to be disconnected, if they are attached to the SCSI bus identified by FI01105, FI01106, or FI01107.

- d. Go to step 9 of this procedure.
8. Continue to isolate the possible failing items by doing the following:
 - a. Power off the system.
 - b. Disconnect the next device that is identified by FI codes FI01105, FI01106, or FI01107 in the FRU list. (See the note in step 7 of this procedure). Do not disconnect disk unit 1 (load-source disk) until you have disconnected all other devices and the load-source disk is the last device that is identified by these FI codes.
9. Power on the system.

Does an SRC appear on the control panel?

No Yes

↓ Go to step 14 of this procedure.

10. Does one of the following displays appear on the console?
 - Disk Configuration Error Report
 - Disk Configuration Warning Report
 - Display Unknown Mirrored Load-Source Status
 - Display Load-Source Failure

Note: On the Disk Configuration Error Report display, the characters under *Type* are the same as the 4 leftmost characters of function 11-3. The characters under *Reference Code* are the same as the 4 rightmost characters of function 11-3.

No Yes

↓ Go to step 14 of this procedure.

11. Look at the Product Activity Log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is a reference code logged as a result of this IPL?

No Yes

↓ Go to step 14 of this procedure.

12. You are here because the IPL completed successfully.
The last device you disconnected is the failing item.
Is the failing item a disk unit?

No Yes

↓ Exchange the failing FRU.

Note: Before exchanging a disk drive, you should attempt to save customer data. Go to “Start Disk Service Here” on page 879 before exchanging a disk unit.

This ends the procedure.

13. Exchange the failing item and reconnect the devices you disconnected previously (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

14. Is the SRC or reference code the same one that sent you to this procedure?

Yes No

↓ Record the SRC or reference code on the Problem Summary Form. Then go to step 17 of this procedure.

15. The last device you disconnected is not failing.

Have you disconnected all the devices that are identified by FI codes FI01105, FI01106, or FI01107 in the FRU list?

Yes No

↓ Leave the device disconnected and go to step 8 of this procedure to continue isolating the possible failing items.

16. You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 341 to help determine part numbers and location in the system.

This ends the procedure.

17. Is the SRC B1xx 4504, and have you disconnected the load-source disk unit?

Note: The load-source disk unit is disconnected by disconnecting disk unit 1.

No Yes

↓ Go to step 19 of this procedure.

18. Does one of the following displays appear on the console, and are all reference codes 0000?

- Disk Configuration Error Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure

Note: On the Disk Configuration Error Report display, the characters under *Type* are the same as the 4 leftmost characters of function 11-3. The characters under *Reference Code* are the same as the 4 rightmost characters of function 11-3.

Yes No

↓ A new SRC or reference code occurred. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

19. The last device you disconnected may be the failing item. Exchange the last device you disconnected (see “Chapter 6. Removal and Installation Procedures” on page 793).

Note: Before exchanging a disk drive, you should attempt to save customer data. Go to “Start Disk Service Here” on page 879 before exchanging a disk unit.

Was the problem corrected by exchanging the last device you disconnected?

No **Yes**

↓ **This ends the procedure.**

20. Reconnect the devices you disconnected previously in this procedure.
21. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59). Do not exchange the FRU that you exchanged in this procedure. If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 341 to help determine part numbers and location in the system.

This ends the procedure.

SDIOP-PIP17

Introduction: This procedure isolates problems that are associated with SCSI bus configuration errors and device task initialization failures.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Were you performing an IPL from removable media (IPL type D) when the error occurred?

No **Yes**

↓ Exchange the FRUs in the failing item list for the reference code that sent you to this procedure.

2. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does an SRC appear on the control panel?

No **Yes**

↓ Go to step 6 of this procedure.

3. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

Yes **No**

↓ Go to step 5 of this procedure.

4. Does one of the following messages appear in the list?
- Missing disk units in the configuration
 - Missing mirror protection disk units in the configuration
 - Device parity protected units in exposed mode.

SDIOP PIPs

No **Yes**

↓ Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to "LIC-PIP11" on page 517 and use cause code 0002. If any of the reference codes are not 0000, go to step 6 of this procedure and use the reference code that is not 0000.

Note: Use the characters in the *Type* column to find the correct reference code table.

5. Look at the product activity log (see "Product Activity Log" in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

Yes **No**

↓ You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 341 to help determine part numbers and location in the system.

This ends the procedure.

6. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 1007).

Is the SRC the same one that sent you to this procedure?

Yes **No**

↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see "Starting Point for All Problems" on page 4).

This ends the procedure.

7. Determine the device unit reference code (URC) from the SRC. If the Disk Configuration Error Report display or Disk Configuration Warning Report display appears on the console, the device URC is displayed under *Reference Code*. This is on the same line as the missing device. (See "System Reference Code (SRC) Record" in the *AS/400 Service Functions* information).

Is the device unit reference code 3020, 3021, or 3022?

Yes **No**

↓ Go to step 9 of this procedure.

8. A unit reference code of 3020, 3021, or 3022 indicates that there is a problem on an I/O card SCSI bus. The problem can be caused by a device that is attached to the I/O card that:

- Is not supported.
- Does not match system configuration rules. For example: There are too many devices that are attached to the bus.
- Is failing.

Perform the following:

- a. Look at the characters on the control panel Data display or the Problem Summary Form for function 13.

Use the format BBBB-Cc-bb (BBBB = bus, Cc = card, bb = board) to determine the card slot location for the I/O card (see "System Unit Locations and Addresses" on page 695).

- b. The unit reference code indicates the SCSI bus that has the problem:

URC	SCSI Bus
3020	0
3021	1
3022	2

To find the bus and device locations, see "System Unit Locations and Addresses" on page 695.

- c. Find the printout that shows the system configuration from the last IPL and compare it to the present system configuration.

Note: If configuration is not the problem, a device on the SCSI bus may be failing.

If you need to perform isolation on the SCSI bus, go to "SDIOP-PIP16" on page 585.

This ends the procedure.

9. The possible failing items are FI codes FI01105 (90%) and FI01112 (10%).

Find the device unit address from the SRC (see "SRC Address Formats" on page 740). Use this information to find the physical location of the device. Record the type and model numbers to determine if the addressed I/O card supports this device.

Is the device given support on your system?

Yes **No**

↓ Go to step 12 of this procedure.

10. Perform the following:

- Exchange the device.
- Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

Does this correct the problem?

No **Yes**

↓ **This ends the procedure.**

11. Ask your next level of support for assistance.

This ends the procedure.

12. Perform the following:

- Remove the device.
- Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

Does this correct the problem?

No **Yes**

↓ **This ends the procedure.**

13. Ask your next level of support for assistance.

This ends the procedure.

SDIOP-PIP18

Introduction: This procedure isolates problems that are associated with SCSI bus configuration errors and device task initialization failures.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does an SRC appear on the control panel?

No **Yes**

↓ Go to step 5 of this procedure.

2. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

Yes **No**

↓ Go to step 4 of this procedure.

3. Does one of the following messages appear in the list?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode.

No **Yes**

↓ Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to “LIC-PIP11” on page 517 and use cause code 0002. If any of the reference codes are not 0000, go to step 5 of this procedure and use the reference code that is not 0000.

Note: Use the characters in the *Type* column to find the correct reference code table.

4. Look at the product activity log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

Yes **No**

↓ You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 341 to help determine part numbers and location in the system.

This ends the procedure.

5. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1007).

Is the SRC the same one that sent you to this procedure?

Yes **No**

- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Starting Point for All Problems” on page 4).

This ends the procedure.

6. Determine the device unit reference code (URC) from the SRC. If the Disk Configuration Error Report display or Disk Configuration Warning Report display appears on the console, the device URC is displayed under *Reference Code*. This is on the same line as the missing device. (See “Stage 1 System Reference Code (SRC) Definition” in the *AS/400 Service Functions* information).
Is the device unit reference code 3020?

Yes No

- ↓ Go to step 8 of this procedure.

7. A device reference code of 3020 indicates that a device is attached to the addressed I/O card. Either it is not supported, or it does not match system configuration rules. For example: There are too many devices that are attached to the bus.

Find the printout that shows the system configuration from the last IPL and compare it to the present system configuration.

Note: Use the unit address and the physical address in the SRC to help you with this comparison. If configuration is not the problem, a device on the SCSI bus may be failing. Use FI code FI00884 to help find the failing device. If you need to perform isolation on the SCSI bus, go to “SDIOP-PIP16” on page 585.

This ends the procedure.

8. The possible failing items are FI codes FI01105 (90%) and FI01112 (10%).
Find the device unit address from the SRC. Use this information to find the physical location of the device. Record the type and model numbers to determine if the addressed I/O card supports this device.

Is the device given support on your system?

Yes No

- ↓ Go to step 11 of this procedure.

9. Perform the following:
- Exchange the device.
 - Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does this correct the problem?

No Yes

- ↓ **This ends the procedure.**

10. Ask your next level of support for assistance.

This ends the procedure.

11. Perform the following:
- Remove the device.
 - Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does this correct the problem?

SDIOP PIPs

No Yes

↓ This ends the procedure.

12. Ask your next level of support for assistance.

This ends the procedure.

SDIOP-PIP19

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Note: If the Storage IOA is a 2740, 2748, or 2763 go to “(2740, 2748) Reference Codes” on page 147 with this SRC.

This procedure isolates the problem when the I/O card reports (during the IPL) that the cache adapter card is not the one it had at the last power off.

You were sent to this procedure from URC 9010, 9011, or 9013.

1. Go to SST or DST to determine if any other SRCs have occurred at about the same time as this error. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

Have any other I/O card or device SRCs occurred at about the same time as this error?

No Yes

↓ Use the other I/O card or device SRCs to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59)

This ends the procedure.

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

Yes No

↓ Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

This ends the procedure.

3. Find the location of the I/O card with the cache adapter card problem by performing one of the following:
 - If you can enter a command at the console, access system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.
 - If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:

- BBBB = hexadecimal offsets 4C and 4D.
- Cc = hexadecimal offset 51.
- bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F. See “System Unit Locations and Addresses” on page 695 for location information. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.

Have you determined the location of the I/O card that is reporting the problem?

Yes **No**

↓ Ask your next level of support for assistance.

This ends the procedure.

4. **Attention:** If the URC is 9010, the I/O card needs to retrieve data from the correct cache adapter card. If the correct cache adapter card is not installed, customer data will be lost.

Attention: If the URC is 9011 or 9013, the cache adapter card has data in its storage that may belong to another I/O card. Customer data from the other I/O card may be lost.

Do you want to continue with the cache adapter card that is installed now and accept the data loss?

No **Yes**

↓ Go to step 8 of this procedure.

5. The correct cache adapter card must be installed in the I/O card. Find the cache adapter card that was removed from the I/O card.

Did you find the correct cache adapter card?

Yes **No**

↓ Go to step 7 of this procedure.

6. Perform the following:
- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Install the correct cache adapter card that you found (see “Chapter 6. Removal and Installation Procedures” on page 793).
 - c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 765)
 - d. Power on the system.
 - e. Go to step 9 of this procedure.
7. You may remove the cache adapter card and continue without a card temporarily. This will cause degraded performance until a card is installed.

Attention: When you install a new cache adapter card or continue without one, customer data is lost.

To continue without a cache adapter card, perform the following:

- a. Power off the system.
- b. Remove the cache adapter card.

SDIOP PIPs

8. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

Attention: Continuing with this option will cause the loss of customer data. Reclaim the cache adapter card storage (see “Reclaim IOP Cache Storage” on page 745).

Note: The system operator may want to restore data from the most recent saved tape after you complete the repair.

9. Does the IPL complete successfully?

No **Yes**

↓ **This ends the procedure.**

10. Go to “Starting Point for All Problems” on page 4 to correct the problem.
This ends the procedure.

SDIOP-PIP20

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates the problem when two or more devices are missing from a disk array.

You were sent to this procedure from URC 9020 or 9021.

1. Go to SST or DST to determine if any other SRCs have occurred at about the same time as this error. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

Have any other I/O card or device SRCs occurred at about the same time as this error?

No **Yes**

↓ Use the other I/O card or device SRCs to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59)

This ends the procedure.

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

Yes **No**

↓ Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

This ends the procedure.

3. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:

- If you can enter a command at the console, select system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.

- If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC.

4. Use the Product Activity Log entry that you found in step 3 of this procedure. Find and record all the array members that have both a present address of 0 and an expected address that is not 0. For a type A or B IPL, view the “Additional Information” to see the formatted log information. For a type D IPL, see “More Information from Hexadecimal Reports” in the *AS/400 Service Functions*.

These devices are missing from the disk array.

Note: There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

5. There are three possible ways to correct the problem:
 - a. Find the missing devices and install them in the correct physical locations in the system.
If you can find the missing devices and want to continue with this repair option, continue with step 6 of this procedure.
 - b. Stop the disk array that contains the missing devices.
Attention: Customer data may be lost.
If you want to continue with this repair option, go to step 8 of this procedure.
 - c. Initialize and format the remaining members of the disk array.
Attention: Customer data will be lost.
If you want to continue with this repair option, go to step 10 of this procedure.
6. Perform the following:
 - a. Install the missing devices in the correct locations in the system (see “Chapter 6. Removal and Installation Procedures” on page 793).
 - b. Power on the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Does the IPL complete successfully?

No **Yes**

↓ **This ends the procedure.**

7. Go to “Starting Point for All Problems” on page 4 to correct the problem.
This ends the procedure.
8. You have chosen to stop the disk array that contains the missing devices.
Attention: Customer data may be lost.

Perform the following:

- a. If you are not already using dedicated service tools, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
- b. Select the *Work with disk units* option.

SDIOP PIPs

Did you get to DST with a Type D IPL?

Yes **No**

↓

- 1) Select the *Work with disk configuration* option.
- 2) Select the *Work with device parity protection* option.

Then continue with the next step of this procedure.

- c. Select the *Stop device parity protection* option.
- d. Follow the online instructions to stop device parity protection.
- e. Perform an IPL from disk.

Does the IPL complete successfully?

No **Yes**

↓ **This ends the procedure.**

9. Go to “Starting Point for All Problems” on page 4 to correct the problem.

This ends the procedure.

10. You have chosen to initialize and format the remaining members of the disk array.

Attention: Customer data will be lost.

Perform the following:

- a. If you are not already using dedicated service tools, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

- b. Select the *Work with disk units* option.

Did you get to DST with a Type D IPL?

Yes **No**

↓

- 1) Select the *Work with disk unit recovery* option.
- 2) Select the *Disk unit problem recovery procedures* option.
- 3) Select the disk units on the display you identified in step 4 of this procedure.

Then continue with the next step of this procedure.

- c. Select the *Initialize and format disk unit* option.
- d. Follow the online instructions to format and initialize the disk units.
- e. Perform an IPL from disk.

Does the IPL complete successfully?

No **Yes**

↓ **This ends the procedure.**

11. Go to “Starting Point for All Problems” on page 4 to correct the problem.

This ends the procedure.

SDIOP-PIP21

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure determines the failing disk unit when, a disk unit is not compatible with other disk units in the disk array, or when a disk unit has failed. The disk array is running, but it is not protected.

You were sent to this procedure from URC 9025 or 9030.

1. Find the address of the I/O card that is reporting the problem, by performing one of the following:
 - If you can enter a command at the console, access system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
 - If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
2. Perform the following:
 - a. Return to the SST or DST main menu.
 - b. Select the *Work with disk units* option.
 - c. Select the *Display disk configuration* option.
 - d. Select the *Display disk configuration status* option.
 - e. On the Display disk configuration status display, look for the devices attached to the I/O card that is identified in step 1 of this procedure.
 - f. Find the device that has a status of “DPY/Unknown” or “DPY/Failed”. This is the device that is causing the problem. Show the device address by selecting the *Display Disk Unit Details* option. Then select the *Display Detailed Address* option and record the device address.
 - g. See “System Unit Locations and Addresses” on page 695 and find the diagram of the system unit, or the expansion unit and find the following:
 - The card slot that is identified by the I/O card direct select address
 - The disk unit location that is identified by the device address

Have you determined the location of the I/O card and disk unit that is causing the problem?

Yes No

↓ Ask your next level of support for assistance.

This ends the procedure.

3. Exchange the disk unit that is causing the problem (see “Start Disk Service Here” on page 879).

This ends the procedure.

SDIOP-PIP22

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:
 - If you can enter a command at the console, select system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.
 - If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC.

For a type A or B IPL, view the “Additional Information” to see the formatted log information. For a type D IPL, see “More Information from Hexadecimal Reports” in the *AS/400 Service Functions*.

Record all the information in the Product Activity Log entry for this SRC.

2. Ask your next level of support for assistance.

Note: Your next level of support may require the error information you recorded in the previous step.

This ends the procedure.

SDIOP-PIP23

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure corrects the problem when the system cannot find the required cache data for the attached disk units.

Note: For some storage I/O adapters, the cache card is integrated and not removable.

You were sent to this procedure from URC 9050.

1. Have any other I/O card or device SRCs occurred at about the same time as this error?

No Yes

- ↓ Use the other I/O card or device SRCs to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59)

This ends the procedure.

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

Yes No

- ↓ Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

This ends the procedure.

3. Were both an I/O card **and** the cache adapter card exchanged during the last repair action or reconfiguration?

Yes No

- ↓ Go to step 7 of this procedure.

4. Can you find the original cache adapter card that was exchanged during the last repair action or reconfiguration?

Yes No

- ↓ Go to step 8 of this procedure.

5. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Remove the cache adapter card from the I/O card and install the original cache adapter card (see “Chapter 6. Removal and Installation Procedures” on page 793).
- c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 765).
- d. Start an IPL by powering on the system.

Does the IPL complete successfully?

Yes No

- ↓ This is a new problem. Go to “Starting Point for All Problems” on page 4.

This ends the procedure.

6. The repair action corrected the problem.

This ends the procedure.

7. Have disk units been moved from another I/O card to this I/O card?

Yes No

- ↓ Ask your next level of support for assistance.

This ends the procedure.

8. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:

- If you can enter a command at the console, select system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
- If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions*

SDIOP PIPs

information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:

- BBBB = hexadecimal offsets 4C and 4D.
- Cc = hexadecimal offset 51.
- bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F.

9. For a type A or B IPL, view the "Additional Information" to see the formatted log information. For a type D IPL, see "More Information from Hexadecimal Reports" in the *AS/400 Service Functions*.

Record the addresses that are not 0000 0000 for all devices listed.

Note: There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

10. See "System Unit Locations and Addresses" on page 695 and find the diagram of the system unit, or the expansion unit. Then find the following:
 - The card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
 - The disk unit locations that are identified by the unit addresses.

Have you determined the location of the I/O card and disk units with the problem?

Yes **No**

↓ Ask your next level of support for assistance.

This ends the procedure.

11. There are three possible ways to correct the problem:
 - Physically remove the disk units you identified in step 8 of this procedure and return them to their original location.

If you want to continue with this repair option, continue with step 12 of this procedure.
 - Initialize and format the disk units you identified in step 8 of this procedure.

Attention: Customer data will be lost.

If you want to continue with this repair option, go to step 13 of this procedure.
 - Perform an IPL to DST and perform the Reclaim Cache Storage procedure.

Attention: Customer data will be lost.

If you want to continue with this repair option, go to step 14 of this procedure.

12. You have chosen to remove the problem disk units.

Perform the following:

- a. Physically remove the problem disk units and return them to their original location.

Note: The Product Activity Log I/O processor and cache adapter card information fields identify the type, serial number of the original I/O card, and cache adapter card to which the disk units should be returned.

- b. Select the IPL type and mode that are used by the customer.
 - c. Power on the system.
 - d. Go to step 15 of this procedure.
13. You have chosen to initialize and format the disk units you identified in step 8 of this procedure.

Attention: Customer data will be lost.

Perform the following:

- a. If you are not already using dedicated service tools, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
- b. Select the *Work with disk units* option.

Did you get to DST with a Type D IPL?

Yes No

↓

- 1) Select the *Work with disk unit recovery* option.
- 2) Select the *Disk unit problem recovery procedures* option.
- 3) Select the disk units on the display that you identified in step 8 of this procedure.

Then continue with the next step of this procedure.

- c. Select the *Initialize and format disk unit* option.
 - d. Follow the online instructions to format and initialize the disk units.
 - e. Perform an IPL from disk.
 - f. Go to step 15 of this procedure.
14. You have chosen to perform an IPL to DST and perform the Reclaim Cache Storage procedure.

Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

Reclaim the cache adapter card storage (see “Reclaim IOP Cache Storage” on page 745).

Note: The system operator may want to restore data from the most recent saved tape after you complete the repair.

15. Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

16. Go to “Starting Point for All Problems” on page 4 to correct the problem.
This ends the procedure.

SDIOP-PIP25

Introduction:

SDIOP PIPs

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates the problem when a device attached to the I/O card has functions that are not given support on the I/O card.

You were sent to this procedure from URC 9008.

1. Have any other I/O card or device SRCs occurred at about the same time as this error?

No **Yes**

↓ Use the other I/O card or device SRCs to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

Yes **No**

↓ Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

This ends the procedure.

3. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:
 - If you can enter a command at the console, select system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
 - If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:

- BBBB = hexadecimal offsets 4C and 4D.
- Cc = hexadecimal offset 51.
- bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F.

4. For a type A or B IPL, view the “Additional Information” to see the formatted log information. For a type D IPL, see “More Information from Hexadecimal Reports” in the *AS/400 Service Functions*.

Record the addresses that are not 0000 0000 for all devices listed.

Note: There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

5. See “System Unit Locations and Addresses” on page 695 and find the diagram of the system unit, or the expansion unit. Then find the following:
- The card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
 - The disk unit locations that are identified by the unit addresses.

Have you determined the location of the I/O card and the devices that are causing the problem?

Yes **No**

↓ Ask your next level of support for assistance.

This ends the procedure.

6. Have one or more devices been moved to this I/O card from another I/O card?

Yes **No**

↓ Ask your next level of support for assistance.

This ends the procedure.

7. Is the I/O card capable of supporting the devices attached, or is it in the correct mode to support the devices attached?

Note: For information on I/O card modes, see “Storage I/O Card Modes and Jumpers” on page 746.

Yes **No**

↓ Either change the I/O card mode or remove the devices from the I/O card (see “Start Disk Service Here” on page 879).

Note: You can remove disk units without installing other disk units and the system will continue to operate.

This ends the procedure.

8. Do you want to continue using these devices with this I/O card?

Yes **No**

↓ Remove the devices from the I/O card (see “Start Disk Service Here” on page 879).

Note: You can remove disk units without installing another disk unit, and the system will continue to operate.

This ends the procedure.

9. Initialize and format the disk units.

Attention: Data on the disk unit will be lost.

Perform the following:

- a. Access SST or DST(see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
- b. Select the *Work with disk units* option.

Did you get to DST with a Type D IPL?

Yes **No**

↓ Select the *Work with disk unit recovery* option.

SDIOP PIPs

Then continue with the next step of this procedure.

- c. Select the *Initialize and format disk unit* option for each disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete. This may take 30 minutes or longer.
- d. The disk unit is now ready to be added to the system configuration.

This ends the procedure.

SDIOP-PIP26

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure corrects the problem when the I/O card recognizes that the attached disk unit must be initialized and formatted.

You were sent to this procedure from URC 9092.

1. Have any other I/O card or device SRCs occurred at about the same time as this error?

No Yes

↓ Use the other I/O card or device SRCs to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

Yes No

↓ Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

This ends the procedure.

3. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:
 - If you can enter a command at the console, select system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product Activity Log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
 - If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:

- BBBB = hexadecimal offsets 4C and 4D.

- Cc = hexadecimal offset 51.
- bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F.

4. For a type A or B IPL, view the "Additional Information" to see the formatted log information. For a type D IPL, see "More Information from Hexadecimal Reports" in the *AS/400 Service Functions*.

Record the addresses that are not 0000 0000 for all devices listed.

Note: There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

5. See "System Unit Locations and Addresses" on page 695 and find the diagram of the system unit, or the expansion unit. Then find the following:
 - The card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
 - The disk unit locations that are identified by the unit addresses.

Have you determined the location of the I/O card and the devices that are causing the problem?

Yes **No**

↓ Ask your next level of support for assistance.

This ends the procedure.

6. Have one or more devices been moved to this I/O card from another I/O card?

Yes **No**

↓ Ask your next level of support for assistance.

This ends the procedure.

7. Do you want to continue using these devices with this I/O card?

Yes **No**

↓ Remove the devices from the I/O card (see "Start Disk Service Here" on page 879).

Note: You can remove disk units without installing another disk unit, and the system will continue to operate.

This ends the procedure.

8. Initialize and format the disk units.

Attention: Data on the disk unit will be lost.

Perform the following:

- a. Access SST or DST.
- b. Select the *Work with disk units* option.

Did you get to DST with a Type D IPL?

Yes **No**

↓ Select the *Work with disk unit recovery* option.

Then continue with the next step of this procedure.

- c. Select the *Initialize and format disk unit* option for each disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete. This may take 30 minutes or longer.

SDIOP PIPs

d. The disk unit is now ready to be added to the system configuration.

This ends the procedure.

SDIOP-PIP27

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

You were sent to this procedure with a unit reference code of 9051.

Note: For some storage I/O adapters, the cache card is integrated and not removable.

I/O card cache data exists for a missing or failed device. The possible causes are:

- One or more disk units have failed on the I/O card.
- The cache card of the I/O card was not cleared before it was shipped as a MES to the customer. In addition, the service representative moved devices from the I/O card to a different I/O card before performing a system IPL.
- The cache card of the I/O card was not cleared before it was shipped to the customer. In addition, residual data was left in the cache card for disk units that manufacturing used to test the I/O card.
- The I/O card and cache card were moved from a different system or a different location on this system after an abnormal power off.
- One or more disk units were moved either concurrently, or they were removed after an abnormal power off.

Note: Any Function 08 power down (including from a D-IPL) is an Abnormal power off!

Perform the following:

1. Display the Product Activity Log entry for URC 9051 by performing one of the following:
 - If you can enter a command at the console, access system service tools (SST) (see "System Service Tools (SST)" in the *AS/400 Service Functions* information). Select the Product Activity Log option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
 - If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information). Select the Product activity log option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
 - If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the Product Activity Log option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:
 - BBBB = hexadecimal offsets 4C and 4D.

- Cc = hexadecimal offset 51.
- bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F.

For a type A or B IPL, view the "Additional Information" to see the formatted log information. For a type D IPL, see "More Information from Hexadecimal Reports" in the *AS/400 Service Functions* information.

Record the device types and serial numbers for those devices that show a unit address of 0000 0000.

Note: There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

See "System Unit Locations and Addresses" on page 695 and find the diagram of the system unit, or the expansion unit. Find the card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.

2. If the devices from step 1 of this procedure have never been installed on this system, go to step 3 of this procedure. If the devices are not in the current system disk configuration, go to step 5 of this procedure. Otherwise, the devices are part of the system disk configuration; go to step 7 of this procedure.
3. If this I/O card and cache card were moved from a different system, go to step 4 of this procedure. Otherwise, the cache card was shipped to the customer without first being cleared. Make a note of both the serial number and the customer number, and the device types and their serial numbers. These were found in step 1 of this procedure. Then inform your next level of support. Then, go to step 6 of this procedure to clear the cache card and correct the URC 9051 problem.
4. You should install both the I/O card, and the cache cards back into their original locations. Then re-IPL the system. There could be data in the cache card for devices in the disk configuration of the original system. After an IPL to DST and a normal power off on the original system, the cache card will be cleared. It is then safe to move the I/O card and the cache card to another location.
5. One or more devices that are not currently part of the system disk configuration were installed on this I/O card. Either they were removed concurrently, or they were removed after an abnormal power off, or they have failed. Go to step 6 of this procedure to clear the cache card and correct the URC 9051 problem.
6. Use the Reclaim IOP Cache Storage procedure to clear data from the cache for the missing or failed devices as follows :
 - a. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).
If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
 - b. Reclaim the cache adapter card storage (see "Reclaim IOP Cache Storage" on page 745).
7. If this I/O card and cache card were moved from a different location on this system, go to step 4 of this procedure. If the devices from step 1 of this procedure are now installed on another I/O card, and they were moved there before the devices were added to the system disk configuration, go to step 3 of

SDIOP PIPs

this procedure. (On an MES, the disk units are sometimes moved from one I/O card to another I/O card. This problem will result if manufacturing did not clear the cache card before shipping the MES.) Otherwise, go to step 8 of this procedure.

8. One or more devices that are currently part of the system disk configuration are either missing or failed and have data in the cache card. This problem may be because devices were moved from the I/O card concurrently, or they were removed after an abnormal power off. If this is the case, locate the devices, power off the system and install the devices on the correct I/O card. If no devices were moved, look for other errors logged against the device, or against the I/O card that occurred at approximately the same time as this error. Continue the service action by using these system reference codes.

SDIOP-PIP28

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

You were sent to this procedure with a unit reference code of 9052.

Either cache data exists for a device that has been modified, or the cache card failed during system operation and became operational at the next system IPL.

1. Has a device currently under this storage I/O adapter been moved from a different I/O card?

No **Yes**

↓ **Attention:** Customer data may be lost.

Ask your next level of support for assistance.

This ends the procedure.

2. The cache card failed during system operation and became available at the next IPL. Perform the following:
 - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Remove the cache card.
 - c. Power on and IPL the system to DST.

If the problem is corrected, exchange the failing cache card (see “Chapter 6. Removal and Installation Procedures” on page 793).

Note: Disk units attached to the I/O card will continue to operate in degraded mode until the cache card is exchanged.

This ends the procedure.

SDIOP-PIP29

Introduction: The cache card is missing or failed.

You were sent to this procedure from URC 9012.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Find the location of the I/O card with the cache adapter card problem by performing one of the following:
 - If you can enter a command at the console, access system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.
 - If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:

 - BBBB = hexadecimal offsets 4C and 4D.
 - Cc = hexadecimal offset 51.
 - bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F. See “System Unit Locations and Addresses” on page 695 for location information. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.

Have you determined the location of the I/O card that is reporting the problem?

Yes **No**

↓ Ask your next level of support for assistance.

This ends the procedure.

2. The correct cache adapter card must be installed in the I/O card. Find the cache adapter card that was removed from the I/O card.

Attention: The I/O card needs to retrieve data from the correct cache adapter card. If the correct cache adapter card is not installed, customer data will be lost.

Did you find the correct cache adapter card?

Yes **No**

↓ Go to step 4 of this procedure.

3. Perform the following:
 - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Install the correct cache adapter card you found in step 2 (see “Chapter 6. Removal and Installation Procedures” on page 793).

SDIOP PIPs

- c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 765).
 - d. Power on the system.
 - e. Go to step 5 of this procedure.
4. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
- Attention:** Continuing with this option will cause the loss of customer data. Reclaim the cache adapter card storage (see “Reclaim IOP Cache Storage” on page 745).
- Note:** The system operator may want to restore data from the most recent saved tape after you complete the repair.
5. Does the IPL complete successfully?
- No Yes**
- ↓ **This ends the procedure.**
6. Go to “Starting Point for All Problems” on page 4 to correct the problem.
- This ends the procedure.**

SDIOP-PIP30

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure corrects the problem when the system cannot find the required cache data for the attached disk units.

You were sent to this procedure from URC 9050.

1. Did you just exchange the storage I/O adapter as a result of a failure?
- Yes No**
- ↓ Go to “SDIOP-PIP23” on page 600.
- This ends the procedure.**
2. You have just exchanged a storage I/O adapter.
- Attention:** Customer data may be lost.
- Perform the following:
- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Replace the new cache directory card with the original cache directory card from the failed storage I/O adapter (see “Cache Directory Card, For Type 2740, 2748” on page 824).
 - c. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

Note: This IPL will result in a 9010 URC. Ignore this and continue with the next steps.

3. Reclaim the cache storage (see “Reclaim IOP Cache Storage” on page 745).

Note: The system operator may want to restore data from the most recent saved tape after you complete the repair.

4. Does the IPL complete successfully?

Yes No

↓ Go to “Starting Point for All Problems” on page 4 to correct the problem.

This ends the procedure.

5. Before completing this service action, perform the following:
 - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Replace the cache directory card from the failed storage I/O adapter with the cache directory card that came with the replacement storage I/O adapter that you exchanged in step 2b on page 612. (See “Cache Directory Card, For Type 2740, 2748” on page 824.)
 - c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 765).
 - d. Power on the system.
6. Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

7. Go to “Starting Point for All Problems” on page 4 to correct the problem.

This ends the procedure.

SDIOP-PIP31

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Introduction: Cache data associated with the attached devices cannot be found.

You were sent to this procedure from URC 9010.

1. Did you just exchange the storage I/O adapter as a result of a failure?

Yes No

↓ Go to step 6 on page 614 of this procedure.

2. Reclaim the cache storage (see “Reclaim IOP Cache Storage” on page 745).

Note: The system operator may want to restore data from the most recent saved tape after you complete the repair.

3. Does the IPL complete successfully?

Yes No

SDIOP PIPs

- ↓ Go to “Starting Point for All Problems” on page 4 to correct the problem.

This ends the procedure.

4. Before completing this service action, perform the following:
 - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Replace the cache directory card from the failed storage I/O adapter with the cache directory card that came with the replacement storage I/O adapter (see “Cache Directory Card, For Type 2740, 2748” on page 824).
 - c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 765).
 - d. Power on the system.

5. Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

6. Have the I/O cards been moved or reconfigured recently?

Yes No

↓ Go to step 9 of this procedure.

7. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Restore all I/O cards to their original position.
- c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 765).
- d. Power on the system.

8. Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

9. Has the system been powered off for several days?

Yes No

↓ Ask your next level of support for assistance.

This ends the procedure.

10. The cache battery pack may be depleted. Do NOT replace the I/O adapter or the cache battery pack.

Reclaim the cache storage (see “Reclaim IOP Cache Storage” on page 745).

Note: The system operator may want to restore data from the most recent saved tape after you complete the repair.

11. Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

12. Ask your next level of support for assistance.

This ends the procedure.

SDIOP-PIP32**Introduction:**

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

You were sent to this procedure from URC 9011.

Attention: There is data in the cache of this I/O card, that belongs to devices other than those that are attached. Customer data may be lost.

1. Did you just exchange the storage I/O adapter as a result of a failure?

Yes No

↓ Go to step 5 of this procedure.

2. You have just exchanged a storage I/O adapter.

Reclaim the cache storage (see “Reclaim IOP Cache Storage” on page 745).

3. Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

4. Go to “Starting Point for All Problems” on page 4 to correct the problem.

This ends the procedure.

5. Have the I/O cards been moved or reconfigured recently?

Yes No

↓ Ask your next level of support for assistance.

This ends the procedure.

6. Perform the following:

a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

b. Restore all I/O cards to their original position.

c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 765).

d. Power on the system.

7. Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

8. Ask your next level of support for assistance.

This ends the procedure.

Storage Device I/O Card FRU Locations

Use Table 30 on page 616 to find FRU locations. If only a type number is listed, go to the “Type, Model, and Part Number List” on page 362 to determine the part number. If the failing item is an FI code, see “Failing Item (FI) Code Table” on page 341.

SDIOP PIPs

Note: See “System Unit Locations and Addresses” on page 695 to help find FRUs that are not in this table.

Table 30. Storage Device I/O card FRU Locations

FRU Description	Location Procedure
<ul style="list-style-type: none">• Diskette adapter (type 6146 or type 6147)• I/O card	Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.
Terminating plug	See the symbolic FRU “DEVTERM” in “Symbolic FRU Isolation” on page 374 for more information. Also see “System Unit Locations and Addresses” on page 695.

Service Processor Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure that has been detected by the service processor. This section covers the following items:

- Bus unit
- Magnetic storage I/O processor card
- Service processor card or a card in the wrong slot
- Match problems between the hardware and software
- Information needed to perform a removable media or a disk IPL from the control panel

Note: These procedures should be performed by selecting Manual mode on the control panel.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Attention: When removing or installing the service processor card, failure to follow the Cards procedure in “Chapter 6. Removal and Installation Procedures” on page 793 may damage the card, the card enclosure, or both.

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 761
- “Cards” on page 848
- “Hardware Service Manager” in the *AS/400 Service Functions* information

SP-PIP40

This procedure isolates a failing load-source IOP card.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

1. Record the extended reference code (ERC) information for function 13 on the control panel.

Is the ERC 1xxx?

No Yes

↓ Go to step 6 of this procedure.

2. Is the ERC 8xxx?

No Yes

↓ Go to step 9 of this procedure.

3. Is the SRC B1xx 4502?

No Yes

↓ Perform “Bus Problem Isolation Procedures” on page 442.

This ends the procedure.

4. Perform the following:
 - a. Exchange the MFIOP card (see “Chapter 6. Removal and Installation Procedures” on page 793).

b. Perform an IPL.

Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

5. Perform the following:
 - a. Exchange the system processor card.
 - b. Perform an IPL.

Service Processor PIPs

Does the IPL complete successfully?

No **Yes**

↓ **This ends the procedure.**

6. The problem is in the load-source device.

Perform the following:

- a. Find the load-source device and verify the correct connection of all cables.
- b. Perform an IPL.

Does the IPL complete successfully?

No **Yes**

↓ **This ends the procedure.**

7. Perform the following:

- a. Exchange the load-source device (see “Chapter 6. Removal and Installation Procedures” on page 793).
- b. Perform an IPL.

Does the IPL complete successfully?

No **Yes**

↓ **This ends the procedure.**

8. Go to step 11 of this procedure.

9. The control panel is the failing item.

Verify the correct connection of all control panel cables.

Does this correct the problem?

No **Yes**

↓ **This ends the procedure.**

10. Exchange the control panel (see “Chapter 6. Removal and Installation Procedures” on page 793).

Does this correct the problem?

No **Yes**

↓ **This ends the procedure.**

11. Ask your next level of support for assistance and provide the SRC information for functions 11-3 through 20-3.

This ends the procedure.

System Power Control Network (SPCN) Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure in the system power control network (SPCN).

Note: The C in the SRC (1xxC xxxx) indicates the problem is on the processor side. Any value other than C indicates the problem is **not** on the processor side.

Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 757 before disconnecting or removing the cryptographic I/O processor.

The following safety notices apply throughout this section.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

SPCN-PIP1

Introduction: This procedure isolates regulator problems.

Read the “Overview” on page 618 before continuing with this procedure.

Attention: AC power **must** be removed from the system before removing or installing regulators 17 or 18.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

1. Perform the following:
 - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Power on the system.

Does the same SRC that sent you to this procedure occur?

Yes No

↓ A different SRC or reference code occurred. Use the new SRC or reference code and go to “Starting Point for All Problems” on page 4.

This ends the procedure.

SPCN PIPs

2. Is the problem in the system unit (The Base I/O Tower (9251) is part of the model 650, 740, S40, and SB1 system unit)?

Yes **No**

↓ Go to step 16 of this procedure.

3. Power off the system.

4. Is the system you are working on a Model 650, 740, S40, or SB1?

Yes **No**

↓ Go to step 7 of this procedure.

5. Is the SRC on the Base I/O Tower 9251 (1xxC-xxxx)?

No **Yes**

↓ Go to step 16 of this procedure.

6. Perform the following:

- a. **Attention:** Read "Important Continuously Powered Main Storage (CPM) Information" on page 757.
- b. Perform "SPCN-PIP5" on page 623.
- c. Return here and continue with the next step of this procedure.

7. Perform the following:

Attention: To prevent overheating problems, do not remove any card completely from the card enclosure unless you install an airflow card in its place.

Using the SRC, try to determine the cards that are served by the regulator reporting the fault. (Example: regulators 1 and 2 supply the SPD cage assembly.)

Disconnect all cards served by the regulator reporting the fault. Do not disconnect any regulators or the Clock card.

Note: Disconnect the cards by pulling them out about one inch.

8. Power on the system.

Does a regulator SRC occur?

Yes **No**

↓ Go to step 13 of this procedure.

9. Perform the following:

- a. Power off the system.
- b. If the SRC identifies the failing regulator, start with that regulator.
- c. Remove one of the regulators and install a new regulator.
- d. Power on the system.

Does a regulator SRC occur?

Yes **No**

↓ The regulator that was removed in this step is the failing item.

This ends the procedure.

10. Perform the following:

- a. Power off the system.
- b. Remove the new regulator that you just installed and install the original regulator.

- c. Remove a different regulator (not previously removed) and install a new regulator.
- d. Power on the system.

Does a regulator SRC occur?

Yes **No**

↓ The regulator that was removed in this step is the failing item.

- 11. Repeat step 10 until a new regulator has been installed in all possible positions. Then continue with the next step.
- 12. In the failing unit, exchange the following FRUs, one at a time, until the problem is corrected (see “Chapter 6. Removal and Installation Procedures” on page 793).

Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 757 before disconnecting or removing the cryptographic I/O processor.

- a. BKSPCN
- b. BACKPLN

If the system has the same SRC after exchanging all the FRUs in the procedure, ask your next level of support for assistance.

This ends the procedure.

- 13. Do you have an SRC other than a regulator SRC?

No **Yes**

↓ A different SRC or reference code occurred. Use the new SRC or reference code and go to “Starting Point for All Problems” on page 4.

- 14. Perform the following:
 - a. Install one of the cards you removed in step 7 of this procedure.
 - b. Power on the system.

Does a regulator SRC occur?

No **Yes**

↓ Power off the system.

Exchange the last card installed.

This ends the procedure.

- 15. Repeat step 14 until all of the cards have been installed.
If a regulator SRC exists after completing this procedure, ask your next level of support for assistance.

This ends the procedure.

- 16. Perform the following:
 - a. Power off the system.
 - b. Do not remove the card enclosure AMD assembly.

Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 757 before disconnecting or removing the cryptographic I/O processor.

SPCN PIPs

Attention: To prevent overheating problems, do not remove any card completely from the card enclosure unless you install an airflow card in its place.

- c. Disconnect all the cards (except the regulators) in the expansion card enclosure by sliding them partially out of the card enclosure.
- d. Power on the system.

Does a regulator overcurrent SRC occur?

No **Yes**

↓ Go to step 20 of this procedure.

17. Perform the following:

- a. Power off the system.
- b. Connect one of the cards you disconnected in step 16 of this procedure.
- c. Power on the system.

Does a regulator fault SRC occur?

No **Yes**

↓ Exchange the regulator indicated by the SRC (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

18. Does a regulator SRC occur?

Yes **No**

↓ Repeat steps 17 and 18 of this procedure until you determine the failing card.

This ends the procedure.

19. Exchange the last card you reconnected in step 17 of this procedure (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

20. Perform the following:

- a. Power off the system.
- b. Remove all except one of the regulators.
- c. Power on the system.

Does the remaining regulator report an SRC?

Yes **No**

↓ Go to step 23 of this procedure.

21. Perform the following:

- a. Power off the system.
- b. Remove the remaining regulator and install one of the regulators you removed in step 20 of this procedure.
- c. Power on the system.

Does a regulator fault SRC occur?

Yes **No**

↓ Exchange the regulator you removed in this step.

This ends the procedure.

22. Exchange the following FRUs in the failing unit one at a time:

- a. BKSPCN if installed, if not installed the AC module
- b. Card enclosure

Note: Exchange all the failing items for the SRC that sent you here before exchanging the card enclosure.

This ends the procedure.

23. Perform the following:
 - a. Power off the system.
 - b. Install one of the regulators that was disconnected in step 20 of this procedure.
 - c. Power on the system.

Does a regulator fault SRC occur?

No Yes

↓ Exchange the regulator you just installed.

This ends the procedure.

24. Have all of the regulators that were removed in step 20 of this procedure been installed?

No Yes

↓ **This ends the procedure.**

25. Go to step 23 of this procedure.

SPCN-PIP5

Introduction: This procedure prepares a system with the Continuously Powered Main Storage (CPM) feature for hardware maintenance procedures.

Note: If you are able to select Function 6 on the system control panel, CPM is enabled.

Attention: Read the “Important Continuously Powered Main Storage (CPM) Information” on page 757 before continuing with this procedure.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

1. Is the background light for the Data display on the control panel on?

Note: The background light is a dim (yellow) light in the Data area on the control panel.

Yes No

↓ Go to step 4 of this procedure.

2. Attempt to select function 06 on the control panel. **Function 06 must be accessed with the control panel in manual mode when powered down.**

Can you select function 06 on the control panel?

Yes No

SPCN PIPs

↓ The CPM feature is disabled. You may continue with any hardware maintenance procedures. Return to the procedure that sent you here.

This ends the procedure.

3. Power on the system.

Does the system power on and complete an IPL successfully?

No Yes

↓ Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Go to step 5 of this procedure.

4. The background light for the Data display on the control panel is not on, or the system did not power on and complete an IPL successfully.

Is the background light for the Data display on the control panel on?

Yes No

↓ Perform the following:

- a. Power off the system.
- b. Disconnect all battery power from the system unit (see “Chapter 6. Removal and Installation Procedures” on page 793).
- c. Disconnect the mainline ac power cable from the customer’s power outlet.

Attention: Disconnecting the battery power unit from the system unit disables the CPM feature. Tell the customer that the next IPL will take longer than usual and data may be lost.

You may continue with any hardware maintenance procedures. Return to the procedure that sent you here.

This ends the procedure.

5. Attempt to select function 06 on the control panel.

Can you select function 06 on the control panel?

Yes No

↓ The CPM feature is disabled. You may continue with any hardware maintenance procedures. Return to the procedure that sent you here.

This ends the procedure.

6. **Attention:** Disconnecting the battery power unit from the system unit disables the CPM feature. Tell the customer that the next IPL will take longer than usual.

Scroll to function 06 and select D to disable the CPM feature. Scroll to function 06 again and ensure that it was disabled.

Note: It may take up to 1 minute for function 06 to be disabled.

Was function 06 disabled on the control panel?

No Yes

↓ You may continue with any hardware maintenance procedures. Return to the procedure that sent you here.

This ends the procedure.

7. Perform the following:
 - a. Power off the system.
 - b. **Attention:** Disconnecting the battery power unit from the system unit disables the CPM feature. Tell the customer that the next IPL will take longer than usual and data may be lost.
Disconnect all battery power from the system unit (see “Chapter 6. Removal and Installation Procedures” on page 793).
 - c. Disconnect the mainline AC power cable from the outlet.

You may continue with any hardware maintenance procedures. Return to the procedure that sent you here.

This ends the procedure.

SPCN-PIP10

Introduction: A power supply is failing. If the failure is in an expansion unit, go to “SPCN-PIP11” on page 630.

A bulk power supply with a blinking or unlit light (led) is an indication of a failure.

Read the “Overview” on page 618 before continuing with this procedure.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

Attention: AC power **must** be removed from the system before removing or installing regulators 17 or 18.

1. Perform the following:
 - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - b. Power on the system.

Does the same SRC that sent you to this procedure occur?

Yes No

↓ A different SRC occurred. Use the new SRC and go to “Chapter 2. Unit Reference Codes” on page 59.

This ends the procedure.

2. Does a 1xxx 7404 SRC occur?

No Yes

↓ Go to step 26 of this procedure.

3. Are you working on a model 650, 740, or S40?

Yes No

↓ Go to step 6 of this procedure.

4. Disconnect all regulators by sliding them partially out of the enclosure.
Power on the system.

SPCN PIPs

Does a power supply reference code occur?

Yes **No**

↓ Go to step 23 of this procedure.

5. Go to step 8.
6. Perform the following:
 - a. Power off the system.
 - b. **Attention:** Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read "Important Cryptographic I/O Processor Information" on page 757 before disconnecting or removing the cryptographic I/O processor.
 - c. **Attention:** Read "Important Continuously Powered Main Storage (CPM) Information" on page 757.
 - d. Perform "SPCN-PIP5" on page 623.
 - e. Remove all regulators, except one I/O type 2713, from the bus.
 - f. Power on the system.

Does a power supply reference code occur?

Yes **No**

↓ Go to step 23 of this procedure.

7. Perform the following:
 - a. Power off the system.
 - b. Remove the only I/O type 2713 regulator installed.
 - c. Install the other I/O type 2713 regulator that you removed in step 6.
 - d. Power on the system.

Does a power supply reference code occur?

Yes **No**

↓ The single I/O type 2713 regulator you just removed is the failing item.

This ends the procedure.

8. Perform the following:
 - a. Remove one of the AMDs from the system that was not previously removed during this procedure.
 - b. Power on the system.

Does a power supply reference code occur?

Yes **No**

↓ The AMD you removed in this step is the failing item.

This ends the procedure.

9. Have you removed all of the AMDs one at a time?

No **Yes**

↓ Install all the AMDs and continue with step 11 of this procedure.

10. Perform the following:
 - a. Power off the system.
 - b. Install the AMD that was removed in step 8 in the original location.
 - c. Go to step 8.
11. Perform the following:

- a. Power off the system.
- b. Remove the battery power unit charger.
- c. Power on the system.

Does a power supply reference code occur?

Yes No

- ↓ The battery power unit charger you removed in this step is the failing item.

This ends the procedure.

12. Perform the following:
 - a. Power off the system.
 - b. Disconnect all the DASD and removable media units by pulling them out of the enclosure about one inch.
 - c. Power on the system.

Does a power supply reference code occur?

No Yes

- ↓ Go to step 16 of this procedure.

13. One of the DASD or Removable Media devices you removed in step 12 is the failing item.

Perform the following:

- a. Power off the system.
- b. Install one of the DASD or Removable media devices that was removed in step 12 in the original location.
- c. Power on the system.

Does a power supply reference code occur?

No Yes

- ↓ The DASD or Removable Media device installed in this step is the failing item.

This ends the procedure.

14. Have you installed all the DASD or Removable Media devices that were removed in step 12?

Yes No

- ↓ Go to step 13.

15. **This ends the procedure.**

16. Perform the following:
 - a. Power off the system.
 - b. Remove all except one of the power supplies from the system.
 - c. Power on the system.

Does a power supply reference code occur?

Yes No

- ↓ Go to step 20 of this procedure.

17. Perform the following:
 - a. Power off the system.
 - b. Remove the power supply that is installed.

SPCN PIPs

- c. Install one of the other power supplies (removed in step 16).
- d. Power on the system.

Does a power supply reference code occur?

Yes **No**

↓ The power supply you just removed in step 17 is the failing item.

This ends the procedure.

18. Perform the following:
 - a. Power off the system.
 - b. Exchange the SPCN card.
 - c. Power on the system.

Does a power supply reference code occur?

Yes **No**

↓ The SPCN card you exchanged is the failing item.

This ends the procedure.

19. Exchange the BACKPLN.

This ends the procedure.

20. Perform the following:
 - a. Power off the system.
 - b. Install one of the power supplies that was removed in step 16 of this procedure.
 - c. Power on the system.

Does a power supply reference code occur?

No **Yes**

↓ The power supply you installed in this step is the failing item.

This ends the procedure.

21. Have you installed all of the power supplies that were removed in step 16 of this procedure?

Yes **No**

↓ Go to step 20 of this procedure.

22. The problem is no longer present. You may have an intermittent problem.

This ends the procedure.

23. Perform the following:
 - a. Power off the system.
 - b. Install one of the regulators that were removed in either step 4 or 6.
 - c. Remove all bus load (processor, memory, IOP except the Clock card).
 - d. Power on the system.

Does a power supply reference code occur?

No **Yes**

↓ The regulator you just installed is the failing item.

This ends the procedure.

24. Have you installed all the regulators that were removed in either step 4 or 6 of this procedure?

Yes No

↓ Go to step 23 of this procedure.

25. **This ends the procedure.**

26. Are feature power supplies installed?

Yes No

↓ Go to step 30 of this procedure.

27. Perform the following:

- a. Power off the system.
- b. Remove the feature power supplies.
- c. Power on the system.

Does a 1xxx 7404 SRC occur?

No Yes

↓ Go to step 30 of this procedure.

28. Perform the following:

- a. Power off the system.
- b. Reconnect 1 of the feature power supplies removed in step 27 of this procedure.
- c. Power on the system.

Does a 1xxx 7404 SRC occur?

No Yes

↓ Exchange the feature power supply reconnected in this step. **This ends the procedure.**

29. Exchange the following one at a time:

- a. Second feature power supply (if installed).
- b. ACMODUL
- c. BACKPLN

This ends the procedure.

30. Perform the following:

- a. Power off the system.
- b. Remove the battery charger units.
- c. Power on the system.

Does a 1xxx 7404 SRC occur?

No Yes

↓ Go to step 32 on page 630 of this procedure.

31. Perform the following:

- a. Power off the system.
- b. Install one of the battery charger units removed in step 30 of this procedure.
- c. Power on the system.

Does a 1xxx 7404 SRC occur?

No Yes

↓ Exchange the battery charger unit installed in this step.

SPCN PIPs

32. Exchange the following one at a time:
 - a. Second battery charger unit (if installed)
 - b. ACMODUL
 - c. BACKPLN

This ends the procedure.

SPCN-PIP11

Introduction: A power supply is failing on a expansion. A power supply with a blinking light (led) or unlit led in a powered on system is an indication of a failure.

Read the "Overview" on page 618 before continuing with this procedure.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel.

1. Perform the following:
 - a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
 - b. Power on the system.

Does the same SRC that sent you to this procedure occur?

Yes No

↓ A different SRC occurred. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.

This ends the procedure.

2. Does a 1xxx 7404 SRC occur?

No Yes

↓ Go to step 21 on page 633 of this procedure.

3. Power off the system and disconnect the ac power cable.
4. Remove the covers. See "Covers" on page 828.
5. Is the SRC on a FC 5065 or 5066 expansion tower?

No Yes

↓ Go to step 28 on page 634.

6. Perform the following:
 - a. Disconnect all the I/O devices (tape, diskette, optical, and disk units) from the unit you are working on by sliding them partially out of the unit (see "Removable Media — Dedicated and Concurrent" on page 838).
 - b. Disconnect all cards (except regulators) from the front and rear by sliding them partially out of the card enclosure.
 - c. Disconnect the feature power supplies (if installed) from the unit you are working on (see "Power Supply" on page 837).
 - d. Disconnect all battery power units by sliding them partially out of the enclosure. (1xxx A300 SRC will appear, disregard it during this procedure).

- e. Disconnect the disk expansion unit power cable (if installed) at the top of the card enclosure.
- f. Reconnect the ac power cable to the unit you are working on.
- g. Power on the system.

Does a power supply reference code occur?

No Yes

↓ Exchange the following, one at a time, until the problem is resolved:

- a. AC module.
- b. Regulators in the card enclosure.
- c. Card enclosure AMD assembly.
- d. Control panel.
- e. Control panel cable.
- f. Card enclosure.

This ends the procedure.

7. Were feature power supplies removed in step 6 on page 630 ?

Yes No

↓ Go to step 10 of this procedure. (Refer to "FC 5065 and FC 5066 Expansion Towers" on page 708.)

8. Perform the following:

- a. Power off the system.
- b. Disconnect the ac power cable to the unit you are working on.
- c. Reconnect one feature power supply (see "Power Supply" on page 837).
- d. Reconnect the ac power cable to the unit you are working on.
- e. Power on the system.

Does a power supply reference code occur?

No Yes

↓ Exchange the last feature power supply you reconnected in this step (see "Power Supply" on page 837).

This ends the procedure.

9. Have you reconnected all the feature power supplies?

Yes No

↓ Repeat step 8 of this procedure.

10. Perform the following:

- a. Power off the system.
- b. Disconnect the ac power cable to the unit you are working on.
- c. Connect one battery power unit (see "Battery" on page 820).
- d. Connect the ac power cable to the unit you are working on.
- e. Power on the system.

Does a power supply reference code occur?

No Yes

SPCN PIPs

- ↓ Exchange the last battery charger unit you connected in this step (see “Battery” on page 820).

This ends the procedure.

11. Have you reconnected all the battery power units?

Yes No

- ↓ Go to step 10 on page 631 of this procedure.

12. Perform the following:

- a. Power off the system.
- b. Reconnect all of the I/O devices (tape, diskette, or disk units) you disconnected in step 6 of this procedure.
- c. Power on the system.

Does a power supply reference code occur?

Yes No

- ↓ Go to 15.

13. Perform the following:

- a. Power off the system.
- b. Disconnect all of the I/O devices (tape, diskette, or disk units) you connected in step 12 of this procedure.
- c. Reconnect one of the I/O devices (tape, diskette, or disk units) you disconnected in 13b.
- d. Power on the system.

Does a power supply reference code occur?

No Yes

- ↓ Exchange the last I/O device you reconnected in this step (see “Removable Media — Dedicated and Concurrent” on page 838).

14. Have you reconnected all the I/O devices?

Yes No

- ↓ Repeat 13 except for 13b.

15. Is the storage expansion unit installed?

Yes No

- ↓ **This ends the procedure.**

16. Perform the following:

- a. Power off the system.
- b. Reconnect the storage expansion unit power cable (PWR20X) at the top of the card enclosure.
- c. Install the AMD.
- d. Power on the system.

Does a power supply reference code occur?

Yes No

- ↓ **This ends the procedure.**

17. Perform the following:

- a. Power off the system.

- b. Disconnect all the disk units by sliding them partially out of the storage expansion unit.
- c. Power on the system.

Does a power supply reference code occur?

No Yes

↓ Exchange the following, one at a time, (see “FC 5065 or 5066 Expansion Tower Removal and Installation Procedures” on page 819):

- a. Storage expansion unit adapter.
- b. Storage expansion unit power cable.

This ends the procedure.

18. Perform the following:
- a. Power off the system.
 - b. Connect one disk unit you disconnected in step 17 on page 632 of this procedure.
 - c. Power on the system.

Does a power supply reference code occur?

No Yes

↓ Exchange the tray assembly of the last disk unit you connected in this step (see “FC 5065 or 5066 Expansion Tower Removal and Installation Procedures” on page 819).

This ends the procedure.

19. Have you reconnected all the disk units in the storage expansion unit?

Yes No

↓ Repeat 18.

20. **This ends the procedure.**

21. Are feature power supplies installed?

Yes No

↓ Go to step 25 on page 634 of this procedure.

22. Perform the following:
- a. Power off the system.
 - b. Remove the feature power supplies.
 - c. Power on the system.

Does a 1xxx 7404 SRC occur?

No Yes

↓ Go to 25 on page 634.

23. Perform the following:
- a. Power off the system.
 - b. Reconnect 1 of the feature power supplies removed in step 22 of this procedure.
 - c. Power on the system.

Does a 1xxx 7404 SRC occur?

No Yes

SPCN PIPs

↓ Exchange the feature power supply reconnected in this step.

This ends the procedure.

24. Exchange the following one at a time:
 - a. Second feature power supply (if installed).
 - b. ACMODUL
 - c. BACKPLN

This ends the procedure.

25. Perform the following:
 - a. Power off the system.
 - b. Remove the battery charger units.
 - c. Power on the system.

Does a 1xxx 7404 SRC occur?

No Yes

↓ Go to step 27 of this procedure.

26. Perform the following:
 - a. Power off the system.
 - b. Install one of the battery charger units removed in step 25 of this procedure.
 - c. Power on the system.

Does a 1xxx 7404 SRC occur?

No Yes

↓ Exchange the battery charger unit installed in this step.

27. Exchange the following one at a time:
 - a. Second battery charger unit (if installed)
 - b. ACMODUL
 - c. BACKPLN

This ends the procedure.

28. Perform the following:
 - a. Disconnect all the I/O devices (tape, diskette, optical, and disk units) from the unit you are working on by sliding them partially out of the unit (see Chapter 6, "Removal and Installation Procedures" in topic 2.1).
 - b. Remove and label all cards that are installed in the PCI card area.
 - c. Reconnect the ac power cable to the unit you are working on.
 - d. Power on the system.

Does a power supply reference code occur?

Yes No

↓ Go to step 37 on page 635 of this procedure.

29. Perform the following:
 - a. Power off the system.
 - b. Remove power supplies P02 and P03.
 - c. Power on the system.

Does a power supply reference code occur?

No Yes

↓ Go to step 32 of this procedure.

30. Perform the following:
- Power off the system.
 - Reconnect power supply P02 removed in step 29 on page 634 of this procedure.
 - Power on the system.

Does a power supply reference code occur?

No **Yes**

↓ Exchange the power supply P02 reconnected in this step.

This ends the procedure.

31. Exchange power supply P03.

This ends the procedure.

32. Perform the following:
- Power off the system.
 - Remove power supply P01.
 - Reconnect power supply P02 or P03.
 - Power on the system.

Does a power supply reference code occur?

Yes **No**

↓ Exchange the power supply P01.

This ends the procedure.

33. Perform the following:
- Remove one of the AMDs from the system that was not previously removed during this procedure. (Disregard a AMD SRC if it occurs during this step.)
 - Power on the system.

Does a power supply reference code occur?

Yes **No**

↓ The AMD you removed in this step is the failing item.

This ends the procedure.

34. Have you removed all of the AMDs one at a time?

No **Yes**

↓ Install all the AMDs and continue with step 36 of this procedure.

35. Perform the following:
- Power off the system.
 - Install the AMD that was removed in step 33 in the original location.
 - Go to step 33 of this procedure.

36. Replace BACKPLN.

This ends the procedure.

37. Perform the following:
- Power off the system.
 - Reconnect all cards that you removed in step 28 on page 634.

SPCN PIPs

- c. Reconnect the ac power cable to the unit you are working on.
- d. Power on the system.

Does a power supply reference code occur?

Yes **No**

↓ Go to step 40 of this procedure.

38. Perform the following:
- a. Power off the system.
 - b. Disconnect one of the cards you connected in step 37 on page 635 of this procedure.
 - c. Power on the system.

Does a power supply reference code occur?

Yes **No**

↓ Exchange the last card you disconnected in this step.

This ends the procedure.

39. Have you disconnected all the cards?

Yes **No**

↓ Repeat step 38 of this procedure.

40. Perform the following:
- a. Power off the system.
 - b. Reconnect all of the I/O devices (tape, diskette, or disk units) you disconnected in step 28 on page 634 of this procedure.
 - c. Power on the system.

Does a power supply reference code occur?

Yes **No**

↓

This ends the procedure.

41. Perform the following:
- a. Power off the system.
 - b. Disconnect all of the I/O devices (tape, diskette, or disk units) you connected in step 40 of this procedure.
 - c. Reconnect one of the I/O devices (tape, diskette, or disk units) you connected in this step 41b of this procedure.
 - d. Power on the system.

Does a power supply reference code occur?

No **Yes**

Exchange the last I/O device you reconnected in this step.

This ends the procedure.

42. Have you reconnected all the I/O devices?

Yes **No**

↓ Repeat step 41 of this procedure, except for step 41b.

43. Replace BACKPLN.

This ends the procedure.

SPCN-PIP20

Introduction: This procedure verifies that the lights and display on the following are operating correctly:

- System Unit.
- FC 505x Storage Expansion Unit.
- FC 507x System Unit Expansion.
- FC 508x Storage Expansion Tower.
- FC 9251 Base I/O Tower.
- FC 5065 or 5066 expansion tower.

Read the “Overview” on page 618 before continuing with this procedure.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

1. Perform the following:
 - a. Select function 04 (Lamp Test) on the control panel.
 - b. Press the Enter key.
2. Look at the display panels on the following:
 - System Unit
 - FC 505x Storage Expansion Unit.
 - FC 5065 or 5066 expansion tower.
 - FC 507x System Unit Expansion.
 - FC 508x Storage Expansion Tower.
 - FC 9251 Base I/O Tower.

Note: The SPCN lamp test is active for only 25 seconds after you press the Enter key.

Are all of the following lights on?

For the System Unit, the FC 505x Storage Expansion Unit, the FC 5065 or 5066 Expansion Tower, the FC 507x System Unit Expansion, and the FC 508x Storage Expansion Tower:

- Power-on light.
- Attention light.
- A five-by-seven dot pattern for the 8 or 32-character display as installed.

No Yes

↓ These control panel lights are working correctly.

This ends the procedure.

3. Exchange the following FRUs in the failing unit one at a time (see “Chapter 6. Removal and Installation Procedures” on page 793):
 - a. Control panel.
 - b. AC module.
 - c. Control panel cable.

This ends the procedure.

SPCN-PIP21

Introduction: This procedure verifies that the Remote Control Panel is operating correctly.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

Procedure:

1. Select function 04 (Lamp Test) on the control panel by clicking on the \uparrow until 04 appears, then click on Enter.

2. Look at the display panels on the System Unit.

Are all of the following lights on?

- Power-on light
- Attention light
- Manual light
- Normal light
- Auto light
- Secure light
- The 8-character display segments

No Yes

\downarrow The control panel lights are working correctly.

This ends the procedure.

3. Exchange the following FRU in the failing unit

- Remote Control Panel cable – 97H7584
- Operations Console Configuration cable — 97H7556

This ends the procedure.

Tape I/O Processor Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure detected by the tape I/O processor (TIOP) during an alternate IPL.

The System/370-type sequences are specifically for the 3422/3430 and 3480/3490 Tape Units. Therefore, the attachment of other System/370 devices is not valid.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 761
- “Cards” on page 848

TIOP-PIP1

This procedure isolates problems on the System/370 interface for the tape I/O processor (TIOP). It explains how to find the TIOP, the I/O device, System/370 interface cables, and terminating plugs. After you verify that the cables are correct, use an isolation procedure to find the failing part.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 638 before continuing with this procedure.

1. See “Tape I/O Processor Failing Items” on page 653 to find the TIOP, interface adapter cable, System/370 interface cables, I/O devices, and terminating plugs. Verify the following and correct if necessary before continuing with the next step of this procedure:
 - Ensure that all cable connections are correct and are tight.
 - Ensure that there are no pushed-back or damaged pins on the interface cable connectors, adapter cable connectors, terminating plugs, or device connectors.
 - Ensure that the Bus and Tag cables are in the correct location. They should be between the Interface Adapter cable box and the I/O device control unit. The Bus cable goes to Bus-In, and the Tag cable goes to Tag-In. The dark-colored connectors should be attached to the light-colored connectors.
 - The Bus terminating plug should be in the Bus-Out location in the device control unit. The Tag terminating plug should be in the Tag-Out location in the device control unit.

Tape IOP PIPs

Note: The 3490E Model Cxx has only one terminating plug.

- Ensure that all I/O devices have the correct address, as indicated in the system configuration list.
- Ensure that all I/O devices are powered on and that the I/O device is ready and either enabled or online. If necessary, see the service information for the specific I/O device.
- Ensure that the service switches on the device are set to the Off or Normal position.

2. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Power on the system in manual mode (see “Selecting IPL Type, Mode, and Speed” on page 765).

Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

3. Perform the “System/370 Interface Cable Wrap Test” on page 641. Then return here and answer the following question.

Did you find and correct a problem?

No Yes

↓ **This ends the procedure.**

4. Go to the service information for the specific tape unit and perform the procedures for an interface or channel problem. After completing the tape unit procedures, return to this step and answer the following question.

Did you find and correct a problem?

No Yes

↓ **This ends the procedure.**

5. Exchange the Bus terminating plug and the Tag terminating plug in the I/O device control unit.

6. Perform the following:

- a. Power off the system.
- b. Power on the system in manual mode

Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

7. Exchange the TIOP card (see “Chapter 6. Removal and Installation Procedures” on page 793).

Does the IPL complete successfully?

No Yes

↓ **This ends the procedure.**

8. Ask your next level of support for assistance.

This ends the procedure.

TIOP-PIP5

This procedure isolates the cause of an assign command failure.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 638 before continuing with this procedure.

1. Ask the system operator if the tape subsystem is shared with other systems.

Is the tape subsystem shared with other systems?

Yes No

↓ Ask your next level of support for assistance.

This ends the procedure.

2. Ask the system operator if another system was controlling the tape subsystem when the SRC that sent you here occurred.

Was another system controlling the tape subsystem when the SRC that sent you here occurred?

No Yes

↓ Wait for the other system to finish using the tape subsystem. Then ask the system operator to vary off the tape drive on the other system.

This ends the procedure.

3. Ask your next level of support for assistance.

This ends the procedure.

System/370 Interface Cable Wrap Test

This procedure determines if the tape I/O processor (TIOP) card or one of the cables that connects the TIOP to the tape device is failing. If a cable is failing, perform another analysis to find the failing signal lines. You may repair or exchange a failing cable.

Notes:

1. To perform this procedure, the tape unit must be the alternate IPL device.
2. To perform this procedure, you need one or both of the following:
 - Channel wrap block 1 (part 62X3403)
 - Channel wrap block 2 (part 6473051)

See “Channel Wrap Block 1” on page 777 and “Channel Wrap Block 2” on page 777.

These channel wrap blocks are stored with the system tools.

The tape subsystem configuration of the system determines the channel wrap blocks you need.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Is a 3490 Model Cxx Tape Unit connected to the system?

Tape IOP PIPs

No Yes

↓ Go to step 27 of this procedure.

- The tape subsystem cables are connected as shown in Figure 17.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

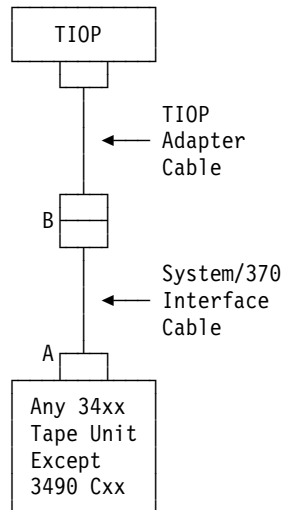


Figure 17. Tape Subsystem Cable Connections

Perform the following:

- Disconnect the System/370 interface cable from the I/O device control unit (at **A** in Figure 17).
 - Connect channel wrap block 1, part 62X3403, to the end of the System/370 interface cable (Bus to Bus and Tag to Tag). The channel wrap block 1 is stored with the system tools.
- Perform the following:
 - Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
 - Select IPL type D in manual mode (see “Selecting IPL Type, Mode, and Speed” on page 765).
 - Power on the system.

Does a TIOP reference code occur?

Note: This may take up to 5 minutes.

No Yes

↓ Go to step 6 of this procedure.

- Does a different reference code occur?

Yes No

↓ Ask your next level of support for assistance.

This ends the procedure.

- Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

6. Read the TIOP unit reference code (4 rightmost characters).

Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?

No Yes

- ↓ This is the normal reference code when the channel wrap block is connected and the cable string is not failing. The tape unit may be causing the problem.

Perform the following:

- a. Disconnect the channel wrap block from the device end of the System/370 interface cable.
- b. Reconnect the cable to the I/O device control unit.
- c. Return to the procedure that sent you here.

This ends the procedure.

7. Does TIOP reference code 3090 occur?

No Yes

- ↓ Go to step 10 of this procedure.

8. Does a different reference code occur?

Yes No

- ↓ Ask your next level of support for assistance.

This ends the procedure.

9. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

10. The wrap test detected a cable failure or TIOP card failure.

Perform the following:

- a. Disconnect channel wrap block 1 from the end of the System/370 interface cable.
- b. Disconnect the TIOP adapter cable from the System/370 interface cable (at **B** in Figure 17 on page 642).
- c. Connect channel wrap block 1 to the end of the TIOP adapter cable.

11. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does a TIOP reference code occur?

Note: This may take up to 5 minutes.

No Yes

- ↓ Go to step 14 of this procedure.

12. Does a different reference code occur?

Yes No

- ↓ Ask your next level of support for assistance.

This ends the procedure.

13. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

Tape IOP PIPs

This ends the procedure.

14. Read the TIOP unit reference code (4 rightmost characters).
Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?
No Yes
↓ This is the normal code when the channel wrap block is connected and the cable string is not failing. The System/370 interface cable (the one you disconnected from the cable string in step 10 of this procedure) is the failing item. Go to step 61 of this procedure.
15. Does TIOP reference code 3090 occur again?
No Yes
↓ Go to step 18 of this procedure.
16. Does a different reference code occur?
Yes No
↓ Ask your next level of support for assistance.
This ends the procedure.
17. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.
This ends the procedure.
18. You have isolated the problem to either the TIOP adapter cable or the TIOP card.
Perform the following:
 - a. Power off the system.
 - b. Exchange the TIOP card (see "Chapter 6. Removal and Installation Procedures" on page 793).
 - c. Select IPL type D in manual mode.
 - d. Power on the system.Does TIOP reference code 3090 occur again?
No Yes
↓ Go to step 22 of this procedure.
19. Does TIOP unit reference code 3100 occur?
No Yes
↓ This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the TIOP card, which you exchanged in step 18 of this procedure.
Perform the following:
 - a. Disconnect the channel wrap block from the end of the TIOP adapter cable.
 - b. Reconnect the TIOP adapter cable to the System/370 interface cable.
 - c. Reconnect the System/370 interface cable to the I/O device control unit.
 - d. Return to the procedure that sent you here.**This ends the procedure.**
20. Does a different reference code occur?
Yes No

↓ Ask your next level of support for assistance.

This ends the procedure.

21. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

22. Perform the following:

- a. Disconnect the channel wrap block from the end of the TIOP adapter cable.
- b. Exchange the TIOP adapter cable that is connected to the TIOP card.

23. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does TIOP reference code 3090 occur again?

No Yes

↓ Ask your next level of support for assistance.

This ends the procedure.

24. Does TIOP unit reference code 3100 occur?

No Yes

↓ This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the TIOP adapter cable, which you exchanged in step 22 of this procedure.

Perform the following:

- a. Reconnect the TIOP adapter cable to the System/370 interface cable.
- b. Reconnect the System/370 interface cable to the I/O device control unit.
- c. Return to the procedure that sent you here.

This ends the procedure.

25. Does a different reference code occur?

Yes No

↓ Ask your next level of support for assistance.

This ends the procedure.

26. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

27. You are here because a 3490 Model Cxx is connected to the system.

Is a System/370 interface cable connected in the cable string between the TIOP and the 3490 Model Cxx?

Yes No

↓ Go to step 66 of this procedure.

28. The tape subsystem cables are connected as shown in Figure 18 on page 646.

Tape IOP PIPs

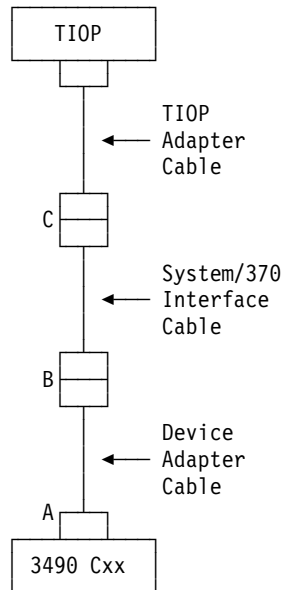


Figure 18. Tape Subsystem Cable Connections

Perform the following:

- a. Disconnect the device adapter cable from the I/O device control unit (at A in Figure 18).
- b. Connect channel wrap block 2, part 6473051, to the device end of the device adapter cable. The channel wrap block is stored with the system tools.

29. Perform the following:

- a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
- b. Select IPL type D in manual mode (see "Selecting IPL Type, Mode, and Speed" on page 765).
- c. Power on the system.

Does a TIOP reference code occur?

Note: This may take up to 5 minutes.

No **Yes**

↓ Go to step 32 of this procedure.

30. Does a different reference code occur?

Yes **No**

↓ Ask your next level of support for assistance.

This ends the procedure.

31. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

This ends the procedure.

32. Read the TIOP unit reference code (4 rightmost characters).

Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?

No **Yes**

- ↓ This is the normal reference code when the channel wrap block is connected and the cable string is not failing. The tape unit may be causing the problem.

Perform the following:

- a. Disconnect the channel wrap block from the device end of the device adapter cable.
- b. Reconnect the cable to the I/O device control unit.
- c. Return to the procedure that sent you here.

This ends the procedure.

33. Does TIOP reference code 3090 occur?

No Yes

- ↓ Go to step 36 of this procedure.

34. Does a different reference code occur?

Yes No

- ↓ Ask your next level of support for assistance.

This ends the procedure.

35. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

This ends the procedure.

36. The wrap test detected a cable failure or a TIOP card failure.

Perform the following:

- a. Disconnect channel wrap block 2 from the end of the device adapter cable.
- b. Disconnect the System/370 interface cable from the device adapter cable (at **B** in Figure 18 on page 646).
- c. Connect channel wrap block 1 (part 62X3403) to the end of the System/370 interface cable (Bus to Bus and Tag to Tag).

37. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does a TIOP reference code occur?

Note: This may take up to 5 minutes.

No Yes

- ↓ Go to step 40 of this procedure.

38. Does a different reference code occur?

Yes No

- ↓ Ask your next level of support for assistance.

This ends the procedure.

39. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

This ends the procedure.

40. Read the TIOP unit reference code (4 rightmost characters).

Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?

No Yes

Tape IOP PIPs

- ↓ This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the device adapter cable, which you disconnected from the cable string in step 36 of this procedure.

Perform the following:

- a. Exchange the device adapter cable.
- b. Disconnect the channel wrap block from the end of the System/370 interface cable.
- c. Reconnect the System/370 interface cable to the device adapter cable.
- d. Reconnect the device adapter cable to the I/O device control unit.
- e. Return to the procedure that sent you here.

This ends the procedure.

41. Does TIOP reference code 3090 still occur?

No Yes

- ↓ Go to step 44 of this procedure.

42. Does a different reference code occur?

Yes No

- ↓ Ask your next level of support for assistance.

This ends the procedure.

43. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

This ends the procedure.

44. You have isolated the problem to one of the remaining cables or to the TIOP card.

Perform the following:

- a. Disconnect channel wrap block 1 from the end of the System/370 interface cable.
- b. Disconnect the TIOP adapter cable from the System/370 interface cable (at C in Figure 18 on page 646).
- c. Connect channel wrap block 1 to the end of the TIOP adapter cable (Bus to Bus and Tag to Tag).

45. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does a TIOP reference code occur?

Note: This may take up to 5 minutes.

No Yes

- ↓ Go to step 48 of this procedure.

46. Does a different reference code occur?

Yes No

- ↓ Ask your next level of support for assistance.

This ends the procedure.

47. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.
This ends the procedure.
48. Read the TIOP unit reference code (4 rightmost characters).
Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?
- No Yes**
- ↓ This is the normal code when the channel wrap block is connected and the cable string is not failing. The System/370 interface cable (the one you disconnected from the cable string in step 44 of this procedure) is the failing item. Go to step 61 of this procedure.
49. Does TIOP reference code 3090 occur again?
- No Yes**
- ↓ Go to step 52 of this procedure.
50. Does a different reference code occur?
- Yes No**
- ↓ Ask your next level of support for assistance.
This ends the procedure.
51. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.
This ends the procedure.
52. You have isolated the problem to the TIOP adapter cable or the TIOP card.
Perform the following:
- Power off the system.
 - Exchange the TIOP card (see “Chapter 6. Removal and Installation Procedures” on page 793).
 - Select IPL type D in manual mode.
 - Power on the system.
- Does TIOP reference code 3090 still occur?
- No Yes**
- ↓ Go to step 56 of this procedure.
53. Does TIOP unit reference code 3100 occur?
- No Yes**
- ↓ This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the TIOP card, which you exchanged in step 52 of this procedure.
Perform the following:
- Disconnect the channel wrap block from the end of the TIOP adapter cable.
 - Reconnect the TIOP adapter cable to the System/370 interface cable.
 - Reconnect the System/370 interface cable to the I/O device control unit.
 - Return to the procedure that sent you here.
This ends the procedure.
54. Does a different reference code occur?
- Yes No**

Tape IOP PIPs

↓ Ask your next level of support for assistance.

This ends the procedure.

55. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

56. Exchange the TIOP adapter cable that is connected to the TIOP card.

57. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does TIOP reference code 3090 still occur?

No Yes

↓ Ask your next level of support for assistance.

This ends the procedure.

58. Does TIOP unit reference code 3100 occur?

No Yes

↓ This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the TIOP adapter cable, which you exchanged in step 56 of this procedure.

Perform the following:

- a. Reconnect the TIOP adapter cable to the System/370 interface cable.
- b. Reconnect the System/370 interface cable to the I/O device control unit.
- c. Return to the procedure that sent you here.

This ends the procedure.

59. Does a different reference code occur?

Yes No

↓ Ask your next level of support for assistance.

This ends the procedure.

60. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

61. Use “System/370 Interface Information” on page 771, channel wrap block 1, and a multimeter to perform a continuity check on the System/370 interface cable. This check is used to find any open or short circuits.

62. Repair the cable if possible.

Does the open or short circuit condition in the cable still exist after you repaired it?

Yes No

↓ Exchange the cable. Then go to step 64 of this procedure.

63. Connect the cables to their original locations (Bus to Bus and Tag to Tag).

64. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.

c. Power on the system.

Does the IPL complete successfully?

No **Yes**

↓ **This ends the procedure.**

65. Ask your next level of support for assistance.

This ends the procedure.

66. You are here because an internal channel cable is connected between the TIOP and the 3490 Model Cxx.

The tape subsystem cables are connected as shown in Figure 19.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

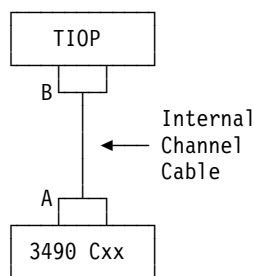


Figure 19. Tape Subsystem Cable Connections

Perform the following:

- a. Disconnect the internal channel cable from the I/O device control unit (at **A** in Figure 19).
- b. Connect channel wrap block 2, part 6473051, to the device end of the internal channel cable. The channel wrap block is stored with the system tools.

67. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Select IPL type D in manual mode (see “Selecting IPL Type, Mode, and Speed” on page 765).
- c. Power on the system.

Does a TIOP reference code occur?

Note: This may take up to 5 minutes.

No **Yes**

↓ Go to step 70 of this procedure.

68. Does a different reference code occur?

Yes **No**

↓ Ask your next level of support for assistance.

This ends the procedure.

69. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

Tape IOP PIPs

This ends the procedure.

70. Read the TIOP unit reference code (4 rightmost characters).

Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?

No Yes

- ↓ This is the normal code when the channel wrap block is connected and the cable string is not failing. You do not need to perform further analysis.

Perform the following:

- a. Disconnect the channel wrap block from the device end of the internal channel cable.
- b. Reconnect the cable to the I/O device control unit.
- c. Return to the procedure that sent you here.

This ends the procedure.

71. Does TIOP reference code 3090 occur?

No Yes

- ↓ Go to step 74 of this procedure.

72. Does a different reference code occur?

Yes No

- ↓ Ask your next level of support for assistance.

This ends the procedure.

73. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

74. The wrap test detected an internal channel cable failure or TIOP card failure.

Perform the following:

- a. Disconnect channel wrap block 2 from the end of the internal channel cable.
- b. Disconnect the internal channel cable from the TIOP card (at **B** in Figure 19 on page 651).
- c. Connect channel wrap block 2 to the TIOP card (at **B** in Figure 19 on page 651).

75. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does TIOP reference code 3090 occur again?

No Yes

- ↓ The failing item is the TIOP card.

Perform the following:

- a. Disconnect channel wrap block 2 from the TIOP card.
- b. Exchange the TIOP card (see “Chapter 6. Removal and Installation Procedures” on page 793).
- c. Reconnect the internal channel cable to the TIOP card (at **B** in Figure 19 on page 651).

- d. Reconnect the internal channel cable to the I/O device control unit (at **A** in Figure 19 on page 651).
- e. Return to the procedure that sent you here.

This ends the procedure.

76. Does TIOP unit reference code 3100 occur?

No Yes

- ↓ This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the internal channel cable, which you disconnected from the TIOP card in step 74 of this procedure.

Perform the following:

- a. Disconnect channel wrap block 2 from the TIOP card.
- b. Exchange the internal channel cable.
- c. Return to the procedure that sent you here.

This ends the procedure.

77. Does a different reference code occur?

Yes No

- ↓ Ask your next level of support for assistance.

This ends the procedure.

78. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

This ends the procedure.

Tape I/O Processor Failing Items

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Item Description
Tape I/O processor

Location Procedure

1. Read the address of the failing TIOP from the product activity log record or from the Problem Summary Form (see “Problem Summary Form Content (Example)” on page 655).
2. If needed, use the system configuration list with this address to physically find the TIOP card.

Bus and Tag terminating plugs

1. Read the address of the failing TIOP from the product activity log record or from the Problem Summary Form (see “Problem Summary Form Content (Example)” on page 655).
2. If needed, use the system configuration list with this address to physically find the I/O devices attached to the TIOP.
3. Find the control unit device attached to the interface cable. The Bus and Tag terminating plugs are in that control unit.

Tape IOP PIPs

Item Description

Interface cables

Location Procedure

1. Read the address of the failing TIOP from the product activity log record or from the Problem Summary Form (see "Problem Summary Form Content (Example)" on page 655).
2. If needed, use the system configuration list with this address to physically find the I/O devices attached to the TIOP.
3. The interface cables connect the TIOP to the device control unit. The failing item number for FI00850 is in "Failing Item (FI) Code Table" on page 341.

Attached I/O devices

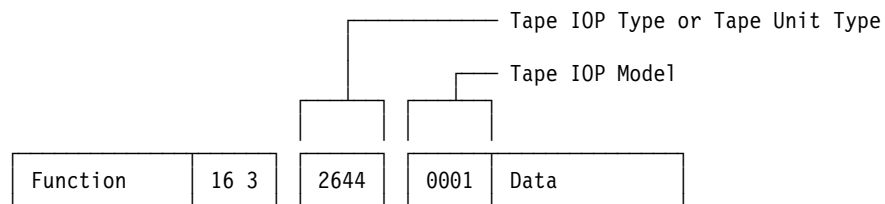
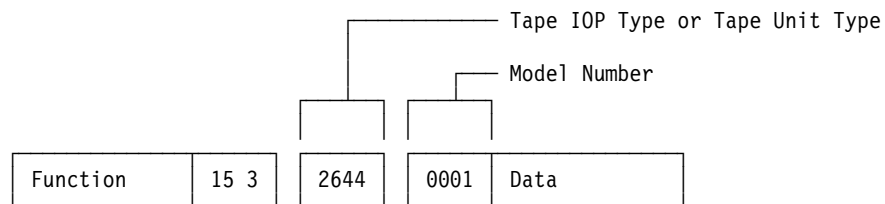
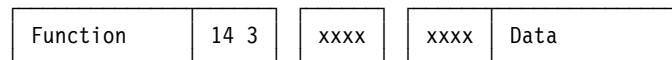
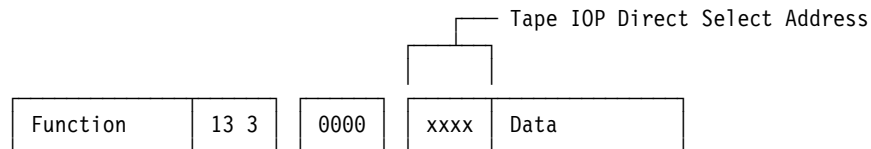
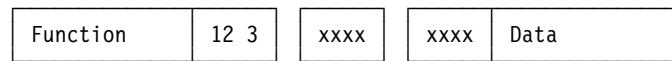
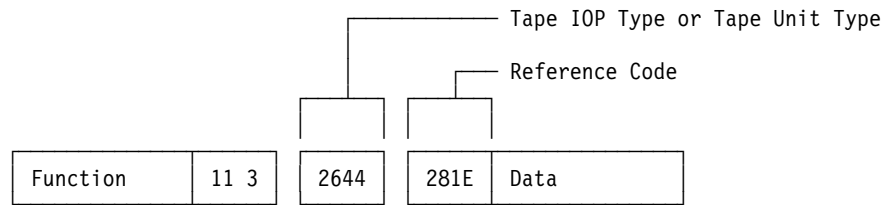
1. Read the address of the failing TIOP from the product activity log record or from the Problem Summary Form (see "Problem Summary Form Content (Example)" on page 655).
2. If needed, use the system configuration list with this address to physically find the I/O devices attached to the TIOP.

Note: Any one of the I/O devices attached to the TIOP may be the failing item.

Tape I/O processor card to cable adapter for the System/370 interface cable

1. Read the address of the failing TIOP from the product activity log record or from the Problem Summary Form (see "Problem Summary Form Content (Example)" on page 655).
2. Read the address of the failing I/O device from the product activity log record or from the Problem Summary Form.
3. If needed, use the system configuration list with this address to physically find the TIOP card.
4. The cable adapter connects the TIOP card to the System/370 interface cables.

Problem Summary Form Content (Example)



To display device sense data (if available):

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, select these functions from the system control panel, they are not available from the *partition status* screen.

1. Select function 25 (Service Switch 1).
2. Select function 26 (Service Switch 2).
3. Select function 55.
4. Select function 5515.
5. Record the data that is displayed from function 5515 (first control unit error code).
6. Select function 5516.
7. Record the data that is displayed from function 5516 (second and third control unit error codes).

Tape IOP PIPs

8. Select function 5518.
9. Record the data that is displayed from function 5518 (drive error codes).

Note: See “System Unit Locations and Addresses” on page 695 for information on direct select address and unit address.

Tape Unit Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure in a tape device.

In these procedures, the term *tape unit* may be any one of the following:

- An internal tape drive; this includes its electronic parts and status indicators
- An internal tape drive; this includes its tray, power regulator, and AMDs
- An external tape drive; this includes its power supply, power switch, power regulator, and AMDs

You should interpret the term *tape unit* to mean the tape drive you are working on. However, this document uses the terms *tape drive* and *enclosure* to indicate a more specific meaning.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 761
- “Initial Program Load (IPL) Information” in the *AS/400 Service Functions* information

TU-PIP1

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates tape unit power problems.

Read the “Overview” on page 656 before continuing with this procedure.

1. Is the tape unit in an external enclosure, and does the tape unit enclosure have a Power switch?

Yes **No**

↓ Go to “TU-PIP3” on page 661.

This ends the procedure.

2. Is the tape unit powered on?

Yes **No**

↓ Go to step 10 of this procedure.

3. Press the Unload switch on the front of the tape unit.

Is a data cartridge or a tape reel present?

Yes **No**

↓ Go to step 5 of this procedure.

4. Attempt to remove the data cartridge or tape reel from the tape unit.

Can you remove the data cartridge or tape reel?

Yes **No**

↓ The tape unit is the failing part.

Go to “TU-PIP3” on page 661.

Note: If the tape unit is an 8-mm tape drive, perform the following:

- a. Go to “Manually Removing the Tape Cartridge” on page 748.
- b. Go to “TU-PIP3” on page 661.

This ends the procedure.

5. Is the tape unit installed in an FC 5032 Removable Storage Unit?

No **Yes**

↓ Go to “TU-PIP5” on page 671.

This ends the procedure.

6. Are you working on an 8-mm tape drive?

Yes **No**

↓ Go to step 8 of this procedure.

7. Is the system powered on?

Yes **No**

↓ The 8-mm tape drive cannot operate if the system is powered off and the external I/O signal cable is connected.

Tape Unit PIPs

Perform the following:

- a. Disconnect the external I/O signal cable from the 8-mm tape drive.
- b. Continue with the next step of this procedure.

8. Is the tape unit Power light on?

Yes No

↓ Perform the following:

- a. Ensure that the power cable connects tightly to the power cable connector at the back of the tape unit.
- b. Ensure that the power cable connects to a power outlet that has the correct voltage.
- c. Go to step 10 of this procedure.

9. Set the tape unit Power switch to the Power Off position (see Table 31).

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Table 31. Power Off and Power On Positions of Tape Unit Power Switches

Operation	Power Switch Type	Toggle
		Push In/Out
Power Off	Down	Out
Power On	Up	In

10. Set the tape unit Power switch to the Power On position (see Table 31).

The Power light should go on and remain on. If a power problem is present, one of the following power failure conditions may occur:

- The Power light flashes, then remains off.
- The Power light does not go on.
- Another indication of a power problem occurs.

Does one of the above power failure conditions occur?

No Yes

↓ Perform the following:

- a. Go to the service information for the specific tape device to correct the power problem.
- b. When you have corrected the power problem, go to “TU-PIP3” on page 661.

This ends the procedure.

11. The tape unit is powered on and runs its power-on self-test. Wait for the power-on self-test to complete.

Does the power-on self-test complete successfully?

No Yes

↓ Go to “TU-PIP3” on page 661.

This ends the procedure.

12. Go to the service information for the specific tape device to correct the problem. Then go to “TU-PIP3” on page 661.

This ends the procedure.

TU-PIP2

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure performs the 8-mm tape drive read self-test and hardware self-test. The write test is performed in “TU-PIP3” on page 661.

Read the “Overview” on page 656 before continuing with this procedure.

1. Press the Unload switch on the front of the 8-mm tape drive.

Is a data cartridge present?

Yes **No**

↓ Go to step 3 of this procedure.

2. Attempt to remove the data cartridge.

Can you remove the data cartridge?

Yes **No**

↓ The tape drive is the failing part.

Go to “Manually Removing the Tape Cartridge” on page 748. After removing the data cartridge, exchange the tape drive (see Removable Media in “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

3. Clean the tape drive by using the cleaning cartridge (part 16G8467).

Note: If the tape drive ejects the cleaning cartridge with the Disturbance light on, a new cleaning cartridge is needed.

The tape drive unloads automatically when cleaning is complete. Cleaning takes up to 5 minutes.

Is the Disturbance light on continuously?

No **Yes**

↓ Repeat this step while using a new cleaning cartridge. If you are using a new cleaning cartridge and the Disturbance light does not go off, the possible failing part is the 8-mm tape drive.

Go to “TU-PIP3” on page 661.

This ends the procedure.

4. Is the Disturbance light blinking?

No **Yes**

↓

Tape Unit PIPs

- If the 8-mm tape drive is a type 6390, the possible failing part is the 6390 Tape Drive.
- If the 8-mm tape drive is a type 7208, the possible failing parts are:
 - a. 7208 Tape Drive
 - b. Power supply
 - c. AMD

Go to “TU-PIP3” on page 661.

This ends the procedure.

5. The 8-mm tape drive read self-test and hardware self-test can take up to 5 minutes to run.

The tape drive runs the read self-test first. During the read self-test, the Read-Write light blinks, and the Disturbance and Ready lights are off.

To start the read self-test and hardware self-test, insert the diagnostic cartridge (part 46G2660) into the tape drive.

The following conditions indicate that the read self-test ended successfully:

- The Read-Write light stops blinking.
- The diagnostic cartridge ejects automatically.
- The three status lights go on to indicate the start of the hardware test.

Does the read self-test end successfully?

No **Yes**

↓ Go to step 9 of this procedure.

6. Does the tape drive eject the diagnostic cartridge?

Yes **No**

↓ The tape drive is the failing part.

Go to “Manually Removing the Tape Cartridge” on page 748. After removing the diagnostic cartridge, exchange the tape drive (see Removable Media in “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

7. Is the Disturbance light blinking approximately four times per second?

No **Yes**

↓ The possible failing part is the diagnostic cartridge (part 46G2660).

If this is your first time through this step, get a new diagnostic cartridge. Go to step 3 of this procedure to clean the tape drive again. Afterwards, run the read self-test and hardware self-test while using the new diagnostic cartridge.

If this is your second time through this step, the possible failing part is the 8-mm tape drive.

Go to “TU-PIP3” on page 661.

This ends the procedure.

8. The Disturbance light is blinking approximately once per second.

- If the 8-mm tape drive is a type 6390, the possible failing part is the 6390 Tape Drive.
- If the 8-mm tape drive is a type 7208, the possible failing parts are:

- a. 7208 Tape Drive
- b. Power supply
- c. AMD

Go to "TU-PIP3".

This ends the procedure.

9. The tape drive runs the hardware self-test. During the hardware self-test, the three tape drive status lights are on for 15 to 30 seconds. The three status lights go off when the hardware self-test ends successfully.

Does the hardware self-test end successfully?

Yes No

↓ When the hardware self-test does not end successfully, the following conditions occur:

- The three status lights do not go off.
- The Ready and Read-Write lights go off.
- The Disturbance light blinks approximately once per second.

Possible failing parts are:

- If the 8-mm tape drive is a type 6390, the possible failing part is the 6390 Tape Drive.
- If the 8-mm tape drive is a type 7208, the possible failing parts are:
 - a. 7208 Tape Drive
 - b. Power supply
 - c. AMD

Go to "TU-PIP3".

This ends the procedure.

10. The read self-test and hardware self-test ended successfully.

Was the user's original tape identified as the probable cause of failure?

Yes No

↓ Go to "TU-PIP3".

This ends the procedure.

11. Perform the following:

- a. Mark and date the data cartridge to indicate that it failed with a permanent error.
- b. Discard this data cartridge when:
 - Volume statistics (if available) indicate a problem with the data cartridge.
 - A total of three permanent errors have occurred with the same data cartridge.
- c. If possible, continue operations with a new data cartridge.

Go to "TU-PIP3".

This ends the procedure.

TU-PIP3

Introduction:

Tape Unit PIPs

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

When you are directed to this procedure, you may need to exchange a failing part. You determined the failing part from one of the following:

- Other problem isolation procedures
- The *Failing Item* column of the tape unit reference code table
- Tape unit service guide

Note: Sometimes, the AS/400 system is available but not performing an alternate IPL (type D IPL). In this instance, any hardware failure of the tape unit I/O processor or any device attached to it is not critical. With the exception of the loss of the affected devices, the system remains available.

Read the “Overview” on page 656 before continuing with this procedure.

1. Do you need to exchange a possible failing device?

No **Yes**

↓ Perform the following:

For an internal tape unit, go to Removable Media “Chapter 6. Removal and Installation Procedures” on page 793.

For an external tape unit, go to the removal and installation procedures in the device service information.

2. Do you need to exchange the tape unit I/O processor?

No **Yes**

↓ Exchange the tape unit I/O processor (see “Chapter 6. Removal and Installation Procedures” on page 793). When you have completed the removal and installation procedure, continue with the next step of this procedure.

3. Are you working with a tape unit in the system unit or in an expansion unit?

Yes **No**

↓ Go to step 5 of this procedure.

4. Is the system available, and can you enter commands on the command line?

No **Yes**

↓ Go to step 12 of this procedure.

5. Display the selected IPL type (see “Selecting IPL Type, Mode, and Speed” on page 765).

Is the displayed IPL type D?

No **Yes**

↓ Go to step 8 of this procedure.

6. Do you want to perform an alternate IPL (type D)?

No **Yes**

↓ Go to step 8 of this procedure.

7. Perform an IPL from disk by doing the following:
 - a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
 - b. Select IPL type A in manual mode.
 - c. Power on the system.
 - d. Go to step 10 of this procedure.
8. Place the first tape of the latest set of SAVSYS tapes or SAVSTG tapes, or the first IBM Software Distribution tape in the alternate IPL tape drive. The tape drive automatically becomes ready for the IPL operation (this may take several minutes).

Note: Do not use the Model-Unique Licensed Internal Code tape.

9. Perform an alternate IPL by doing the following:
 - a. Power off the system.
 - b. Select IPL type D in manual mode.
 - c. Power on the system.
10. The IPL may take one or more hours to complete.
Does an unexpected SRC appear on the control panel, and is the System Attention light on?

No Yes

↓ Go to step 13 of this procedure.

11. Does the IPL complete successfully?

Yes No

↓ Go to "Starting Point for All Problems" on page 4 to continue analyzing the problem.

This ends the procedure.

12. Perform the following to test the tape unit:

- a. Enter
VFYTAP

(the Verify Tape command) on the command line.

- b. Follow the prompts on the Verify Tape displays, then return here and answer the following question.

Does the
VFYTAP

command end successfully?

No Yes

↓ **This ends the procedure.**

13. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 1007).

Is the SRC the same one that sent you to this procedure?

Yes No

↓ A different SRC occurred. Use the new SRC to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

This ends the procedure.

Tape Unit PIPs

14. You cannot continue to analyze the problem. Use the original SRC and exchange the FRUs. Begin with the FRU which has the highest percent of probable failure (see the failing item list for this reference code).

This ends the procedure.

TU-PIP4

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Use this procedure to reset an IOP and its attached tape units.

Note: If disk units are attached to an IOP, you must power off the system, then power it on to reset the IOP.

1. Is the tape unit powered on?

No **Yes**

↓ Perform the following:

- a. Press the Unload switch on the front of the tape unit you are working on.
- b. If a data cartridge or a tape reel is present, do not load it until you need it.
- c. Continue with the next step of this procedure.

2. Verify the following:

- If the external device has a power switch, ensure that it is set to the On position.
- Ensure that the power and external signal cables are connected correctly.

Note: For every 8-mm and 1/4-inch tape unit, the I/O bus terminating plug for the SCSI external signal cable is connected internally. These devices do not need and should not have an external terminating plug.

3. Did you press the Unload switch in step 1 of this procedure?

Yes **No**

↓ Press the Unload switch on the front of the tape unit you are working on.

If a data cartridge or a tape reel is present, do not load it until you need it.

Continue with the next step of this procedure.

4. Can you enter commands on the command line?

Yes **No**

↓ Go to step 12 of this procedure.

5. Has the tape unit operated correctly since it was installed?

Note: If you do not know, continue with the next step of this procedure.

Yes **No**

↓ Go to step 12 of this procedure.

6. If a system message displayed an I/O processor name, a tape unit resource name, or a device name, record the name for use in step 7 of this procedure. You may continue without a name.

Does the I/O processor give support to only one tape unit?

Note: If you do not know, continue with the next step of this procedure.

No **Yes**

↓ Perform the following:

- a. Enter

```
WRKCFGSTS *DEV *TAP ASTLVL(*INTERMED)
```

(the Work with Configuration Status command) on the command line.

- b. You must complete all parts of this step before you press the Enter key.

Note: If the device is not varied off, select the *Vary off* option before continuing.

- c. Select the *Vary on* option for the failing tape unit.

- d. Enter

```
RESET(*YES)
```

(the Reset command) on the command line.

- e. Press the Enter key.

This ends the procedure.

7. Steps 7 and 8 of this procedure determine if the I/O processor for the tape unit gives support to other tape units or to a disk unit.

Notes:

- a. If you cannot determine the tape unit you are attempting to use, go to step 12 of this procedure.
 b. System messages refer to other tape units that the I/O processor gives support to as *associated devices*.

Enter

```
WRKHDWRSC *STG
```

(the Work with Hardware Resources command) on the command line.

Did you record an I/O processor (IOP) resource name in step 6 of this procedure?

No **Yes**

↓ Perform the following:

- a. Select the *Work with resources* option for that resource.
 b. Record the *Configuration description* name of all tape units for which the I/O processor provides support.
 c. Record whether the I/O processor for the tape unit also gives support to any disk unit resources.

Tape Unit PIPs

- d. Go to step 9 of this procedure.
8. Perform the following:
 - a. Select the *Work with resources* option for each storage resource IOP (CMB01, SIO1, and SIO2 are examples of storage resource IOPs).
 - b. Find the Configuration Description name of the tape unit you are attempting to use. Record the Configuration Description names of all tape units that the I/O processor gives support to.
 - c. Record whether the I/O processor for the tape unit also gives support to any disk unit resources.
9. Does the I/O processor give support to any disk unit resources?
No Yes
↓ The *Reset* option is not available. Go to step 12 of this procedure.
10. Does the I/O processor give support to only one tape unit?
No Yes
↓ Perform the following:
 - a. Select the *Work with configuration description* option and press the Enter key.
 - b. Select the *Work with status* option and press the Enter key.
 - c. You must complete the remaining parts of this step before you press the Enter key.

Note: If the device is not varied off, select the *Vary off* option before continuing.
 - d. Select the *Vary on* option for the failing tape unit.
 - e. Enter
RESET(*YES)

(the Reset command) on the command line.
 - f. Press the Enter key.

This ends the procedure.
11. Perform the following:
 - a. Enter
WRKCFGSTS *DEV *TAP ASTLVL(*INTERMED)

(the Work with Configuration Status command) on the command line.
 - b. Select the *Vary off* option for the failing tape unit and associated devices (the devices you identified in step 7 or 8 of this procedure). Press the Enter key.
 - c. You must complete the remaining parts of this step before you press the Enter key.
 - d. Select the *Vary on* option for the failing tape unit.
 - e. Enter
RESET(*YES)

(the Reset command) on the command line.
 - f. Press the Enter key.

- g. Select the *Vary on* option for the associated devices (tape units) you identified in step 7 or 8 of this procedure. It is not necessary to use the *Reset* option again.

Does a system message indicate that the vary on operation failed?

Yes No

↓ **This ends the procedure.**

12. The *Reset* option is not available, or you were not able to find the Configuration Description name when using
WRKHDWRSC *STG

(the Work with Hardware Resources command).

You can perform an I/O processor (IOP) reset by performing an IPL of the I/O processor. All devices that are attached to the IOP will reset.

The following steps describe how to load an IOP, how to configure a tape drive, how to vary on tape devices, and how to make tape devices available.

13. Is the tape device you are working on an 8-mm tape drive?

Yes No

↓ Go to step 15 of this procedure.

14. Verify the following on the 8-mm tape drive:

- The power and external signal cables are connected correctly.
- The Power switch is set to the On position (pushed in).

Note: The SCSI I/O bus terminating plug for the system-external signal cables is connected internally in the 8-mm tape drive. The 8-mm tape drive does not need and must not have an external terminating plug.

Is the 8-mm tape drive Power light on, and is the Disturbance light off?

Yes No

↓ Go to "TU-PIP2" on page 659 to correct the problem.

This ends the procedure.

15. Is a data cartridge or a tape reel installed in the tape device?

No Yes

↓ Remove the data cartridge or tape reel. Then continue with the next step of this procedure.

16. Can you enter commands on the command line?

Yes No

↓ Perform the following:

- a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
- b. Power on the system.

The system performs an IPL and resets all devices. If the tape device responds to SCSI address 7, the AS/400 system configures the tape device.

This ends the procedure.

Tape Unit PIPs

17. Verify that automatic configuration is On by entering
DPSYSVAL QAUTOCFG

(the Display System Value command) on the command line.

Is the *Autoconfigure device* option set to 1?

Yes **No**

↓ Perform the following:

- a. Press the Enter key to return to the command line.
- b. Set automatic configuration to On by entering
CHGSYSVAL QAUTOCFG '1'

(the Change System Value command) on the command line.

Note: QAUTOCFG resets to its initial value in step 23 of this procedure,

- c. Continue with the next step of this procedure.

18. Perform the following:

- a. Enter
STRSST

(the Start SST command) on the command line.

- b. Select the *Start a Service Tool* option.
- c. Select the *Hardware Service Manager* option.
- d. Select the *Logical Hardware Resources* option.
- e. Select the *System Bus Resources* option.

The Logical Hardware Resources on System Bus display shows all of the IOPs.

- f. Find the IOP you want to reset.

Note: You **must** ensure that no one is using any of the tape units, communication channels, or display stations that are attached to the IOP you want to reset.

Does a "*" indicator appear to the right of the IOP description?

No **Yes**

↓ Disk units are attached to the IOP.

Perform the following:

- a. Press F3 until the Exit System Service Tools display appears.
- b. Press the Enter key.
- c. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
- d. Power on the system.

The system performs an IPL and resets all devices.

This ends the procedure.

19. Perform the following:

- a. Select the *I/O debug* option.

- b. Select the *IPL the I/O processor* option.
 - c. When the IOP reset is complete, continue with the next step of this procedure.
20. Perform the following:
- a. Press F12 to return to the Logical Hardware Resources on System Bus display.
 - b. Select the *Resources associated with IOP* option for the IOP you reset.

Did the IOP detect the tape unit?

Yes No

↓ The IOP did not detect the tape unit.

Ensure that the tape unit is powered on and that the signal cables are connected correctly. If you find and correct a power problem or a signal cable problem, return to step 18 of this procedure.

The tape unit may be failing. Go to the tape unit service information and perform the procedures for analyzing device problems. If you find and correct a tape unit problem, return to step 18 of this procedure.

If not, ask your next level of support for assistance.

This ends the procedure.

21. Press F3 until the Exit System Service Tools display appears. Then press the Enter key.
22. Was automatic configuration Off before you performed step 17 of this procedure?

Yes No

↓ **This ends the procedure.**

23. Enter
CHGSYSVAL QAUTOCFG '0'

(the Change System Value command) on the command line to reset QAUTOCFG to its initial value.

This ends the procedure.

Note: TU-PIP5 FOLLOWS PIP6.

TU-PIP6

Introduction: This procedure isolates a Device Not Found message during installation from an alternate device. There are several possible causes:

- The alternate installation device was not correctly defined.
- The alternate installation device was not made ready.
- The alternate installation device does not contain installation media.
- The alternate installation device is not powered on.
- The alternate installation device is not connected properly.
- There is a hardware error on the alternate installation device or the attached I/O Processor.

Tape Unit PIPs

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 656 before continuing with this procedure.

1. Is the device that you are using for alternate installation defined as the alternate installation device?

Yes **No**

↓ Correct the alternate installation device information and retry the alternate installation.

This ends the procedure.

2. Is the alternate installation device ready?

Yes **No**

↓ Make the alternate installation device ready and retry the alternate installation.

This ends the procedure.

3. Is there installation media in the alternate installation device?

Yes **No**

↓ Load the correct media and retry the alternate installation.

This ends the procedure.

4. Is the alternate installation device an external device?

Yes **No**

↓ Go to 11 of this procedure.

5. Is the alternate installation device powered on?

Yes **No**

↓ Go to step 8 of this procedure.

6. Make sure that the alternate installation device is properly connected to the I/O processor or I/O Adapter card.

Is the alternate installation device properly connected?

Yes **No**

↓ Correct the problem and retry the alternate installation.

This ends the procedure.

7. Go to step 11 of this procedure.

8. Ensure that the power cable is connected tightly to the power cable connector at the back of the alternate device. Ensure that the power cable is connected to a power outlet that has the correct voltage. Set the alternate device Power switch to the Power On position.

The Power light should go on and remain on. If a power problem is present, one of the following power failure conditions may occur:

- The Power light flashes, then remains off.
- The Power light does not go on.
- Another indication of a power problem occurs.

Does one of the above power failure conditions occur?

No **Yes**

↓ Perform the following:

- a. Go to the service information for the specific alternate device to correct the power problem.
- b. When you have corrected the power problem, retry the alternate installation.

This ends the procedure.

9. The alternate device is powered on and runs its power-on self-test. Wait for the power-on self-test to complete.

Does the power-on self-test complete successfully?

No **Yes**

↓ Retry the alternate installation.

This ends the procedure.

10. Go to the service information for the specific alternate installation device to correct the problem. Then retry the alternate installation.

This ends the procedure.

11. Was a device error recorded in the Product Activity Log?

No **Yes**

↓ See "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

This ends the procedure.

12. Contact your next level of support.

TU-PIP5

Introduction

This procedure isolates Field Replacable Units when the failing tape unit is installed in the FC 5032 Removable Storage Unit and is being used for an alternate IPL operation. For this operation, install the failing tape unit in position 1 or 3 of the FC 5032 Removable Storage Unit.

Note: The DSE module (differential to single-ended module) internal to the FC 5032 Removable Storage Unit terminates each external signal cable. No terminating plug is required. The DSE module converts two external differential signal I/O buses to four internal tape unit single-ended (SE) I/O buses. The DSE module connects Tape units as follows:

- Tape units in the top 5032 locations (positions 1 and 2) use the top external cable connector.
- Tape units in the bottom 5032 locations (positions 3 and 4) use the bottom external cable connector.

Each 1/4-inch tape unit has a terminating plug that terminates the internal single-ended I/O bus.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.

Tape Unit PIPs

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the "Overview" on page 656 before continuing with this procedure.

1. Is the Power On switch on the FC 5032 Removable Storage Unit set to the Power On position?
Yes No
↓ Set the Power On switch on the FC 5032 Removable Storage Unit to the Power On position.
This ends the procedure.
2. Is a data cartridge installed in the tape unit?
No Yes
↓ Remove the data cartridge. Then continue with the next step of this procedure.
3. Is the Power On light (green) on the front of the FC 5032 Removable Storage Unit on?
No Yes
↓ Go to step 7 of this procedure.
4. Perform the following:
 - a. Set the Power On switch on the FC 5032 Removable Storage Unit to the Power Off position.
 - b. Ensure that the tape unit power cable is connected correctly at the back of the tape unit and at the frame power control compartment (PCC).
 - c. Ensure that the PCC circuit breaker for the tape unit power cable is set to the I (on) position.
 - d. Set the Power On switch on the FC 5032 Removable Storage Unit to the Power On position.
5. Look at the display on the FC 5032 Removable Storage Unit control panel. The display may be blank, or it may have system power control network (SPCN) status codes in the following form:
 - 1RRN rrrr - Power faultWhere RR is the frame number, N is the port number, and rrrr is a reference code that is listed in "(1xxx) System Power Control Network (SPCN) Reference Codes" on page 65.

Is the display 1RRN rrrr?
No Yes
↓ Use the value for the reference code **rrrr** and go to "(1xxx) System Power Control Network (SPCN) Reference Codes" on page 65 to correct the problem.
This ends the procedure.
6. Is the Power On light (green) on the front of the FC 5032 Removable Storage Unit on?
Yes No
↓ Go to "Starting Point for All Problems" on page 4 to correct the problem.

This ends the procedure.

7. Is the tape indicator light on the front of the tape unit on?

No Yes

↓ The tape unit is failing. Exchange this tape unit (see Removable Media in “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

8. Insert the test data cartridge into the failing tape unit.

Does the tape indicator light (green) on the front of the tape unit go on for approximately 1 minute, then go off?

No Yes

↓ This tape unit is not failing.

If this is your first time through this procedure, go to step 13 of this procedure.

If this is your second time through this procedure, go to step 11 of this procedure.

If this is your third time through this procedure, go to step 12 of this procedure.

9. Perform the following:

a. Set the Power On switch on the FC 5032 Removable Storage Unit to the Power Off position.

b. Reseat the following:

- The tray for the failing tape unit
- The external signal cable at the FC 5032 Removable Storage Unit and at the I/O processor.

c. Set the Power On switch on the FC 5032 Removable Storage Unit to the Power On position.

Does the tape indicator light (green) on the front of the tape unit go on for approximately 1 minute, then go off?

No Yes

↓ You corrected the problem by reseating the items in this step.

This ends the procedure.

10. Insert a test data cartridge (part 21F8586) into the tape unit to the right of the tape unit you are using.

Note: A tape unit to the right of the tape unit being used may be causing the failure. The signal control lines from the left and right tape units are common at the FC 5032 DSE module internal I/O bus. A tape unit above or below the tape unit being used is *not* a probable cause of failure. (It is attached to a different internal DSE I/O bus.)

Does the tape indicator light (green) on the front of the tape unit to the right go on for approximately 1 minute, then go off?

Yes No

↓ Go to step 12 of this procedure.

11. Exchange the following field replacable units one at a time until you have corrected the problem:

Tape Unit PIPs

- a. Failing tape unit - 96%
- b. External signal cable - 1%
- c. DSE module - 1%
- d. If a tape unit is installed to the right of the tape unit in use, exchange that tape unit - 1%
- e. Cable carrier - 1%

Note: After exchanging each field replaceable unit, perform the following:

- a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
- b. Select IPL type D in manual mode (see "Selecting IPL Type, Mode, and Speed" on page 765).
- c. Power on the system.
- d. Select the first tape of the latest set of SAVSYS tapes, SAVSTG tapes, or the first IBM Software Distribution tape. Place it in the tape unit that is located in the system unit. The tape unit automatically becomes ready for the IPL operation (this may take several minutes).

This ends the procedure.

12. Exchange the following field replaceable units one at a time until you have corrected the problem:
 - a. I/O processor - 91%
 - b. DSE module - 4%
 - c. Cable carrier - 4%
 - d. External signal cable - 1%

Note: After exchanging each field replaceable unit, perform the following:

- a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
- b. Select IPL type D in manual mode (see "Selecting IPL Type, Mode, and Speed" on page 765).
- c. Power on the system.
- d. Select the first tape of the latest set of SAVSYS tapes, SAVSTG tapes, or the first IBM Software Distribution tape. Place it in the tape unit that is located in the system unit. The tape unit automatically becomes ready for the IPL operation (this may take several minutes).

This ends the procedure.

13. Perform the following:
 - a. Remove the test data cartridge from the tape unit.
 - b. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
 - c. Select IPL type D in manual mode (see "Selecting IPL Type, Mode, and Speed" on page 765).
 - d. Select the first tape of the latest set of SAVSYS tapes, SAVSTG tapes, or the first IBM Software Distribution tape. Place it in the tape unit that is located in the system unit. The tape unit automatically becomes ready for the IPL operation (this may take several minutes).

- Note:** Do not use the Model-Unique Licensed Internal Code tape.
- e. Power on the system.

This ends the procedure.

Tape Device Ready Conditions

Introduction

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

All the conditions that are listed for the device must be correct for the device to be ready.

Note: If the device is not ready, use the *Action* column or other instructions and go to the service information for the specific tape device.

Table 32. Tape Device Ready Conditions

Storage Device	Ready Description	Action
2440	<ul style="list-style-type: none"> • Power switch is set to the On position. • Power light is on. • Tape is loaded. • Status display shows A 0. • Online light is on. 	See the <i>IBM 2440 Magnetic Tape Subsystem Operator's Manual</i> G571-0149, for instructions on making the tape unit ready. If you cannot make the tape unit ready, go to the “MAPs” section of the <i>IBM 2440 Magnetic Tape Subsystem Service Guide</i> , G571-0166.
3422/3430	<ul style="list-style-type: none"> • Power switch is set to the On position. • Power light is on. • Enable/Disable switch is set to the Enable position. • Tape is loaded. • Ready light is on. 	See the <i>3422 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0090, or <i>3430 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0079, for instructions on making the tape unit ready.
3480/3490	<ul style="list-style-type: none"> • Power switch is set to the On position. • Power light is on. • DC Power light is on. • Control unit Online switch is set to the Online position. • Control unit Normal/Test switch is set to the Normal position. • Control unit channel Enable/Disable switch is set to the Enable position. • Tape unit Online/Offline switch is set to the Online position. • Tape is loaded. • Tape unit displays Ready U or Ready F. 	See the <i>3480 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0066, or <i>3490 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0124, for instructions on making the tape unit ready.

Tape Unit PIPs

Table 32. Tape Device Ready Conditions (continued)

Storage Device	Ready Description	Action
7208	<ul style="list-style-type: none"> • Power switch is on (pressed). • Power light is on. • Data cartridge is inserted. • Ready light is on. • System external signal cable is connected to the type 2621 I/O processor and to the 7208 Tape Drive. <p>Note: The SCSI I/O bus terminating plug for the system external signal cable is connected internally in the 7208 Tape Drive. The 7208 Tape Drive does not need, and must not have, an external terminating plug.</p>	See the <i>7208 8 mm Tape Drive Operator's Manual</i> for instructions on making the tape drive ready. If you cannot make the 7208 Model 012 Tape Drive ready, go to "TU-PIP2" on page 659.
9348	<ul style="list-style-type: none"> • Power switch is set to the On position. • Power light is on. • Tape is loaded. • Status display shows 00 A002. • Online light is on. 	See the <i>9348 Customer Information manual, SA21-9567</i> , for instructions on making the tape unit ready. If you cannot make the tape unit ready, go to the "Analyzing Problems" section of <i>9348 Tape Unit Service Information, SY31-0697</i> .

Twinaxial Workstation I/O Processor Problem Isolation Procedures

This section contains the procedures to isolate a failure which has been detected by the twinaxial workstation I/O processor.

Note: If you are using a personal computer, an emulation program must be installed and working.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see "Powering Off and Powering On the System or Expansion Tower" on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Attention: When instructed, remove and connect cables carefully. You may damage the connectors if you use too much force.

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 761
- “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information

TWSC-PIP1

The workstation IOP detected an error. One of the following occurred:

- All of the workstations on one port are not working.
- All of the workstations on the system are not working.
- One of the workstations on the system is not working.
- The reference code table instructed you to perform this procedure.
- The Remote Operations Console is not working.

Note: If you are using a Remote Operations Console, use “ROC-PIP3” on page 570 before using this procedure.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Are you using a workstation adapter console?

Note: A personal computer (used as a console) that is attached to the AS/400 system using a console cable feature is known as a workstation adapter console. The cable (P/N 46G0450, 46G0479, or 44H7504) connects the serial port on the personal computer to a communications I/O adapter on the AS/400 system.

No	Yes
-----------	------------

↓	Go to “WSAC-PIP1” on page 689.
---	--------------------------------

Twinaxial Workstation PIPs

This ends the procedure.

2. Is the device you are attempting to repair a personal computer (PC)?

No Yes

↓ PC emulation programs operate and report system-to-PC communications problems differently. See the PC emulation information for details on error identification.

Go to step 3 of this procedure.

3. Perform the following:

- a. Verify that all the devices you are attempting to repair, the primary console, and any alternative consoles are powered on.
- b. Verify that the all the devices you are attempting to repair, the primary console, and any alternative consoles have an available status. For more information on displaying the device status, see "Hardware Service Manager" in the *AS/400 Service Functions* information.
- c. Verify that the workstation addresses of all workstations on the failing port are correct. Each workstation on the port must have a separate address, from 0 through 6. See the workstation service information for details on how to check addresses.
- d. Verify that the last workstation on the failing port is terminated. All other workstations on that port must not be terminated.
- e. Ensure that the cables that are attached to the device or devices are tight and are not visibly damaged.
- f. If there were any cable changes, check them carefully.
- g. If all of the workstations on the system are not working, disconnect them by terminating at the console.
- h. Verify the device operation (see the device information for instructions).

Note: The cursor position can assist in problem analysis.

- The cursor in the upper left corner indicates a communication problem between the workstation IOP and the operating system. Perform the following to assist in problem analysis:
 - Verify that all current PTFs are loaded.
 - Ask your next level of support for assistance.
- The cursor in the upper right corner indicates a communication problem between the workstation IOP and the device.
 - Continue to the next step of this procedure to analyze the problem.

4. Is the system powered off?

Yes No

↓ Go to step 7 of this procedure.

5. Perform the following:

- a. Power on the system in Manual mode (see "Selecting IPL Type, Mode, and Speed" on page 765).
- b. Wait for a display to appear on the console or a reference code to appear on the control panel.

Does a display appear on the console?

No Yes

- ↓ If you disconnected any devices after the console in step 3 of this procedure, perform the following:
- Power off the system.
 - Reconnect one device.

Note: Ensure that you terminate the device you just reconnected and remove the termination from the device previously terminated.

- Power on the system.
- If a reference code appears on the control panel, go to step 8 of this procedure.
- If no reference code appears, repeat steps a through d of this step until you have checked all devices disconnected previously.
- Continue to perform the initial program load (IPL).

This ends the procedure.

6. Does the same reference code that sent you to this procedure appear on the control panel?

Yes No

- ↓ Go to “Starting Point for All Problems” on page 4 for this new problem.

This ends the procedure.

7. Perform the following to make DST available:
- Ensure that Manual mode on the control panel is selected (see “Selecting IPL Type, Mode, and Speed” on page 765).
 - Select function 21 (Make DST Available).
 - Check the console and any alternative consoles for a display.

Does a display appear on any of the console displays?

No Yes

- ↓ If you disconnected any devices after the console in step 3 of this procedure, perform the following:
- Power off the system.
 - Reconnect one device.

Note: Ensure that you terminate the device you just reconnected and remove the termination from the previously terminated device.

- Power on the system.
- If a reference code appears on the control panel, go to step 8 of this procedure.
- If no reference code appears, repeat steps a through d of this step until you have checked all devices disconnected previously.

Continue to perform the initial program load (IPL).

This ends the procedure.

8. Ensure that the following conditions are met:
- The workstation addresses of all workstations on the failing port must be correct.

Twinaxial Workstation PIPs

Each workstation on the port must have a separate address, from 0 through 6. See the workstation service information if you need help with checking addresses.

Did you find a problem with any of the above conditions?

Yes No

↓ Go to step 11 of this procedure.

9. Perform the following:
 - a. Correct the problem.
 - b. Select function 21 (Make DST Available).
 - c. Check the console and any alternative consoles for a display.

Does a display appear on any of the consoles?

No Yes

↓ Continue to perform the IPL.

This ends the procedure.

10. Does the same reference code appear on the control panel?

Yes No

↓ Go to "Starting Point for All Problems" on page 4 for this new problem.

This ends the procedure.

11. Is the reference code one of the following: 0001, 0003, 0004, 0005, 0006, 0101, 0103, 0104, 0105, 0106, 5004, 5082, B000, D010, or D023?

No Yes

↓ Go to step 15 of this procedure.

12. Does the system have an alternative console on a second workstation IOP?

Yes No

↓ Go to step 14 of this procedure.

13. There is either a Licensed Internal Code problem or two device failures on the workstation IOPs, consoles, or cables. The console and any alternative consoles are the most probable causes for this failure.

- See the service information for the failing display to attempt to correct the problem. If a display is connected to the system by a link protocol converter, use the link protocol converter information to attempt to correct the problem. The link protocol converter may be the failing item.
- If you have another working display, you can exchange the console and alternative consoles and perform an IPL to attempt to correct the problem.
- Exchange the following parts one at a time until you determine the failing item:
 - a. Console
 - b. Alternative console
 - c. Cables
 - d. Workstation IOA for the console
 - e. BACKPL2 (see "Chapter 8. Parts Listing" on page 909)

This ends the procedure.

14. The console, cables, or the workstation IOP card are the most probable causes for this failure. If the console is connected to the system by a link protocol converter, the link protocol converter is possibly the failing item.

Use one or more of the following options to correct the problem:

- See the service information for the failing displays for more information. If a display is connected to the system by a link protocol converter, see the link protocol converter information to attempt to correct the problem.
- If you have another working display, you can exchange the console and perform an IPL to attempt to correct the problem.
- Exchange the following parts one at a time until you determine the failing item:
 - a. Console
 - b. Workstation IOA
 - c. BACKPL2 (see “Chapter 8. Parts Listing” on page 909)
 - d. Twinaxial attachment (cable)

This ends the procedure.

15. To continue problem analysis, use a port tester, part 93X2040 or 59X4262, which you may have with your tools or the customer may have one. The port tester has either two or three lights.

Is a port tester available?

No Yes

↓ Go to step 18 of this procedure.

16. Check or exchange the cables from the system to the failing display.

Did this correct the problem?

Yes No

↓ Go to step 12 of this procedure.

17. You corrected the problem.

This ends the procedure.

18. **DANGER**

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

To use the port tester to isolate the problem, perform the following:

- Verify that the port tester is operating correctly by doing a self-test. A self-test can be made at any time, even when the port tester is attached to a port or cable. Perform the following steps to do a self-test:
 - a. Move the selector switch to the center (0) position.
 - b. Push and hold the test button until all lights go on. The yellow lights should go on immediately, and the green light should go on approximately 5 seconds later. The port tester is ready for use if all lights go on.
- Leave the system power on.

19. Find the input cable to the failing console or port.

Is the failing console or the failing port attached to a protocol converter?

No Yes

↓ Perform the following:

Twinaxial Workstation PIPs

- a. Disconnect the cable that comes from the system at the protocol converter.
 - b. Connect the port tester to the cable.
 - c. Go to step 21 of this procedure.
20. Perform the following:
- a. Disconnect the input cable from the failing console.
 - b. Connect the port tester to the input cable.
21. Set the selector switch on the port tester to the left (1) position for a twinaxial connection. Set the switch to the right (2) position for a twisted pair connection.

Press and hold the test switch on the port tester for 15 seconds and observe the lights.

If the port tester has three lights, do the following:

- If only the top (green) light is on, go to step 31 of this procedure.
- If both the top (green) and center (yellow) lights are on, go to step 23 of this procedure.

Note: The center (yellow) light is always on for twisted pair cable and may be on for fiber optical cable.

- If only the bottom (yellow) light is on, go to step 24 of this procedure.
- If all lights are off, go to step 25 of this procedure.
- If all lights are on, go to step 22 of this procedure.

If the port tester has two lights, do the following:

- If only the top (green) light is on, go to step 31 of this procedure.
- If only the bottom (yellow) light is on, go to step 24 of this procedure.
- If both lights are off, go to step 25 of this procedure.
- If both lights are on, continue with the next step of this procedure.

22. The tester is in the self-test mode. Check the position of the selector switch. If the selector switch is not in the correct position, go to step 21 of this procedure.

If the selector switch is already in the correct position, the port tester is not working correctly. Exchange the port tester and go to step 18 of this procedure.

23. The cable you are testing has an open shield.

Note: The open shield can be checked only on the cable from the twinaxial workstation attachment to the device or from device to device. Only one section of cable can be checked at a time. See the *Port Tester Use* information.

This ends the procedure.

24. The cable network is bad. The wires in the cable between the console and the twinaxial workstation attachment are reversed. Go to step 30 of this procedure.
25. Perform the following:
- a. Find the twinaxial workstation attachment to which the failing console is attached.
 - b. Disconnect the cable from port 0 on that twinaxial workstation attachment.
 - c. Connect the port tester to port 0 on the attachment.

- d. Set the selector switch on the port tester to the left (1) position.
26. Press and hold the test switch on the port tester for 15 seconds and observe the lights.

If the port tester has three lights, do the following:

- If both the top (green) and center (yellow) lights are on, continue with step 27 of this procedure.

Note: The center (yellow) light is always on for twisted pair cable and may be on for fiber optical cable.

- If only the bottom (yellow) light is on, continue with step 27 of this procedure.
- If all lights are off, continue with step 27 of this procedure.
- If only the top (green) light is on, go to step 29 of this procedure.
- If all lights are on, go to step 28 of this procedure.

If the port tester has two lights, do the following:

- If only the top (green) light is on, go to step 29 of this procedure.
- If only the bottom (yellow) light is on, continue with step 27 of this procedure.
- If both lights are off, continue with step 27 of this procedure.
- If both lights are on, go to step 28 of this procedure.

27. The test indicated that there was no signal from the system. Reconnect the cable you disconnected and perform the following:

a. Exchange the following parts:

- 1) Twinaxial workstation IOA card
- 2) BACKPL2 (see "Chapter 8. Parts Listing" on page 909)

b. Power on the system to perform an IPL.

This ends the procedure.

28. The tester is in the self-test mode. Check the position of the selector switch. If the selector switch is not in the left (1) position, set the switch to the left (1) position and go to step 26 of this procedure.

If the selector switch is already in the left (1) position, the port tester is not working correctly. Exchange the port tester and go to step 25 of this procedure.

29. The cable to the workstation is the failing item.

Continue with the next step of this procedure.

30. Cable maintenance is a customer responsibility.

See the information listed below for more information on correcting cable problems.

- If the IBM cable system is being used to attach the workstation, see the following information:
 - *IBM Cabling System Planning and Installation Guide*, GA27-3361
 - *Using the IBM Cabling System with Communication Products*, GA27-3620
 - *IBM Cabling System Problem Determination Guide for Twinaxial Applications*, GA21-9491
- If the telephone twisted-pair cable is being used to attach the console, see:
 - *IBM 5299 Model 3 Terminal Multiconnector and IBM Twinaxial to Twisted-pair Adapter Planning, Installation, and Problem Analysis Guide*, GA27-3749

Twinaxial Workstation PIPs

- If a twinaxial cable is being used to attach the console, see:
 - *IBM 5250 Information Display System Planning and Site Preparation Guide* , GA21-9337
 - *Twinaxial Cabling Troubleshooting Guide* , SY31-0703
- If a link protocol converter is being used to attach the console, see the link protocol converter service information for problem analysis.
- The cable must be repaired or exchanged.

Then power on the system to perform an IPL.

This ends the procedure.

31. The port tester detects most problems, but it does not always detect an intermittent problem or some cable impedance problems. The tester may indicate a good condition, although there is a problem with the workstation IOP card or cables.
 - If the failing display is connected to a link protocol converter, the link protocol converter is the failing item. See the link protocol converter service information to correct the problem.
 - Exchange the following parts:
 - a. Console
 - b. Twinaxial workstation IOA
 - c. BACKPL2 (see “Chapter 8. Parts Listing” on page 909)
 - d. Cables
 - If you have another working display, you can exchange the console and perform an IPL to attempt to correct the problem.
 - See the service information for the failing display for more information.
 - If exchanging the failing items does not correct the problem, and the reference code was 5002, 5082, or 50FF, there may be a Licensed Internal Code problem. Go to “LIC-PIP3” on page 510.
 - The problem may be caused by devices attached after the console on port 0.

This ends the procedure.

Workstation Adapter Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure that is detected by the workstation adapter. These procedures are used when no display is available with which to perform online problem analysis.

The workstation adapter detected a problem while communicating with the workstation that is used as the primary console.

Note: If you are using a PC, you must install an emulation program.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 761
- “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information

WS-PIP1

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 684 before continuing with this procedure.

Note: If the console has a keyboard error, there may be a K on the display. See the workstation service information for more information.

1. Are you using a workstation adapter console (type 6A58 or 6A59)?

Workstation Adapter PIPs

No Yes

↓ Go to "WSAC-PIP1" on page 689.

This ends the procedure.

2. Perform the following:
 - a. Select the icon on the workstation to make it the console (you may have already done this). You must *save* the console selection. For more information see *Local Device Configuration* and *LAN, Frame-Relay and ATM Support*.
 - b. Access dedicated service tools (DST) by performing the following:
 - 1) Select Manual mode on the control panel.
 - 2) Use the selection switch on the control panel to display function 21 (Make DST Available). Press Enter on the control panel.
 - 3) Wait for a display to appear on the console or for a reference code to appear on the control panel.

Does a display appear on the console?

No Yes

↓ The problem is corrected.

This ends the procedure.

3. Isolate the problem to one AS/400 system and one workstation (console) by doing the following:
 - a. Disconnect the power cable from the workstation.
 - b. Eliminate all workstations, cables, and connector boxes from the network except for one AS/400 system, one console, two connector boxes, and one cable.
 - c. Ensure that the cables that are connected to the console, the keyboard, and the AS/400 system are connected correctly and are not damaged.
4. Perform the following:
 - a. Ensure that the AS/400 system console is terminated correctly.
 - b. Set the Power switch on the console to the On position.
 - c. Select the SNA*PS icon on the console.

See the workstation information for more information.

5. Access DST by performing the following:
 - a. Select Manual mode on the control panel.
 - b. Use the selection switch on the control panel to display function 21 (Make DST Available). Press Enter on the control panel.
 - c. Wait for a display to appear on the console or for a reference code to appear on the control panel.

Does a display appear on the console?

No Yes

↓ The problem is in a cable, connector box, or device you disconnected in step 3 of this procedure.

This ends the procedure.

6. Does the reference code A600 5005 appear on the control panel?

Yes No

↓ Go to “Starting Point for All Problems” on page 4 to correct the problem.

This ends the procedure.

7. Do you have another workstation, cable, and two connector boxes you can exchange with the workstation connected to the AS/400 system?

Yes No

↓ Go to step 10 of this procedure.

8. Repeat steps 3 through 7 of this procedure, using a different workstation, cable, and connector boxes.

Do you still have a problem?

Yes No

↓ The problem is in the cable, connector boxes, or workstation you disconnected.

This ends the procedure.

9. One of the following is causing the problem:

- Workstation adapter Licensed Internal Code
- Workstation adapter configuration
- Workstation IOA
- Communications IOP

Note: The items at the top of the list have a higher probability of fixing the problem than the items at the bottom of the list.

To bring up a workstation other than the console, perform the following:

- a. Connect another workstation into this network.
- b. Select Normal mode on the control panel.
- c. Perform an IPL (see “Initial Program Load (IPL) Information” in the *AS/400 Service Functions* information).

If the sign-on display appears, the following parts are good:

- Communications IOP
- Workstation IOA

Note: If a printer connected to this assembly is not working correctly, it may look like the display is bad. Perform a self-test on the printer to ensure that it prints correctly (see the printer service information).

If you still have not corrected the problem, ask your next level of support for assistance.

This ends the procedure.

10. One of the following is causing the problem:

- Workstation adapter Licensed Internal Code
- Workstation adapter configuration
- Workstation
- Cable
- Connector box
- Workstation IOA

Workstation Adapter PIPs

- Workstation IOP

Note: The items at the top of the list have a higher probability of fixing the problem than the items at the bottom of the list.

If you still have not corrected the problem, ask your next level of support for assistance.

This ends the procedure.

Workstation Adapter Console Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure that is detected by the workstation adapter console. Use these procedures when no display is available with which to perform online problem analysis.

Note: If you are using a PC, you must install an emulation program.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 761) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 761
- “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information
- “Card Removal and Installation” in “Chapter 6. Removal and Installation Procedures” on page 793.
- “System Unit Locations and Addresses” on page 695

WSAC-PIP1

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 688 before continuing with this procedure.

Note: If the console has a keyboard error, there may be a K on the display. See the workstation service information for more information.

1. Ensure that your workstation meets the following conditions:
 - The workstation that you are using for the console is powered on.
 - The emulation program is installed and is working.
 - The input/output adapter (IOA) is installed into the MFIOP.
 - The workstation console cable is attached.

Notes:

a. Card information:

- Hardware that is associated with 6A58 feature is the type 2612 card.
- Hardware that is associated with 6A59 feature is the type 2609, 2721 , or 2745 card.

b. Cable information:

- If the IOA is type 2612, 2721 or 2745, the cable attaches directly to the IOA.
- If the IOA is type 2609, the cable attaches to the two-port adapter cable on the port labeled P2.

Did you find a problem with any of the conditions listed above?

No **Yes**

↓ Correct the problem. Then perform an IPL of the system.

This ends the procedure.

2. Perform the following to make dedicated service tool (DST) available:
 - a. If there is an alternative console, ensure that it is powered on.

Workstation Adapter Console PIPs

- b. Ensure that Manual mode on the control panel is selected (see “Selecting IPL Type, Mode, and Speed” on page 765).
- c. Select function 21 (Make DST Available) on the control panel and press Enter.

Does a display appear on either the console or any alternative console?

No **Yes**

↓ Complete the IPL.

When the operating system display appears, use the Work with Problem command (WRKPRB) or Analyze Problem command (ANZPRB) to analyze and correct or report any console problems .

This ends the procedure.

3. Do you have SRC A600 5001, A600 5004, A600 5007, or B075 xxxx (where xxxx is any value)?

No **Yes**

↓ Perform the following for the type of IOA card you have:

Type 2609:

- a. Disconnect the cable that is attached to the two-port adapter cable port that is labeled P2.
- b. Install the BB wrap plug on the P2 connection of the two-port adapter cable.
- c. Perform an IPL in Manual mode.

Type 2612, 2721, or 2745:

- a. Disconnect any cables that are attached to the IOA.
- b. Install the wrap plug on the IOA. The 2612 wrap plug label is BB. The 2721 and 2745 wrap plug label is QQ.
- c. Perform an IPL in Manual mode.

4. Does SRC 6A58 5007 or 6A59 5007 occur?

No **Yes**

↓ One of the following is causing the problem:

- Workstation emulation program
- Workstation
- Workstation console cable

This ends the procedure.

5. Did SRC A600 5001, A600 5004, 6A58 5008, or 6A59 5008 occur?

No **Yes**

↓ One of the following is causing the problem:

Type 2609:

- Workstation adapter
- Two-port adapter cable

Type 2612, 2721, or 2745:

- Workstation adapter

This ends the procedure.

Workstation Adapter Console PIPs

6. This is a new problem. Use the new reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59) or ask your next level of support for assistance.

This ends the procedure.

Workstation Adapter Console PIPs

Chapter 5. Locations, Addresses, and Service Reference Information

Start Here for Locations Information	694	ASCII Workstation I/O Processor Unit	
System Unit Locations and Addresses	695	Addressing Scheme	739
Locations in Models 640, 730 and S30 System Unit	696	SRC Address Formats	740
Locations in Models 650, 740, S40, and SB1 System Unit	700	Hardware SRC Formats	744
Locations in Models 650, 740, S40, and SB1 Feature 9251 Base I/O Tower	702	Reclaim IOP Cache Storage	745
Optical Link	705	Storage I/O Card Modes and Jumpers	746
Expansion Tower Locations and Addresses	707	Determining and Setting the Mode of an I/O Card	746
Storage Expansion Unit (FC 5051)	707	Switching the Mode of an I/O Card	747
Storage Expansion Unit (FC 5052 and 5058)	707	Mode Jumper has been Overridden	748
FC 5065 and FC 5066 Expansion Towers	708	Mode Jumper is Missing	748
System Unit Expansion Tower (FC 5070, 5071, 5072, and FC 5073)	711	Manually Removing the Tape Cartridge	748
Storage Expansion Tower (FC 5080, 5081, 5082, or 5083)	713	1/4 inch Tape Cartridge (Type 6335)	748
Storage Expansion Unit Cables and Cable Diagrams for System Units	716	6383, 6385, 6386 Tape Cartridge	750
Cable Diagrams	716	Locked Position	751
Cable Diagrams for Expansion Towers	719	Standby Position	751
Cable Diagrams	719	8-mm Tape Cartridge (6390)	752
FC 5065 or 5066 Power and Signal cables	720	Important Continuously Powered Main Storage (CPM) Information	757
I/O Adapters	725	Important Cryptographic I/O Processor Information	757
High and Low Speed PCI IOAs	725	Setting the System Date and Time	758
Integrated Netfinity for AS/400 Server (IOA) Switch Settings	726	Hexadecimal Product Activity Log Data	758
2623/2629	726	Determining the Primary and Alternate Console	758
6510/6520	727	Determining the Load-Source Disk and Alternate IPL Device	759
6616	728	Introduction	759
6617	729	Finding the Load-Source Disk on Systems without Mirrored Protection	759
2750/2751 and 2761 Adapter Card Port Connector Locations	730	What You Should Know about Load-Source Disks on Systems with Mirrored Protection	759
External Devices	730	Finding the Load-Source Disks on Systems with Mirrored Protection	759
SCSI I/O Processor (Type 2621) Addressing Scheme	730	Alternate IPL Device	760
SCSI I/O Processor Unit Address Assignments	731	Search Sequence for the Alternate IPL Device	760
Tape I/O Processor (Type 2644) Addressing Scheme	732	Internal Devices	760
Tape I/O Processor (Type 2644) Unit Address Assignments	732	External Devices	761
3422/3430 Tape Drives	732	Powering Off and Powering On the System or Expansion Tower	761
3480 Tape Drive	733	Powering Off the System	761
3490 Tape Drive	733	Control Panel Power Button	762
Type 2718 IOA, 2729 IOA, and 6534 IOP Addressing	733	Powering Off a System With Logical Partitions	762
Type 6501 IOP Addressing	735	Powering Off a Logical Partition System Using the Control Panel or Primary Partition	763
I/O Bus Addressing Schemes	737	Powering Off a Secondary Partition	764
Communications I/O Processor Unit Addressing Scheme	737	Powering On the System	765
Twinaxial Workstation I/O Processor Unit Addressing Scheme	738	Powering On a Secondary Partition	765
		Selecting IPL Type, Mode, and Speed	765
		Expansion Tower Power Procedure	766
		System/370 Interface Information	771
		Introduction	771
		Cable Wrap Test	771
		System/370 Channel Bus Cable Pin Layout (Type 2644)	773

System/370 Channel Tag Cable Pin Layout (Type 2644)	775	Locating a Secondary Partition's Load Source From the Secondary Partition's Console	784
Tape I/O Processor Card Connectors	776	Locating a Secondary Partition's Load Source From the Primary Partition's Console	785
Type 2644	776	Query of Logical Partition Time and Date	785
Channel Wrap Block 1	777	Conversion of Secondary Partition Time and Date to Primary Partition Time	786
Channel Wrap Block 2	777	Finding the SRC History List for a Secondary Partition	786
Card and Channel Wrap Layout (Type 2644)	778	Closing Related Problems in Other Logical Partitions	786
Verifying the Repair	778	Accessing a Logical Partition's Panel Functions	787
Verify Dedicated Repair.	779	Determining Which Logical Partition Owns a FRU or a System I/O Resource	787
Verify Concurrent Repair.	780	Selecting IPL Type and Mode for a Secondary Partition	788
Determining if the System Has Logical Partitions	781	Missing or Non-reporting System Bus Resources	788
Information About Logical Partitions	781		
Procedures for systems with multiple partitions	782		
Determining the Release Level of a Logical Partition	783		
Locating a Secondary Partition's Console	783		
Locating a Secondary Partition's Load Source	784		

Start Here for Locations Information

This procedure describes how to find the correct diagram to use in this section.

1. Is the Frame ID 1 or is the direct select address 0001xxxx?

Yes No

↓ Go to step 3 of this procedure.

2. The hardware is located in the system unit. Find the model number. When in manual mode, the model number is displayed in function 20 in pxxx cccc format, where xxx is the model number.

Go to "System Unit Locations and Addresses" on page 695 and find the diagram for the model number.

3. Do you know the Frame ID?

No Yes

↓ The Frame ID is the hexadecimal representation of the decimal number that is displayed on the panel of the unit or rack. Find the unit or rack that displays this number. Then, find the unit or rack diagram that matches this hardware. Tower diagrams are in this book. For rack diagrams, see *FC 504x Problem Analysis and Repair and Parts*.

4. Use the following steps in Hardware Service Manager in SST/DST to locate which tower the failing item is in, using the bus number given in the direct select address.
 - a. Go to SST. If SST is not available, go to DST.
 - b. Select "Start a Service Tool".
 - c. Select "Hardware Service Manager".
 - d. Select "Logical Hardware Resources".
 - e. Select "System Bus Resources".
 - f. Change the "System bus(es) to work with" field to the decimal equivalent of the Hex bus address (this is the first four characters of the Direct Select Address). Press enter.
 - g. Select option 8 (Associated packaging resource(s)) for any IOP displayed.

```

Logical Hardware Resources on System Bus

System bus(es) to work with . . . . . 6 *ALL, 1- 7
Subset by . . . . . *ALL *ALL, *STG, *WS, *CMN

Type options, press Enter.
2=Change detail 4=Remove 5=Display detail 6=I/O Debug
8=Associated packaging resource(s) 9=Resources associated with IO P

Resource
Opt Description Type-Model Status Name
_ System Bus - Operational BUS02
8 Storage IOP 6512-001 Operational SI04
_ Storage IOP 6512-001 Operational SI05

F3=Exit F5=Refresh F6=Print F9=Failed resources
F10=Non-reporting resources F11=Display serial/part numbers F12=Cancel

```

Figure 20. Example Display Only

5. The number displayed in the "Frame ID" column is the hexadecimal representation of the decimal number displayed on the panel of the tower or rack. Find the tower or rack that displays this number. Then, find the tower or rack diagram that matches this hardware. Tower diagrams are in this book. For rack diagrams, see *FC 504x Problem Analysis and Repair and Parts*.

```

Packaging Resources Associated with a Logical Resource

Logical resource Type-Model Resource Name
Storage IOP 6512-001 SI04

Type options, press Enter.

2=Change detail 4=Remove 5=Display detail
8=Associated logical resource(s) 9=Hardware contained within package

Opt Description Type-Model Frame ID Resource Name
_ Storage IOP 6512-001 4 C18

F3=Exit F5=Refresh F6=Print
F10=Non-reporting hardware F11=Unresolved locations F12=Cancel

```

Figure 21. Example Display Only

System Unit Locations and Addresses

Locations and Addresses

Locations in Models 640, 730 and S30 System Unit

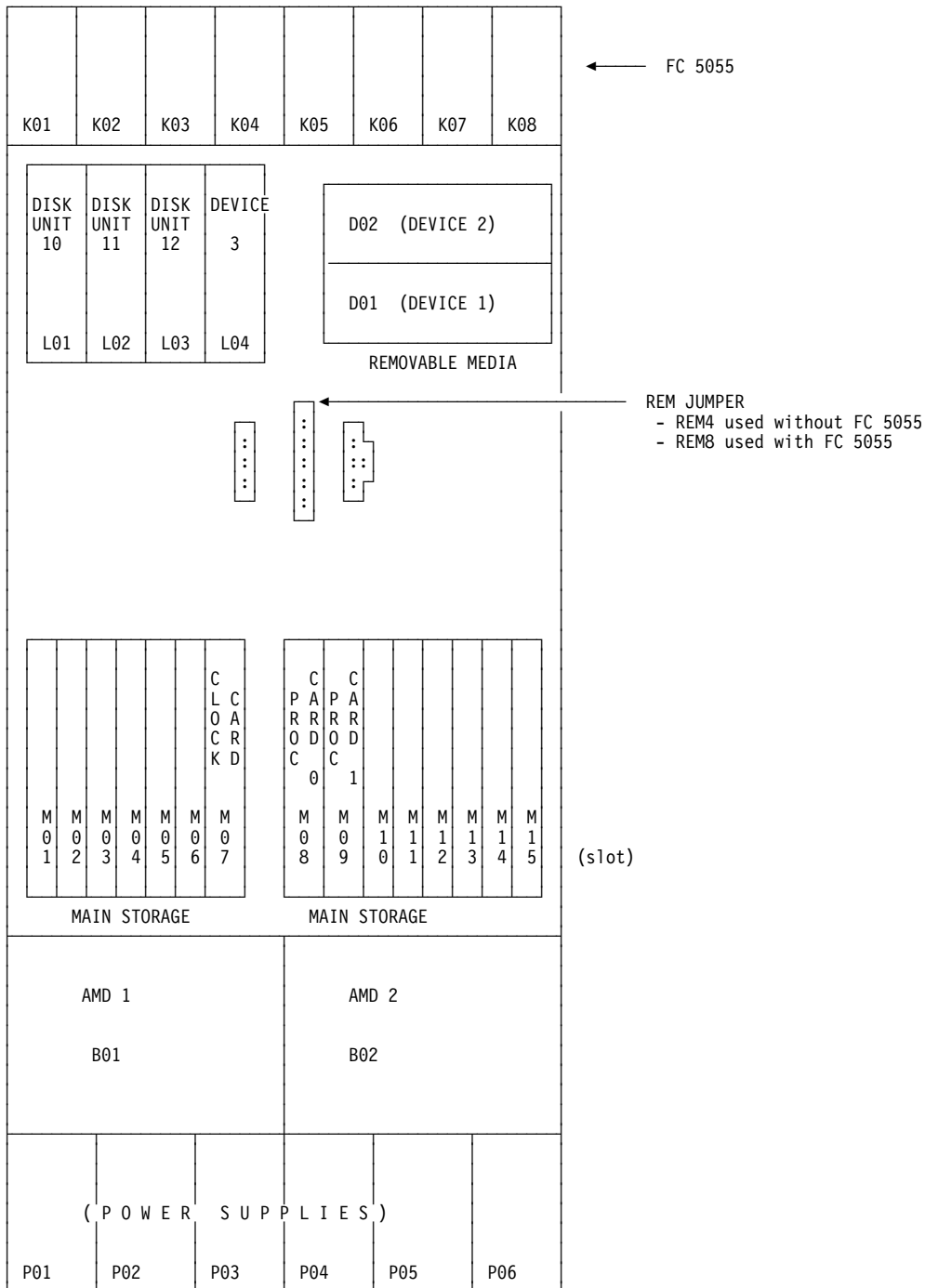


Figure 22. Models 640, 730 and S30 Front view

See AS/400e server 170, 250, 6xx, 7xx, and Sxx System Installation and Upgrade for more information about card descriptions in various slots. For REM4 and REM8 part numbers see "Assembly 5: Models 640, 730 and S30 SPD/DASD Cage Assembly" on page 928.

Locations and Addresses

Table 33. Models 640, 730 and S30 Front Addressing

Location	Device	DSA (BBBBCcbb)	Unit Address
L01	Disk Unit	0001-01-00	0001 00FF
L02	Disk Unit	0001-01-00	0002 00FF
L03	Disk Unit	0001-01-00	0003 00FF
L04	Disk Unit	0001-01-00	0004 00FF
D01	Optical	0001-01-00	0007 00FF
D02	Tape	0001-01-00	0006 00FF
DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved			

Note: You can not install Disk Units 6109 (FC 1109, FC 6109), 6602 (FC 1602), and 6603 (FC 1603) in disk unit positions F08 or K08.

Table 34. Disk Unit Addressing with FC 5055

Location	Device	DSA (BBBBCcbb)	Unit Address with FC 5055
K01	Disk Unit	0001-01-00	0101 00FF
K02	Disk Unit	0001-01-00	0102 00FF
K03	Disk Unit	0001-01-00	0103 00FF
K04	Disk Unit	0001-01-00	0104 00FF
K05	Disk Unit	0001-01-00	0105 00FF
K06	Disk Unit	0001-01-00	0106 00FF
K07	Disk Unit	0001-01-00	0107 00FF
K08	Disk Unit	0001-01-00	0108 00FF
DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved			

Locations and Addresses

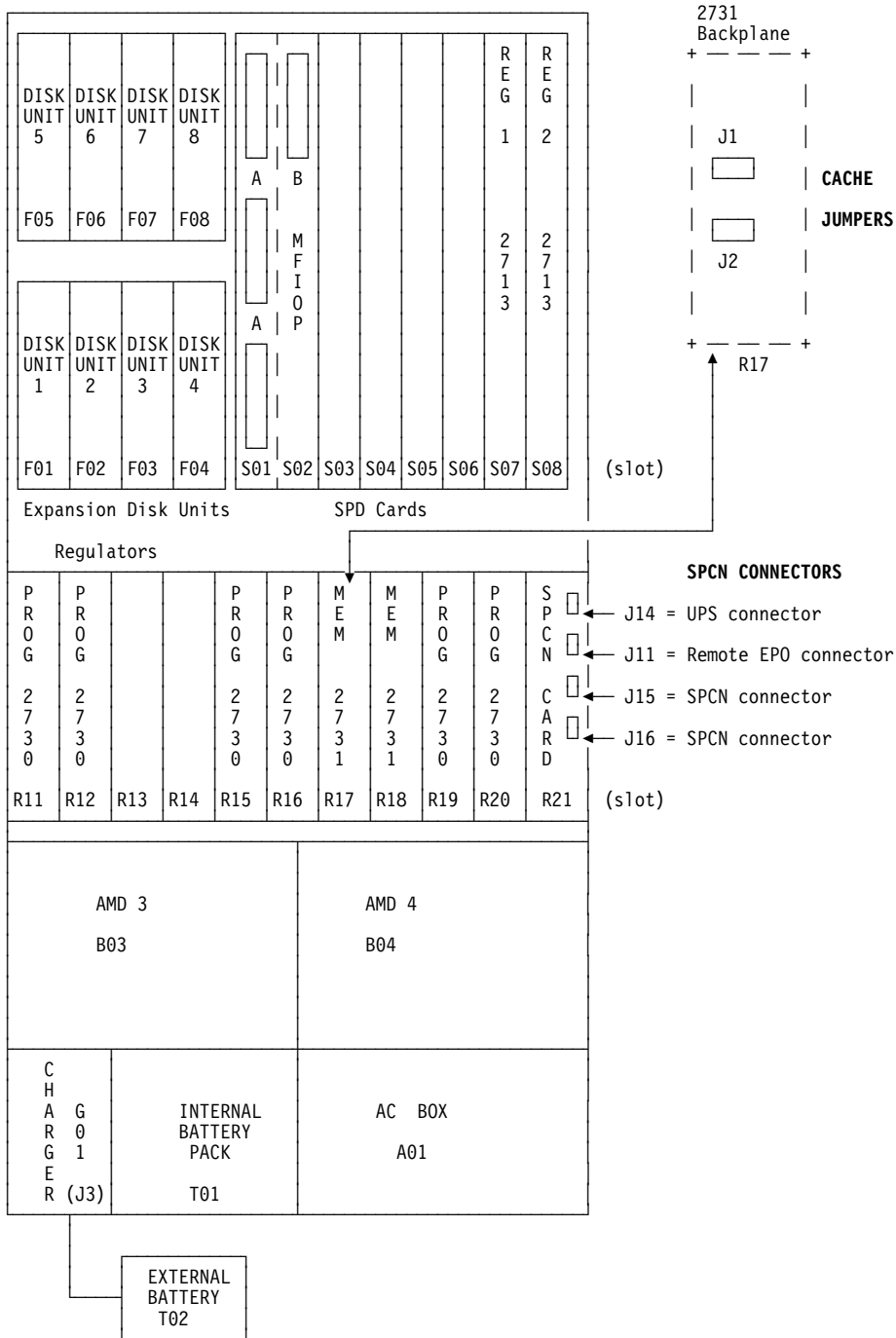


Figure 23. Model 640, 730 and S30 Rear view

See AS/400e server 170, 250, 6xx, 7xx, and Sxx System Installation and Upgrade for more information about card descriptions in various slots.

Table 35. Models 640, 730 and S30 Rear Addressing

Location	Description	DSA (BBBBcbb)	Unit Address
S01, S02	MFIOP (A slots = IOAs; B slot = cache)	0001-01-00	FFFF FFFF
S03	SPD Card	0001-02-00	FFFF FFFF

Locations and Addresses

Table 35. Models 640, 730 and S30 Rear Addressing (continued)

Location	Description	DSA (BBBBCcbb)	Unit Address
S04	SPD Card	0001-04-00	FFFF FFFF
	Local Bus Adapter Card, busses 14-19 (decimal)	N/A	N/A
S04A	SPD Optical Bus Driver Card, busses 18-19 (decimal)	N/A	N/A
S04B	SPD Optical Bus Driver Card, busses 16-17 (decimal)	N/A	N/A
S04C	SPD Optical Bus Driver Card, busses 14-15 (decimal)	N/A	N/A
S05	SPD Card	0001-05-00	FFFF FFFF
	Local Bus Adapter Card, busses 8-13 (decimal)	N/A	N/A
S05A	SPD Optical Bus Driver Card, busses 12-13 (decimal)	N/A	N/A
S05B	SPD Optical Bus Driver Card, busses 10-11 (decimal)	N/A	N/A
S05C	SPD Optical Bus Driver Card, busses 8-9 (decimal)	N/A	N/A
S06	First Local Bus Adapter Card, busses 2-7	N/A	N/A
S06A	SPD Optical Bus Driver Card, busses 7-6	N/A	N/A
S06B	SPD Optical Bus Driver Card, busses 5-4	N/A	N/A
S06C	SPD Optical Bus Driver Card, busses 3-2	N/A	N/A
DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved			

Note: You cannot install Disk Units 6109 (FC 1109, FC 6109), 6602 (FC 1602), and 6603 (FC 1603) in disk unit positions F08 or K08.

Table 36. Disk Unit Addressing

Location	Device	DSA (BBBBCcbb)	Unit Address without FC 5055	Unit Address with FC 5055
F01	Disk Unit	0001-01-00	0101 00FF	0201 00FF
F02	Disk Unit	0001-01-00	0102 00FF	0202 00FF
F03	Disk Unit	0001-01-00	0103 00FF	0203 00FF
F04	Disk Unit	0001-01-00	0104 00FF	0204 00FF
F05	Disk Unit	0001-01-00	0205 00FF	0205 00FF
F06	Disk Unit	0001-01-00	0206 00FF	0206 00FF
F07	Disk Unit	0001-01-00	0207 00FF	0207 00FF
F08	Disk Unit	0001-01-00	0208 00FF	0208 00FF
DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved				

Locations and Addresses

Locations in Models 650, 740, S40, and SB1 System Unit

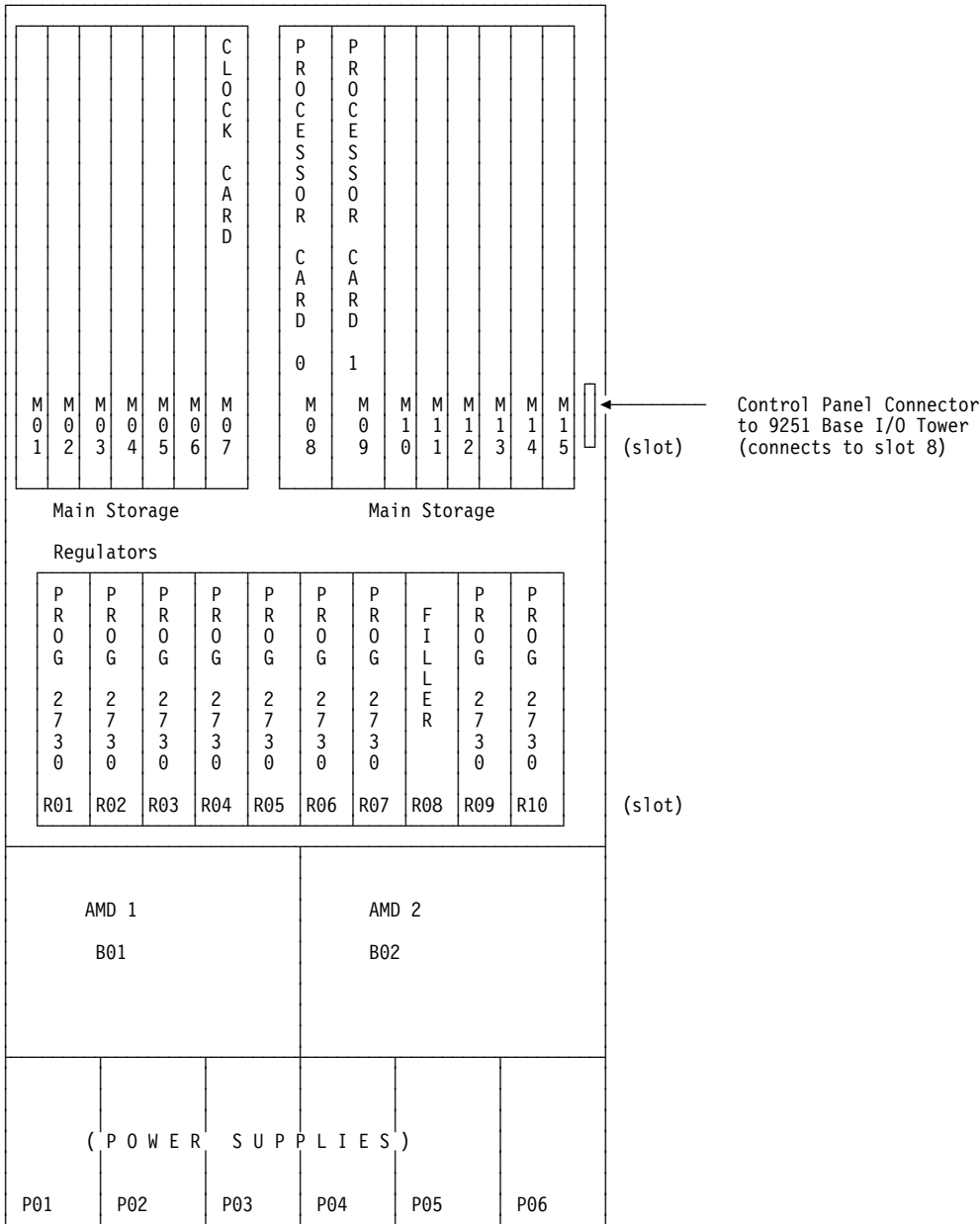


Figure 24. Models 650, 740, S40, and SB1 Front view

See AS/400e server 170, 250, 6xx, 7xx, and Sxx System Installation and Upgrade for more information about card descriptions in various slots.

Locations and Addresses

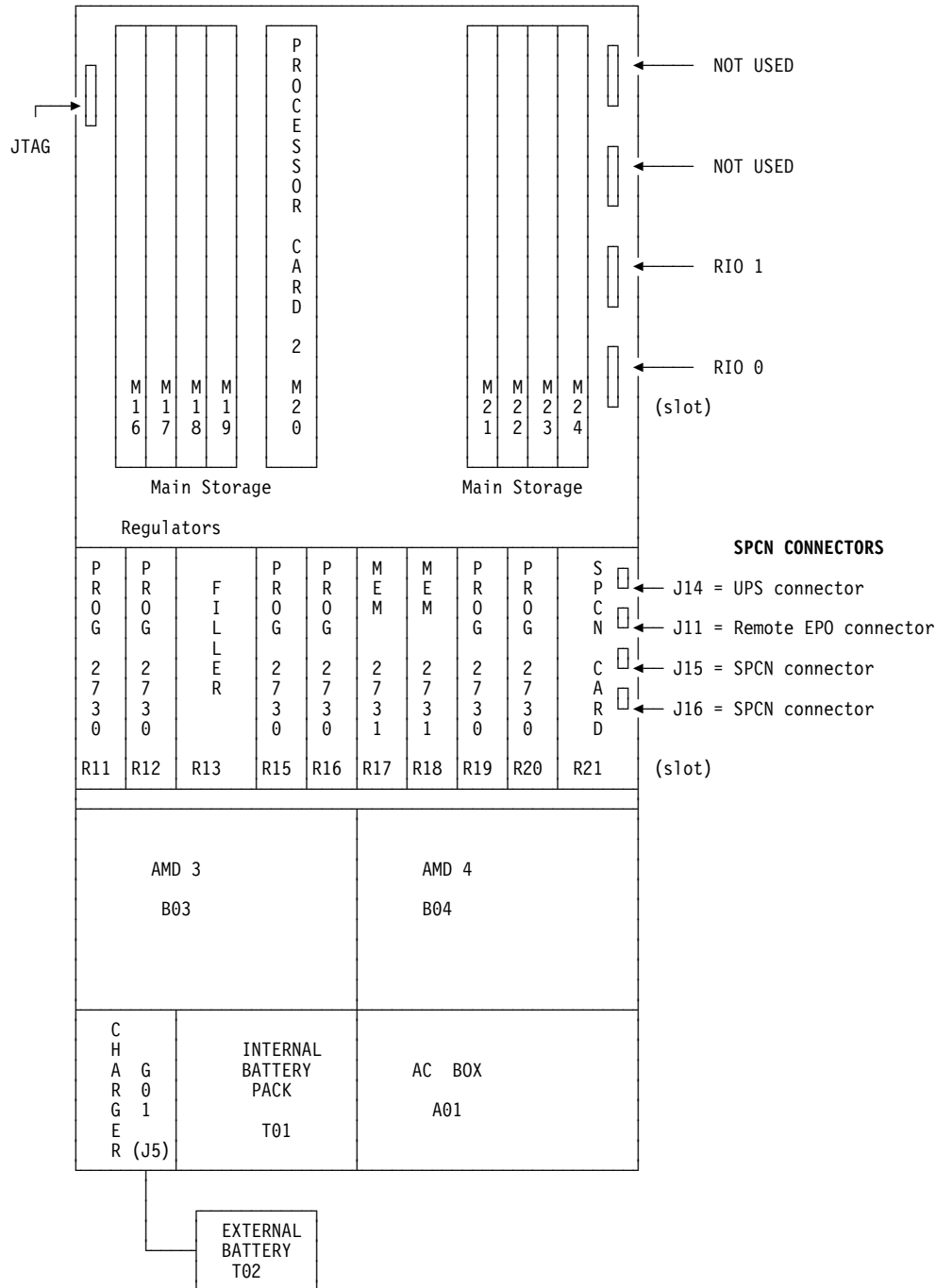


Figure 25. Models 650, 740, S40, and SB1 Rear view

See AS/400e server 170, 250, 6xx, 7xx, and Sxx System Installation and Upgrade for more information about card descriptions in various slots.

Locations and Addresses

Locations in Models 650, 740, S40, and SB1 Feature 9251 Base I/O Tower

Note: You can not install Disk Units 6109 (FC 1109, FC 6109), 6602 (FC 1602), and 6603 (FC 1603) in disk unit positions K08 through K16.

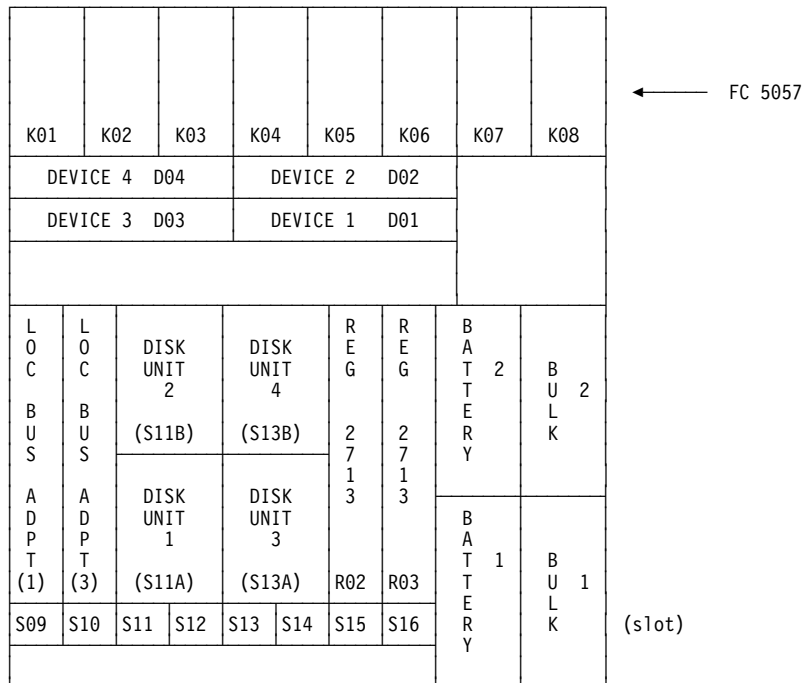


Figure 26. 9251 Front view

See AS/400e server 170, 250, 6xx, 7xx, and Sxx System Installation and Upgrade for more information about card descriptions in various slots.

Table 37. 9251 Front Addressing

Location	Device or Description	DSA (BBBBcbb)	Unit Address
S09	First Local Bus Adapter Card, busses 2-7	N/A	N/A
S09A	SPD Optical Bus Driver Card, busses 6-7	N/A	N/A
S09B	SPD Optical Bus Driver Card, busses 4-5	N/A	N/A
S09C	SPD Optical Bus Driver Card, busses 2-3	N/A	N/A
S10	Local Bus Adapter Card, busses 14-19 (decimal)	N/A	N/A
S10A	SPD Optical Bus Driver Card, busses 18-19 (decimal)	N/A	N/A
S10B	SPD Optical Bus Driver Card, busses 16-17 (decimal)	N/A	N/A
S10C	SPD Optical Bus Driver Card, busses 14-15 (decimal)	N/A	N/A
S11A	Disk Unit	0001-01-00	0001 00FF
S11B	Disk Unit	0001-01-00	0002 00FF
S13A	Disk Unit	0001-01-00	0003 00FF
S13B	Disk Unit	0001-01-00	0004 00FF

Locations and Addresses

Table 37. 9251 Front Addressing (continued)

Location	Device or Description	DSA (BBBBCcbb)	Unit Address
D01	Tape	0001-01-00	0007 00FF
D02	Optical	0001-01-00	0006 00FF
D03	Tape/Optical	0001-02-00	0700 FFFF
D04	Tape/Optical	0001-02-00	0600 FFFF
K01	Disk Unit	0001-01-00	0201 00FF
K02	Disk Unit	0001-01-00	0202 00FF
K03	Disk Unit	0001-01-00	0203 00FF
K04	Disk Unit	0001-01-00	0204 00FF
K05	Disk Unit	0001-01-00	0205 00FF
K06	Disk Unit	0001-01-00	0206 00FF
K07	Disk Unit	0001-01-00	0207 00FF
K08	Disk Unit	0001-01-00	0208 00FF
DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved			

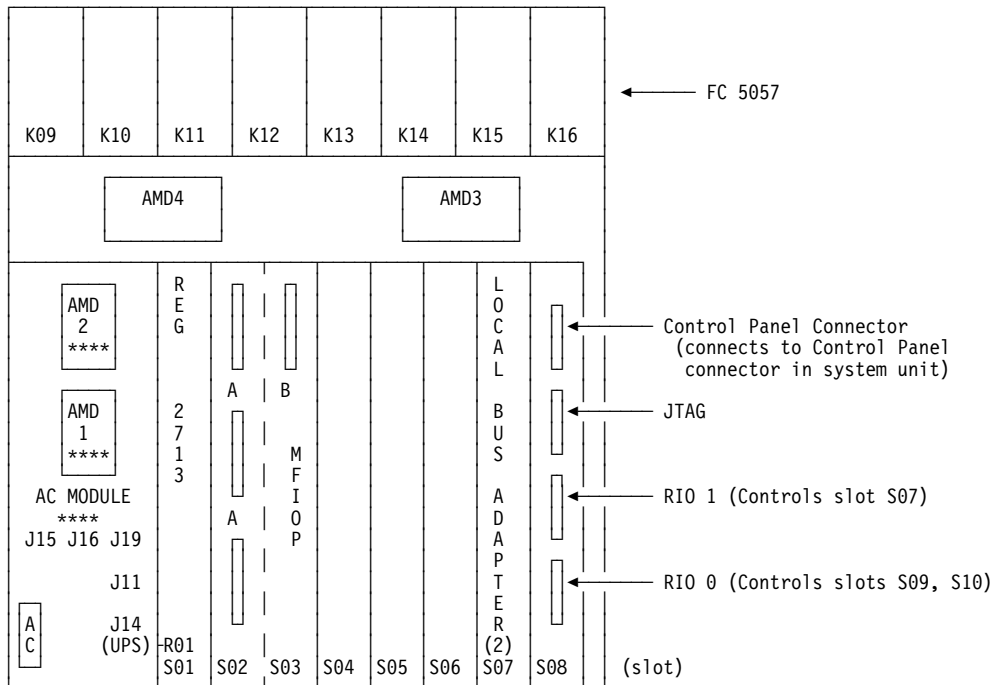


Figure 27. 9251 Rear view

See AS/400e server 170, 250, 6xx, 7xx, and Sxx System Installation and Upgrade for more information about card descriptions in various slots.

Table 38. 9251 Rear Addressing

Location	Description	DSA (BBBBCcbb)	Unit Address
S02, S03	MFIOP (A slots = IOAs; B slot = cache)	0001-01-00	FFFF FFFF
S04	Alt IPL IOP	0001-02-00	FFFF FFFF
S05	Secondary Alt IPL IOP	0001-04-00	FFFF FFFF

Locations and Addresses

Table 38. 9251 Rear Addressing (continued)

Location	Description	DSA (BBBBCcbb)	Unit Address
S06	SPD card	0001-05-00	FFFF FFFF
S07	Local Bus Adapter Card, busses 8-13 (decimal)	N/A	N/A
S07A	SPD Optical Bus Driver Card, busses 12-13 (decimal)	N/A	N/A
S07B	"SPD Optical Bus Driver Card, busses 10-11 (decimal)	N/A	N/A
S07C	SPD Optical Bus Driver Card, busses 8-9	N/A	N/A
S08	Interposer Card	N/A	N/A
K09	Disk Unit	0001-01-00	0101 00FF
K10	Disk Unit	0001-01-00	0102 00FF
K11	Disk Unit	0001-01-00	0103 00FF
K12	Disk Unit	0001-01-00	0104 00FF
K13	Disk Unit	0001-01-00	0105 00FF
K14	Disk Unit	0001-01-00	0106 00FF
K15	Disk Unit	0001-01-00	0107 00FF
K16	Disk Unit	0001-01-00	0108 00FF
DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved			

Optical Link

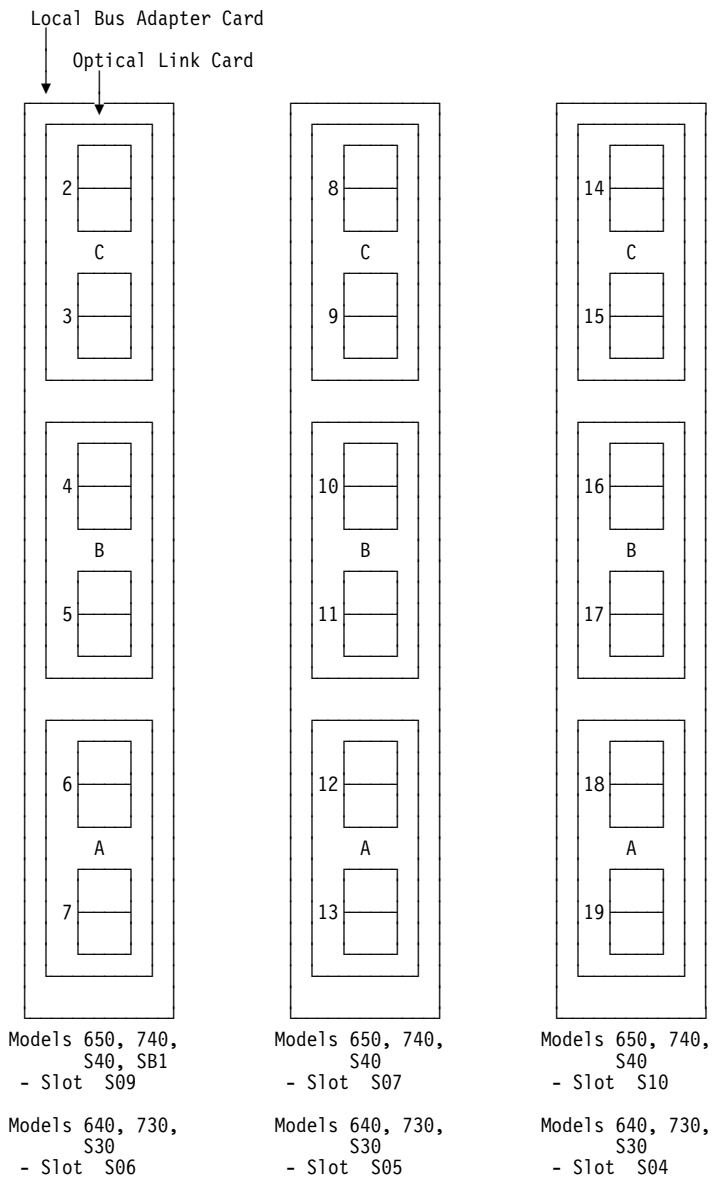


Figure 28. SPD Optical Bus Driver Card

Note: In order to use the Optical Link card in slot S07 in Models 650, 740 and S40, you must have RIO 1 installed. Refer to Figure 25 on page 701 and Figure 27 on page 703 for location information of RIO 1.

Locations and Addresses

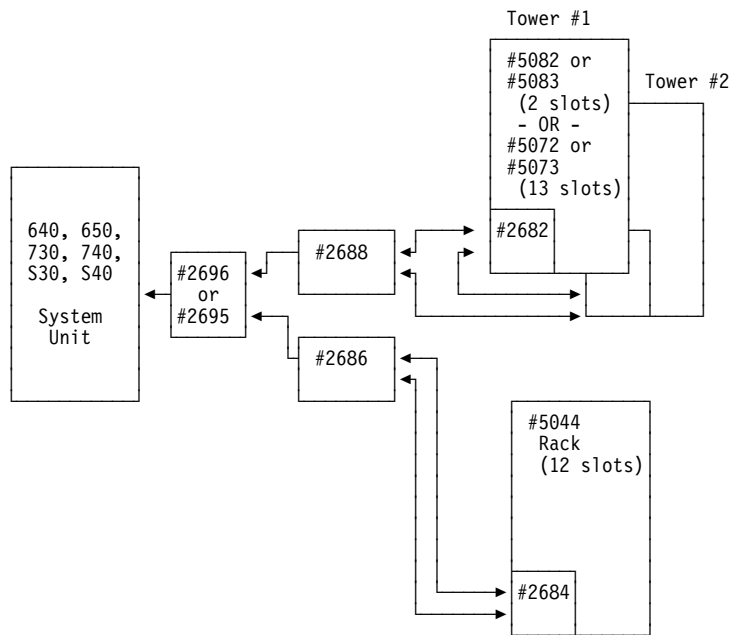


Figure 29. Models 640, 650, 730, 740, S30, and S40 Optical Bus Cable Layout

You can attach three of 2686 and 2688, in any combination, to a single 2696 or 2695 card. This allows up to six towers or three racks, or any combination thereof, to attach to each 2696 or 2695 card.

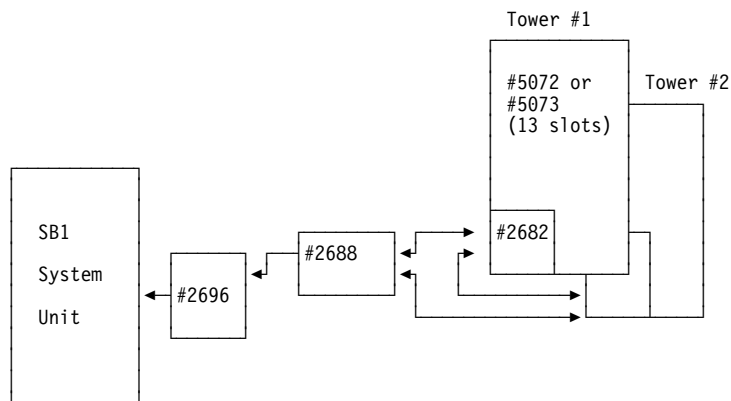


Figure 30. Model SB1 Optical Bus Cable Layout

You can attach three 2688s to a single 2696 card. This allows up to six towers to attach to each 2696 card.

Expansion Tower Locations and Addresses

Storage Expansion Unit (FC 5051)

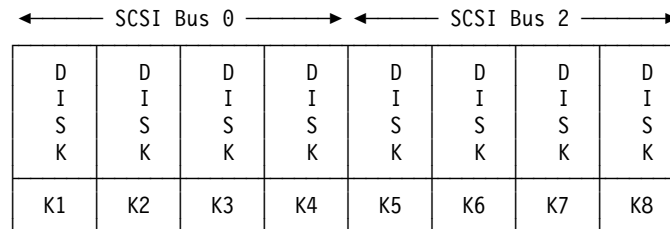


Figure 31. Front View

Note: Disk units 6109 (FC 1109, FC 6109), 6602 (FC 1602) and 6603 (FC 1603) can not be installed in disk unit positions K8 through K16 of the storage expansion unit.

Device	Location	6502/6512/6530 Unit Address	6532/6533 Unit Address
Disk	K1	0100 FFFF	0001 00FF
Disk	K2	0200 FFFF	0002 00FF
Disk	K3	0300 FFFF	0003 00FF
Disk	K4	0400 FFFF	0004 00FF
Disk	K5	2500 FFFF	0205 00FF
Disk	K6	2600 FFFF	0206 00FF
Disk	K7	2700 FFFF	0207 00FF
Disk	K8	2800 FFFF	0208 00FF

Storage Expansion Unit (FC 5052 and 5058)

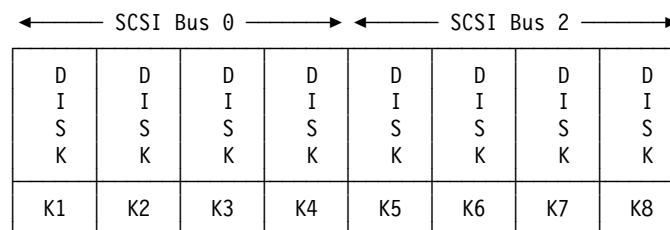


Figure 32. Front View

Locations and Addresses

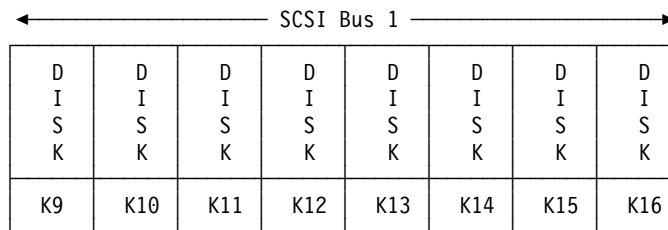


Figure 33. Rear View

Note: Disk units 6109 (FC 1109, FC 6109), 6602 (FC 1602) and 6603 (FC 1603) can not be installed in disk unit positions K8 through K16 of the storage expansion unit.

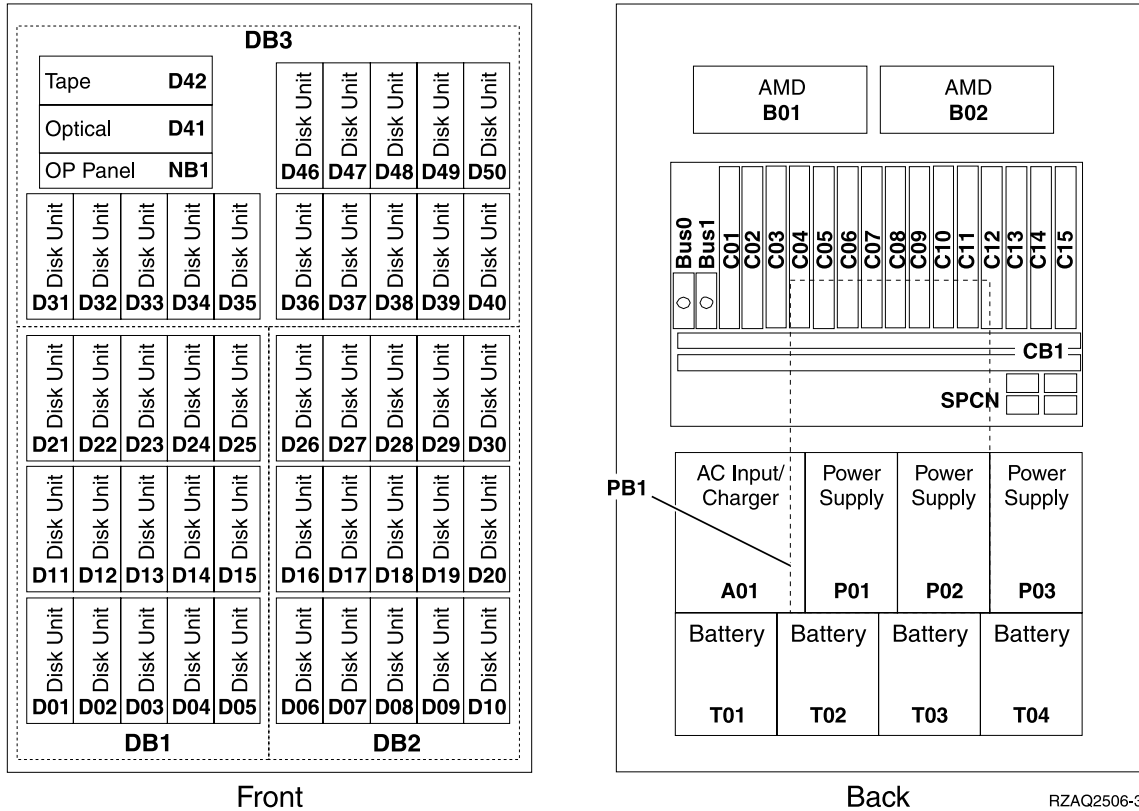
Device	Location	6502/6512/6530 Unit Address	6532/6533 Unit Address
Disk	K1	0100 FFFF	0001 00FF
Disk	K2	0200 FFFF	0002 00FF
Disk	K3	0300 FFFF	0003 00FF
Disk	K4	0400 FFFF	0004 00FF
Disk	K5	2500 FFFF	0205 00FF
Disk	K6	2600 FFFF	0206 00FF
Disk	K7	2700 FFFF	0207 00FF
Disk	K8	2800 FFFF	0208 00FF
Disk	K9	1100 FFFF	0101 00FF
Disk	K10	1200 FFFF	0102 00FF
Disk	K11	1300 FFFF	0103 00FF
Disk	K12	1400 FFFF	0104 00FF
Disk	K13	1500 FFFF	0105 00FF
Disk	K14	1600 FFFF	0106 00FF
Disk	K15	1700 FFFF	0107 00FF
Disk	K16	1800 FFFF	0108 00FF

FC 5065 and FC 5066 Expansion Towers

Note: Service the FC 5066 Expansion Tower as two FC 5065

Figure 34 on page 709 shows the physical locations inside the FC 5065 expansion tower.

Locations and Addresses



RZAQ2506-3

Figure 34. FC 5065 Expansion Tower (Note: Service the FC 5066 Expansion Tower as two FC 5065)

Table 39 shows the Unit Addresses and descriptions for each PCI card slot.

Table 39. Card Slot Unit Addresses and Descriptions

Slot	DSA (BBBBcbbb)	Unit Address	Description
C01	xxxx-01-00	E0FF FFFF	WAN/LAN/Twinax
C02	xxxx-01-00	E1FF FFFF	WAN/LAN/Twinax
C03	xxxx-01-00	FFFF FFFF	CFIOP
C04	xxxx-01-00	E7FF FFFF 0FFF FFFF E7FF FFFF	2838, ATM Storage IOA WAN/LAN/Twinax
C05	xxxx-01-00	ECFF FFFF	2838, ATM WAN/LAN/Twinax
C06	xxxx-02-00	E0FF FFFF	WAN/LAN/Twinax
C07	xxxx-02-00	E1FF FFFF	WAN/LAN/Twinax
C08	xxxx-02-00	FFFF FFFF	CFIOP
C09	xxxx-02-00	E7FF FFFF 0FFF FFFF E7FF FFFF	2838, ATM Storage IOA WAN/LAN/Twinax
C10	xxxx-02-00	ECFF FFFF	2838, ATM WAN/LAN/Twinax
C11	xxxx-03-00	E0FF FFFF	WAN/LAN/Twinax
C12	xxxx-03-00	E1FF FFFF	WAN/LAN/Twinax
C13	xxxx-03-00	FFFF FFFF	CFIOP

Locations and Addresses

Table 39. Card Slot Unit Addresses and Descriptions (continued)

Slot	DSA (BBBBCcbb)	Unit Address	Description
C14	xxxx-03-00	E7FF FFFF 0FFF FFFF E7FF FFFF	2838, ATM Storage IOA WAN/LAN/Twinax
C15	xxxx-03-00	ECFF FFFF	2838, ATM WAN/LAN/Twinax

DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved

Table 40 shows the Unit Addresses and descriptions for each device.

Table 40. Device Unit Addresses and Descriptions

Location	Device	DSA (BBBBCcbb)	Unit Address
D01	Disk Unit	xxxx-02-00	0003 00FF
D02	Disk Unit	xxxx-02-00	0004 00FF
D03	Disk Unit	xxxx-02-00	0005 00FF
D04	Disk Unit	xxxx-02-00	0006 00FF
D05	Disk Unit	xxxx-02-00	0007 00FF
D06	Disk Unit	xxxx-03-00	0003 00FF
D07	Disk Unit	xxxx-03-00	0004 00FF
D08	Disk Unit	xxxx-03-00	0005 00FF
D09	Disk Unit	xxxx-03-00	0006 00FF
D10	Disk Unit	xxxx-03-00	0007 00FF
D11	Disk Unit	xxxx-02-00	0103 00FF
D12	Disk Unit	xxxx-02-00	0104 00FF
D13	Disk Unit	xxxx-02-00	0105 00FF
D14	Disk Unit	xxxx-02-00	0106 00FF
D15	Disk Unit	xxxx-02-00	0107 00FF
D16	Disk Unit	xxxx-03-00	0103 00FF
D17	Disk Unit	xxxx-03-00	0104 00FF
D18	Disk Unit	xxxx-03-00	0105 00FF
D19	Disk Unit	xxxx-03-00	0106 00FF
D20	Disk Unit	xxxx-03-00	0107 00FF
D21	Disk Unit	xxxx-02-00	0203 00FF
D22	Disk Unit	xxxx-02-00	0204 00FF
D23	Disk Unit	xxxx-02-00	0205 00FF
D24	Disk Unit	xxxx-02-00	0206 00FF
D25	Disk Unit	xxxx-02-00	0207 00FF
D26	Disk Unit	xxxx-03-00	0203 00FF
D27	Disk Unit	xxxx-03-00	0204 00FF
D28	Disk Unit	xxxx-03-00	0205 00FF
D29	Disk Unit	xxxx-03-00	0206 00FF
D30	Disk Unit	xxxx-03-00	0207 00FF

Locations and Addresses

Table 40. Device Unit Addresses and Descriptions (continued)

Location	Device	DSA (BBBBCcbb)	Unit Address
D31	Disk Unit	xxxx-01-00	0001 00FF
D32	Disk Unit	xxxx-01-00	0002 00FF
D33	Disk Unit	xxxx-01-00	0003 00FF
D34	Disk Unit	xxxx-01-00	0004 00FF
D35	Disk Unit	xxxx-01-00	0005 00FF
D36	Disk Unit	xxxx-01-00	0103 00FF
D37	Disk Unit	xxxx-01-00	0104 00FF
D38	Disk Unit	xxxx-01-00	0105 00FF
D39	Disk Unit	xxxx-01-00	0106 00FF
D40	Disk Unit	xxxx-01-00	0107 00FF
D41	Optical	xxxx-01-00	0006 00FF
D42	Tape	xxxx-01-00	0007 00FF
D46	Disk Unit	xxxx-01-00	0203 00FF
D47	Disk Unit	xxxx-01-00	0204 00FF
D48	Disk Unit	xxxx-01-00	0205 00FF
D49	Disk Unit	xxxx-01-00	0206 00FF
D50	Disk Unit	xxxx-01-00	0207 00FF
DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved			

System Unit Expansion Tower (FC 5070, 5071, 5072, and FC 5073)

Note: *** in a location indicates a minimum configuration.

Locations and Addresses

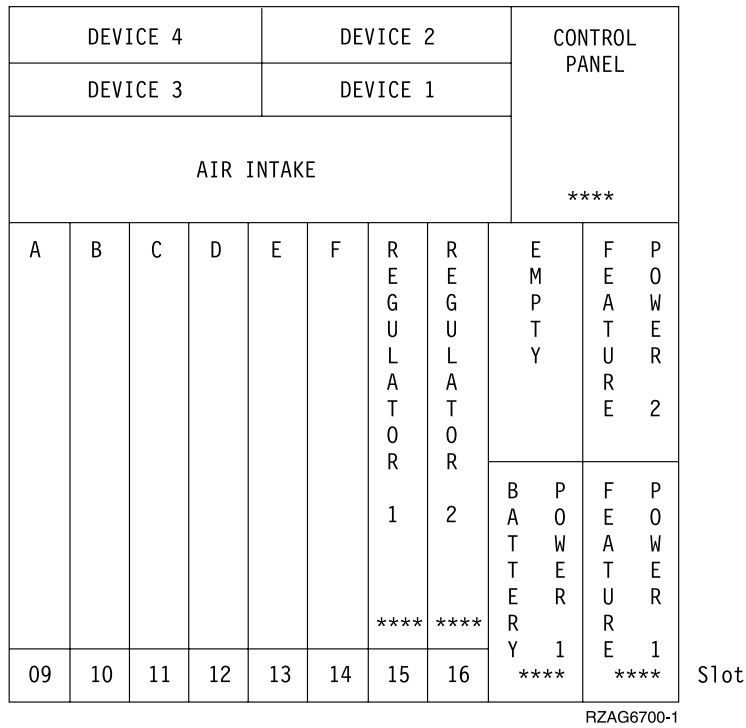


Figure 35. Front View

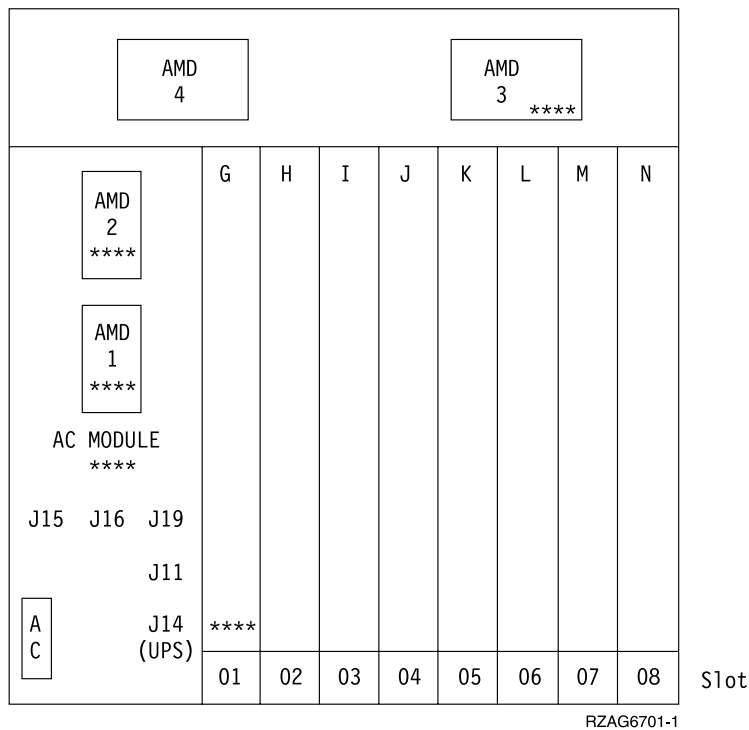


Figure 36. Rear View

Note: In the following list, DSA means Direct Select Address, and UA means Unit Address.

Device 1 (UA=0700 FFFF)

Device 2 (UA=0600 FFFF)
Device 3 (UA=0500 FFFF)
Device 4 (UA=0400 FFFF)
A Feature IOP (DSA=xxxx-08-00 UA=FFFF FFFF)
B Feature IOP (DSA=xxxx-09-00 UA=FFFF FFFF)
C Feature IOP (DSA=xxxx-0A-00 UA=FFFF FFFF)
D Feature IOP (DSA=xxxx-0B-00 UA=FFFF FFFF)
E Feature IOP (DSA=xxxx-0C-00 UA=FFFF FFFF)
F Feature IOP (DSA=xxxx-0D-00 UA=FFFF FFFF)
G Optical Bus Adapter (DSA=xxxx-00-00 UA=FFFF FFFF)
H Feature IOP or MSIOP (DSA=xxxx-01-00 UA=FFFF FFFF)

Note: See “Storage Expansion Unit (FC 5051)” on page 707 or “Storage Expansion Unit (FC 5052 and 5058)” on page 707 for unit address information.

I Feature IOP or Internal Tape IOP (DSA=xxxx-02-00 UA=FFFF FFFF)
J Feature IOP (DSA=xxxx-03-00 UA=FFFF FFFF)
K Feature IOP (DSA=xxxx-04-00 UA=FFFF FFFF)
L Feature IOP (DSA=xxxx-05-00 UA=FFFF FFFF)
M Feature IOP (DSA=xxxx-06-00 UA=FFFF FFFF)
N Feature IOP (DSA=xxxx-07-00 UA=FFFF FFFF)

Storage Expansion Tower (FC 5080, 5081, 5082, or 5083)

Notes:

1. **** in a location indicates a minimum configuration.
2. Disk units 6109 (FC 1109, FC 6109), 6602 (FC 1602) and 6603 (FC 1603) can not be installed in disk unit positions K8 through K16 of the storage expansion unit.
3. Figure 37 on page 714 is shown with FC 5052/5058 installed.
4. Figure 38 on page 715 is shown with FC 5052/5058 installed.

Locations and Addresses

DISK K1		DISK K2		DISK K3		DISK K4		DISK K5		DISK K6		DISK K7		DISK K8					
DEVICE 1 09C				DEVICE 2 11C				DEVICE 3 13C				DEVICE 4 15C				CONTROL PANEL ****			
DISK 2 09B				DISK 4 11B				DISK 6 13B				DISK 8 15B				E M P T Y		F P O W E R U R E 2	
DISK 1 09A				DISK 3 11A				DISK 5 13A				DISK 7 15A				B P A O T W T E R R Y 1 ****		F P O W E R U R E 1 ****	
09	10	11	12	13	14	15	16	****		****		****		****		Slot			

RZAG6702-0

Figure 37. Front View

Locations and Addresses

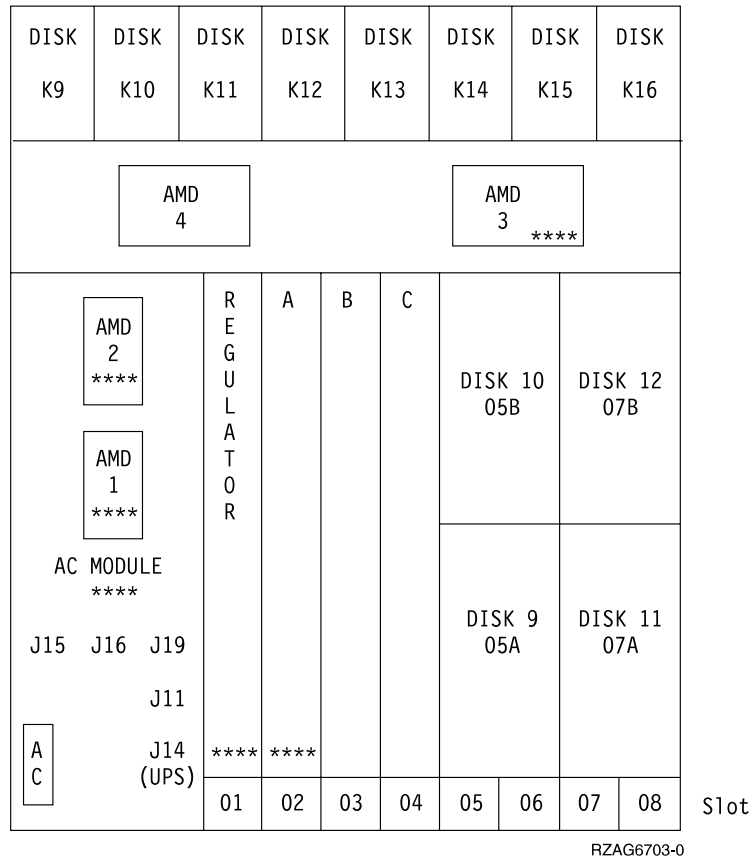


Figure 38. Rear View

A(card position 02) SPD Optical Bus Receiver (DSA=xxxx-00-00 UA=FFFF FFFF)
 BB (card position 03) MSIOP (DSA=xxxx-01-00 UA=FFFF FFFF):

	DSA (BBBBcbb)	6502, 6512, 6530 Unit Address	6532/6533 Unit Address		DSA (BBBBcbb)	6502, 6512, 6530 Unit Address	6532/6533 Unit Address
Device 1 09C	xxxx-01-00	0700 FFFF	0007 00FF	Device 2 11C	xxxx-01-00	0600 FFFF	0006 00FF
Device 3 13C	xxxx-01-00	0500 FFFF	0005 00FF	Device 4 15C	xxxx-01-00	0400 FFFF	0004 00FF

Locations and Addresses

	DSA (BBBBcbb)	6502, 6512, 6530 Unit Address	6532/6533 Unit Address		DSA (BBBBcbb)	6502, 6512, 6530 Unit Address	6532/6533 Unit Address
Disk 1 09A	xxxx-01-00	2100 FFFF	0201 00FF	Disk 2 09B	xxxx-01-00	1100 FFFF	0101 00FF
Disk 3 11A	xxxx-01-00	2200 FFFF	0202 00FF	Disk 4 11B	xxxx-01-00	1200 FFFF	0102 00FF
Disk 5 13A	xxxx-01-00	2300 FFFF	0203 00FF	Disk 6 13B	xxxx-01-00	1300 FFFF	0103 00FF
Disk 7 15A	xxxx-01-00	2400 FFFF	0204 00FF	Disk 8 15B	xxxx-01-00	1400 FFFF	0104 00FF
Disk 9 05A	xxxx-01-00	2500 FFFF	0205 00FF	Disk 10 05B	xxxx-01-00	1500 FFFF	0105 00FF
Disk 11 07A	xxxx-01-00	2600 FFFF	0206 00FF	Disk 12 07B	xxxx-01-00	1600 FFFF	0106 00FF

CC (card position 04) MSIOP (DSA=xxxx-02-00 UA=FFFF FFFF):

	DSA (BBBBcbb)	6502, 6512, 6530 Unit Address	6532/6533 Unit Address		DSA (BBBBcbb)	6502, 6512, 6530 Unit Address	6532/6533 Unit Address
Disk K1	xxxx-02-00	0100 FFFF	0001 00FF	Disk K9	xxxx-02-00	1100 FFFF	0101 00FF
Disk K2	xxxx-02-00	0200 FFFF	0002 00FF	Disk K10	xxxx-02-00	1200 FFFF	0102 00FF
Disk K3	xxxx-02-00	0300 FFFF	0003 00FF	Disk K11	xxxx-02-00	1300 FFFF	0103 00FF
Disk K4	xxxx-02-00	0400 FFFF	0004 00FF	Disk K12	xxxx-02-00	1400 FFFF	0104 00FF
Disk K5	xxxx-02-00	2500 FFFF	0205 00FF	Disk K13	xxxx-02-00	1500 FFFF	0105 00FF
Disk K6	xxxx-02-00	2600 FFFF	0206 00FF	Disk K14	xxxx-02-00	1600 FFFF	0106 00FF
Disk K7	xxxx-02-00	2700 FFFF	0207 00FF	Disk K15	xxxx-02-00	1700 FFFF	0107 00FF
Disk K8	xxxx-02-00	2800 FFFF	0208 00FF	Disk K16	xxxx-02-00	1800 FFFF	0108 00FF

Storage Expansion Unit Cables and Cable Diagrams for System Units

The following cable lists help identify the cables shown in the "Storage Expansion Unit Cables and Cable Diagrams for System Units". Not all cables are present in all models. Cable part numbers can be found in the "Assembly 23: Internal Cable Assemblies" on page 984.

Cable Diagrams

The following diagrams show the logical cable connections in the storage expansion units.

Locations and Addresses

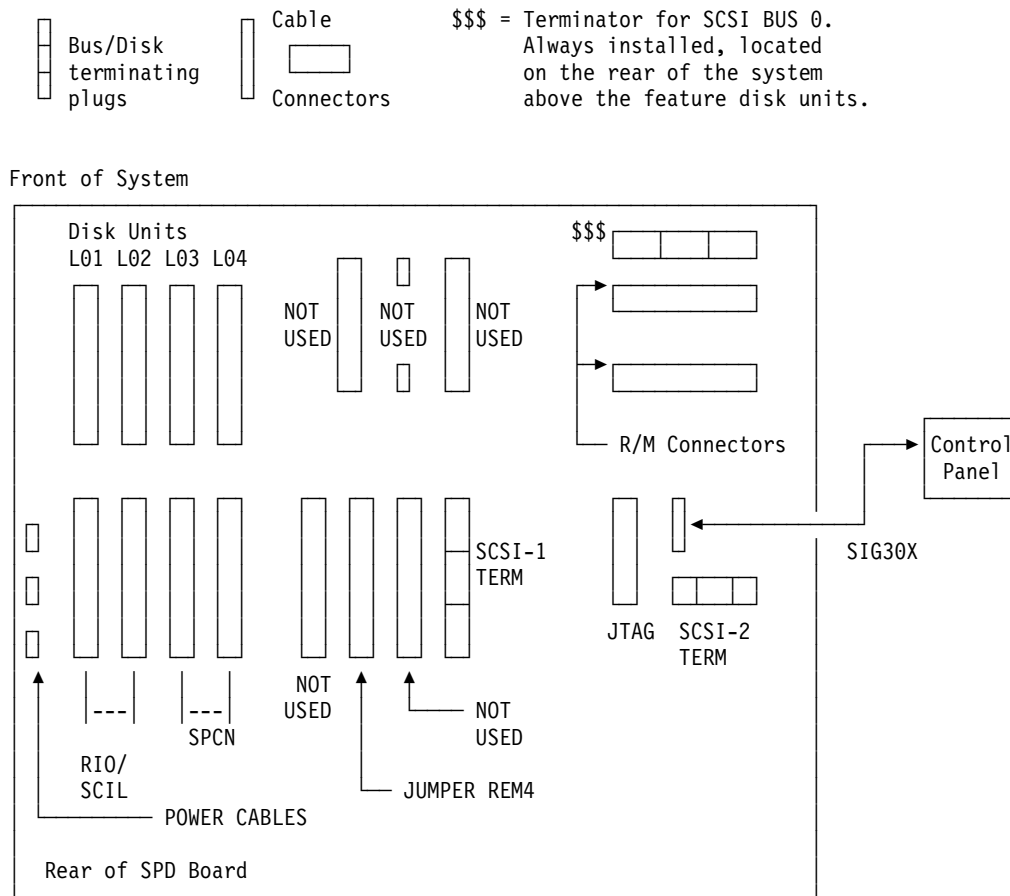
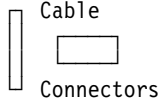
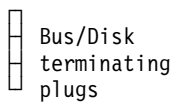


Figure 39. Model 640, 730 and S30

Cable part numbers can be found in the "Assembly 23: Internal Cable Assemblies" on page 984. For the REM4 part number see "Assembly 5: Models 640, 730 and S30 SPD/DASD Cage Assembly" on page 928.

Locations and Addresses



\$\$\$ = Terminator for SCSI BUS 0. Always installed, located on the rear of the system above the feature disk units.

Backplane (Back View)

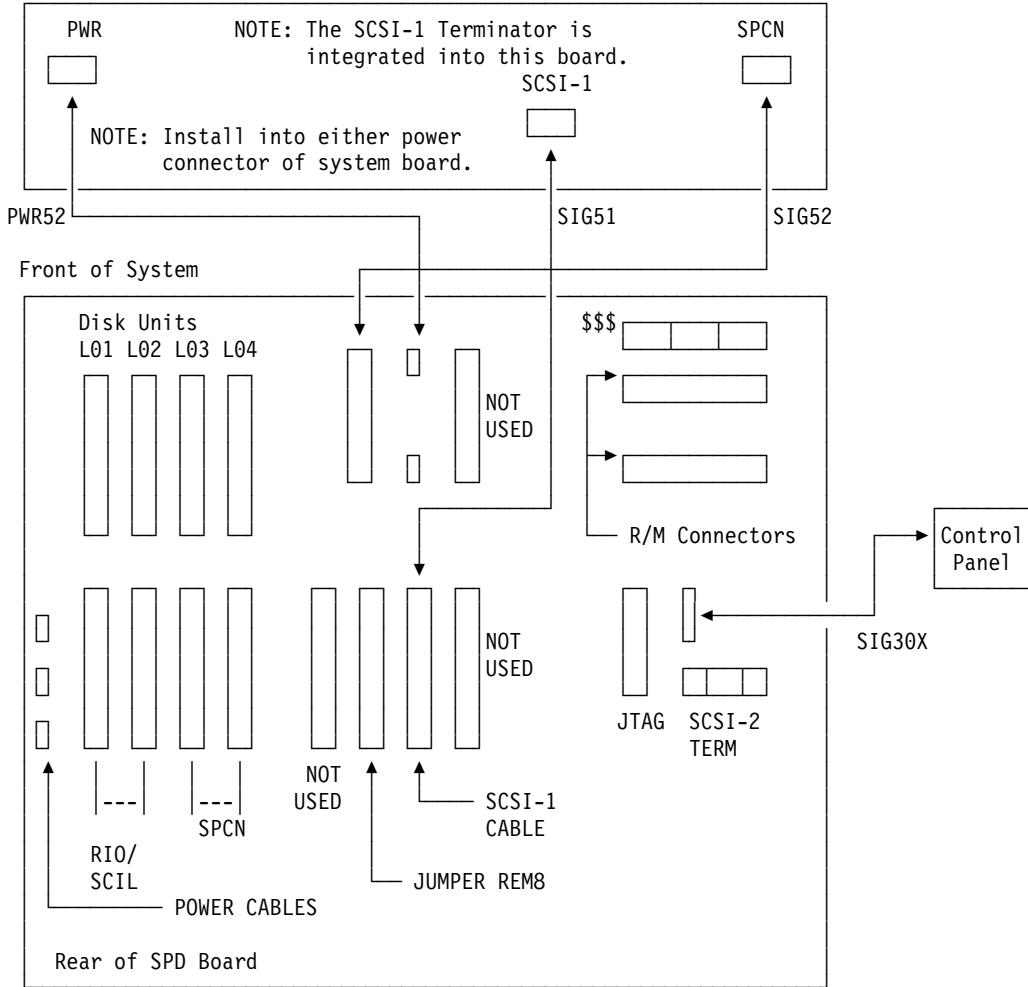


Figure 40. Model 640, 730 and S30 with Storage Expansion Unit (FC 5055)

Cable part numbers can be found in the "Assembly 23: Internal Cable Assemblies" on page 984. For the REM8 part number see "Assembly 5: Models 640, 730 and S30 SPD/DASD Cage Assembly" on page 928.

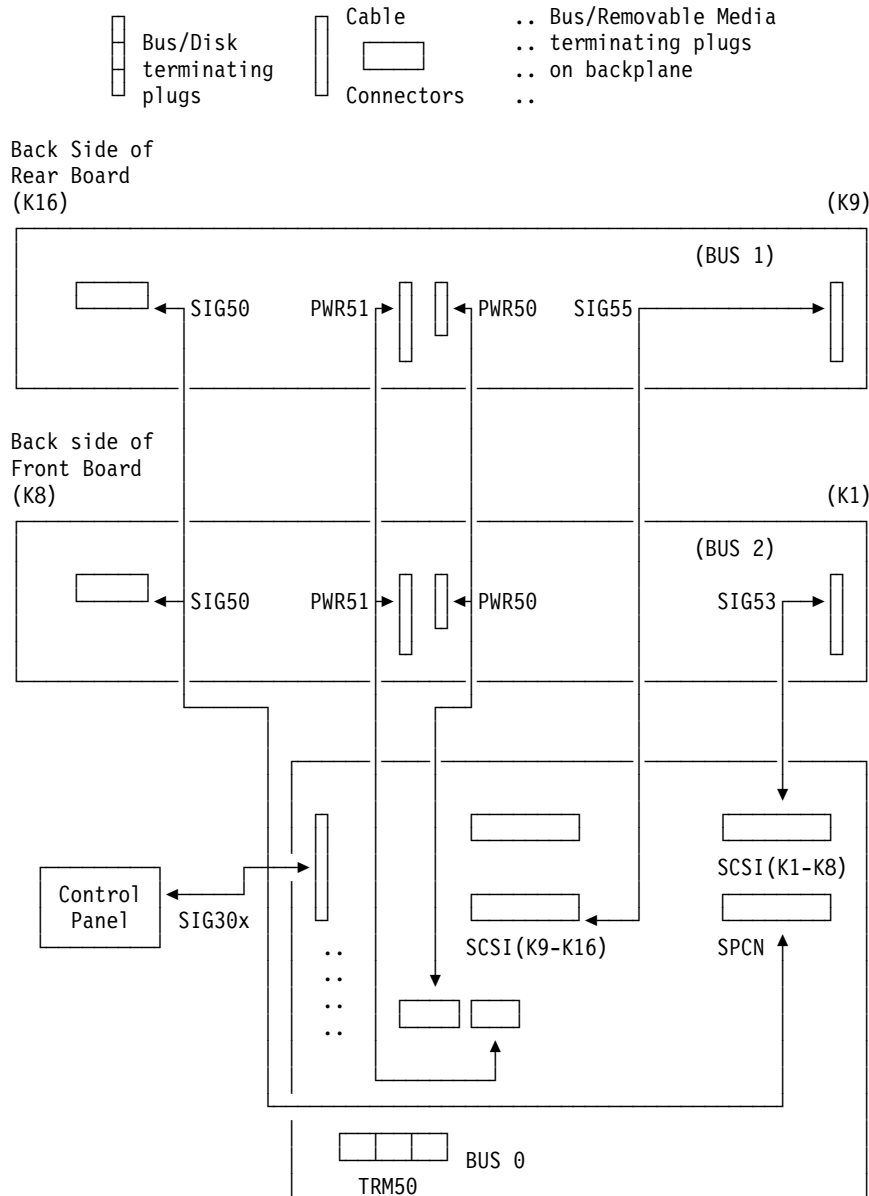


Figure 41. Model 650, 740, S40, and SB1 Feature 9251 Base I/O Tower Storage Expansion Unit (FC 5057)

Cable part numbers can be found in the “Assembly 23: Internal Cable Assemblies” on page 984.

Cable Diagrams for Expansion Towers

The following cable lists help identify the cables in the expansion towers. Not all cables are present in all models. You can find cable part numbers in the “Assembly 23: Internal Cable Assemblies” on page 984.

Cable Diagrams

The following diagrams show the logical cable connections in the expansion towers.

Locations and Addresses

FC 5065 or 5066 Power and Signal cables

The following diagram shows the power cables for a FC 5065 or 5066 expansion tower.

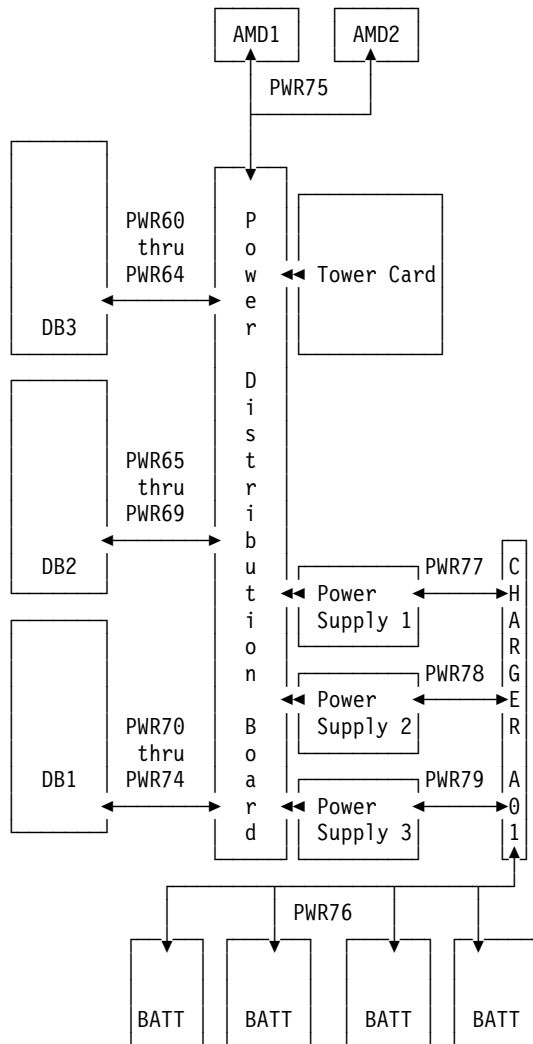


Figure 42. FC 5065 or 5066 Power cables

The following diagram shows the signal cables for a FC 5065 or 5066 expansion tower.

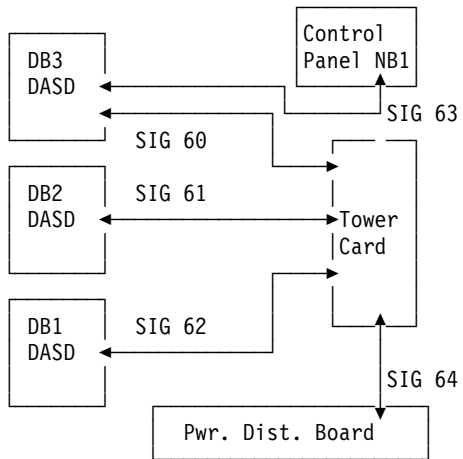


Figure 43. FC 5065 or 5066 Signal cables

Locations and Addresses

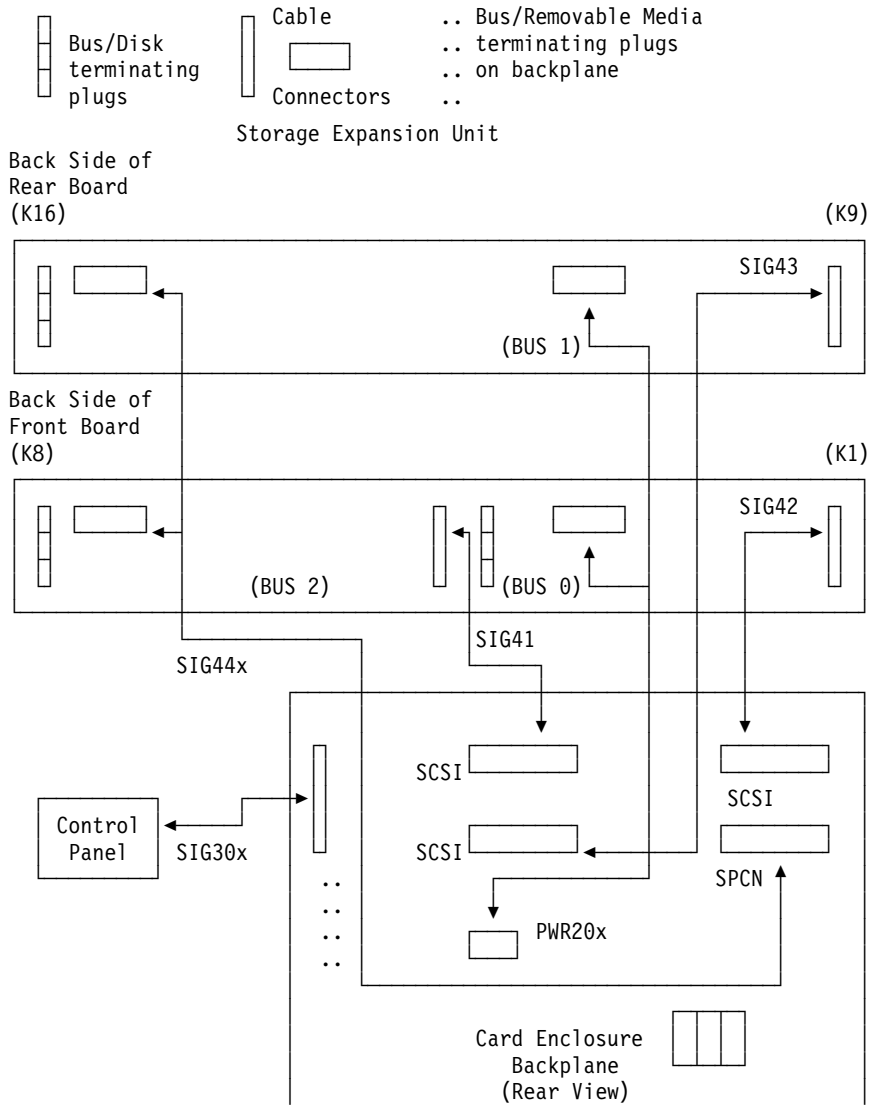


Figure 44. System Unit Expansion Tower (FC 5070, 5072) with Storage Expansion Unit (FC 505x)

Locations and Addresses

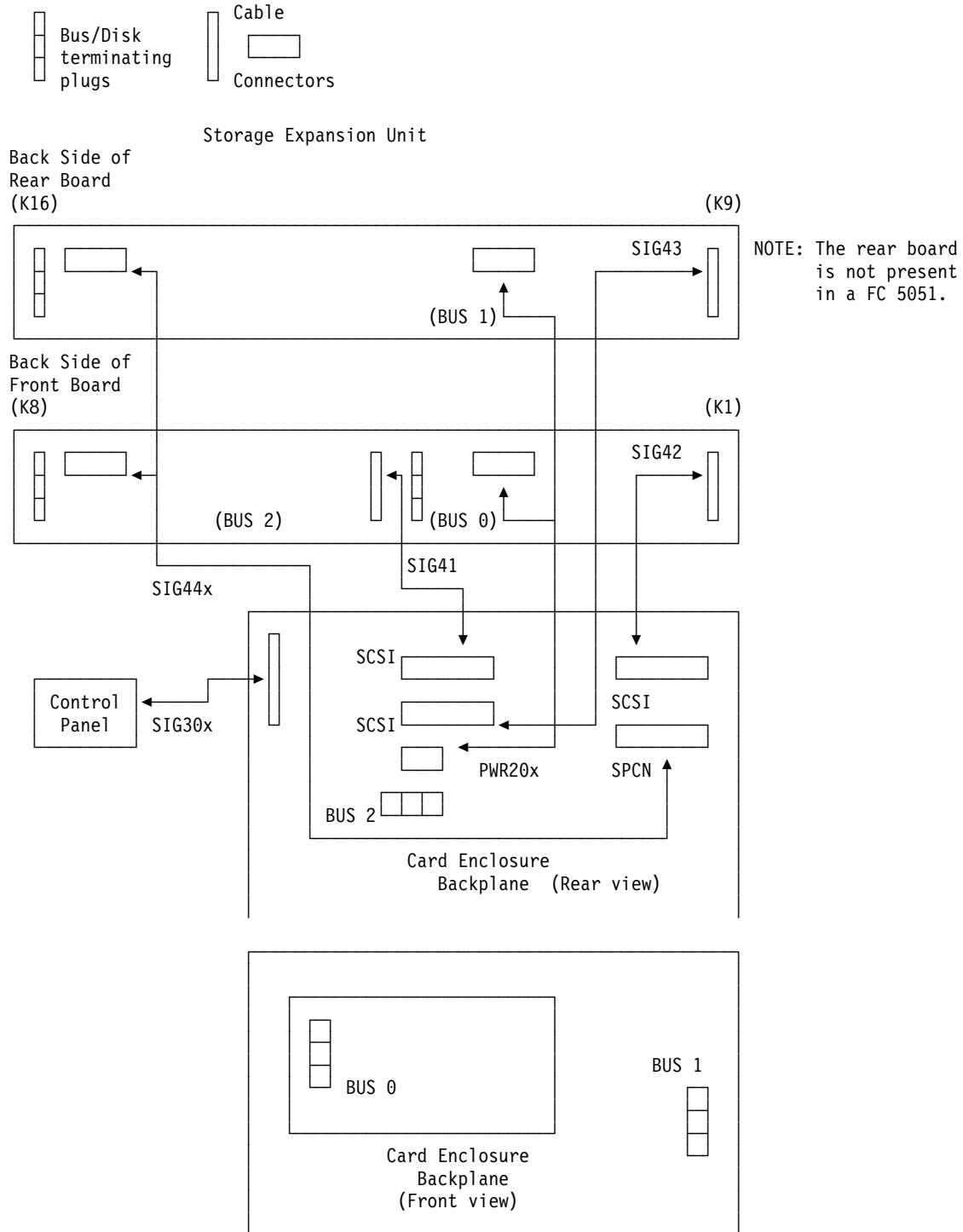


Figure 45. Storage Expansion Tower (FC 5080, 5082) with Storage Expansion Unit (FC 505x)

Locations and Addresses

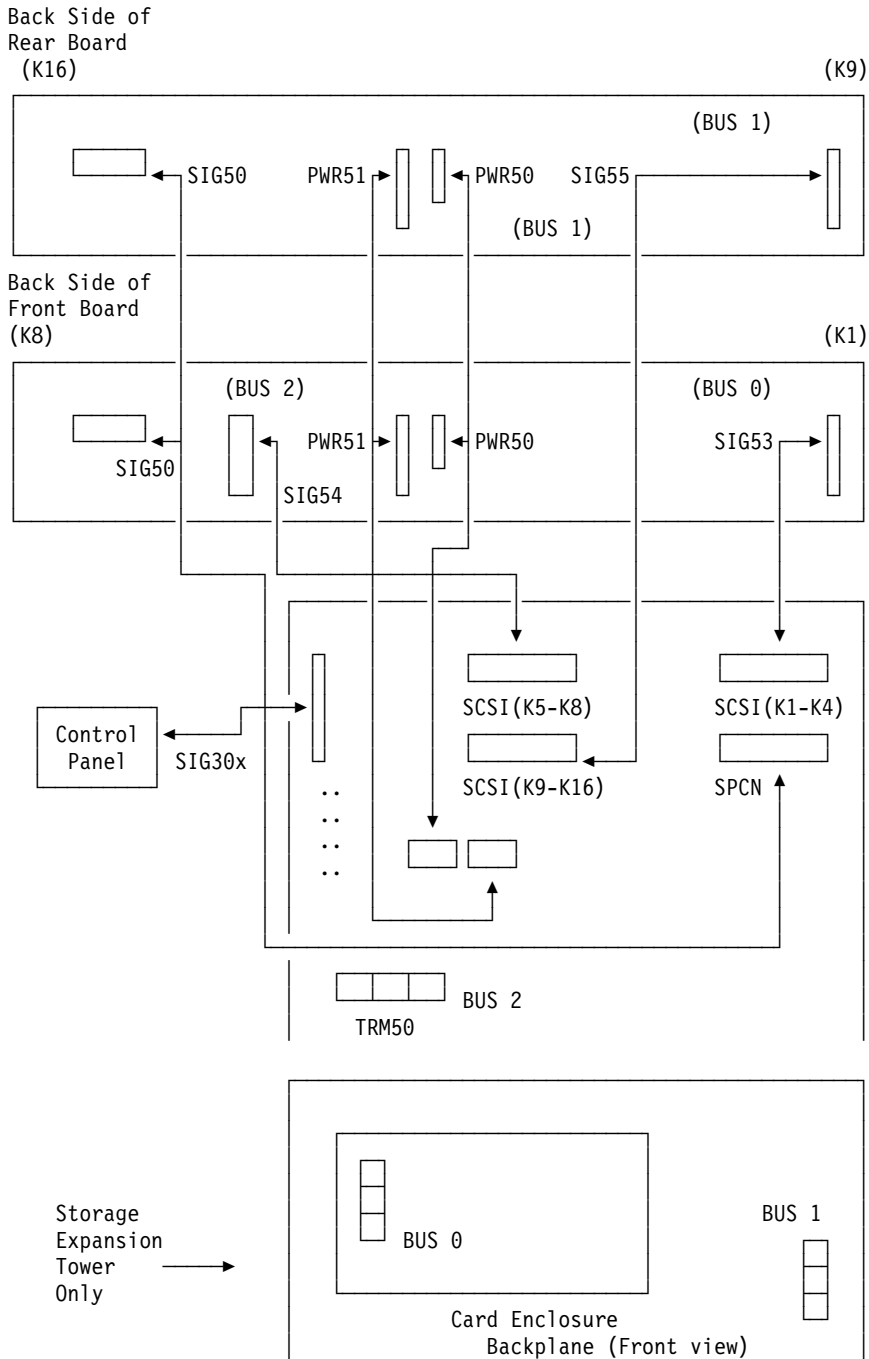
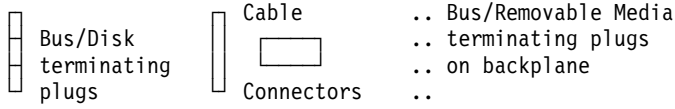


Figure 46. System Unit Expansion Tower (FC 5071, 5073) and Storage Expansion Tower (FC5081, 5083) with Storage Expansion Unit (FC 5058)

I/O Adapters

High and Low Speed PCI IOAs

Table 41 shows the PCI IOA types with descriptions and speeds.

Table 41. PCI IOAs

IOA Type	Description	Speed
2718	External removable media controller	High
2720	2-line communications and twinaxial workstation	Low
2721	2-line communications	Low
2722	Twinaxial workstation	Low
2723	Ethernet	Low
2724	Token Ring	Low
2726	Internal RAID disk, tape, optical controller	High
2728	Internal disk, tape, optical controller	High
2729	External tape controller	High
2740	Internal RAID disk, tape, optical controller	High
2741	Internal RAID disk, tape, optical controller	High
2746	Twinaxial IOA	Low or High
2748	Internal RAID disk, tape, optical controller	High
2750	ISDN Communications IOA	Low or High
2751	ISDN Communications IOA	Low or High
2761	Integrated Modem IOA	Low or High
2838	Ethernet	High

Locations and Addresses

Integrated Netfinity for AS/400 Server (IOA) Switch Settings

166 MHz (has a cooling AMD on the card)

Press the switch at the TOP to turn it ON.

Press the switch at the BOTTOM to turn it OFF.

1	2	3	4	5	6
0	0	0	0	0	0
N	N	F	N	F	F
F F F					
OFF					

133 MHz (no cooling AMD on the card)

Press the switch at the TOP to turn it ON.

Press the switch at the BOTTOM to turn it OFF.

1	2	3	4	5	6
0	0	0	0	0	0
N	F	F	N	F	F
F F F F F					
OFF					

Figure 47. Switch Settings

Note: The 200 MHz and the 333 MHz Integrated Netfinity for AS/400 Server cards do not have switches and do not require jumpers.

2623/2629

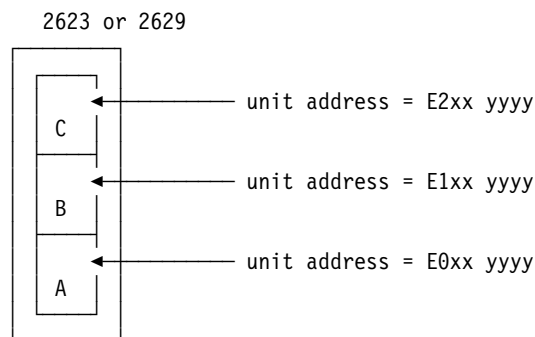


Figure 48. 2623/2629 Plugging

6510/6520

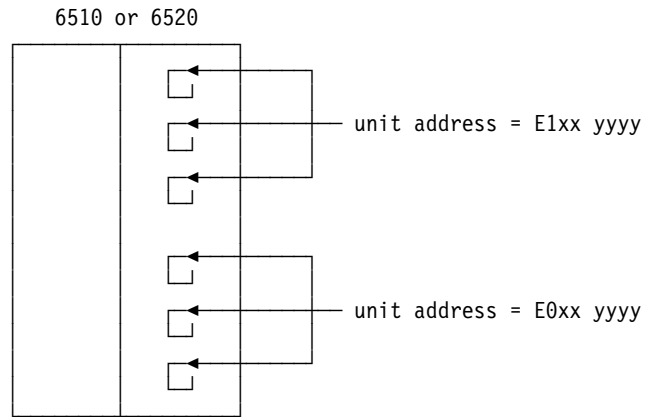


Figure 49. 6510/6520 Plugging

Locations and Addresses

6616

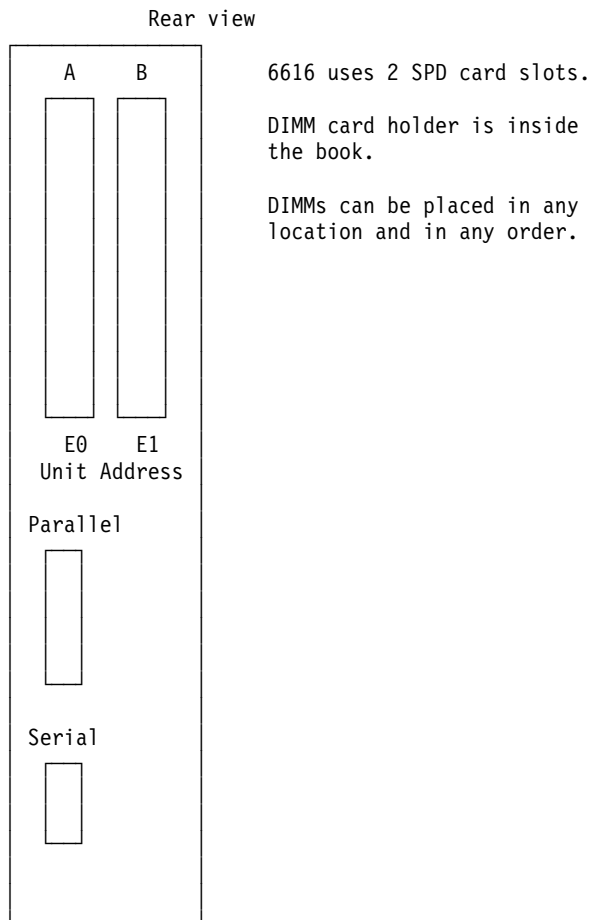
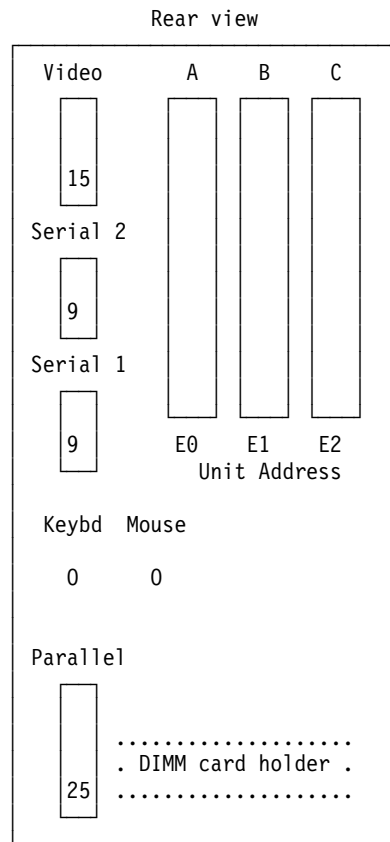


Figure 50. 6616 Plugging

6617



6617 requires 3 SPD card slots.

Slots A, B, C are PCI card slots

(Note: Slot C is used only by Windows NT)

DIMM card holder is inside the book.

DIMM plugging order
 DIMM 3, 2, 1, 0

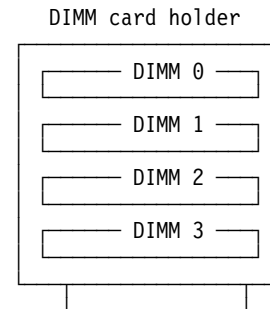


Figure 51. 6617 Plugging

Locations and Addresses

unit address = E2xx yyyy	Cache Adapter (no unit address)
unit address = E1xx yyyy	
unit address = E0xx yyyy	

RZAG6508-1

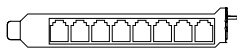
Figure 52. 6751 or 6754

2750/2751 and 2761 Adapter Card Port Connector Locations



FC 2750 and FC 2751 Card

The locations are numbered 4 to 1 (Left to Right)



FC 2761 Card

The locations are numbered 8 to 1 (Left to Right)

External Devices

SCSI I/O Processor (Type 2621) Addressing Scheme

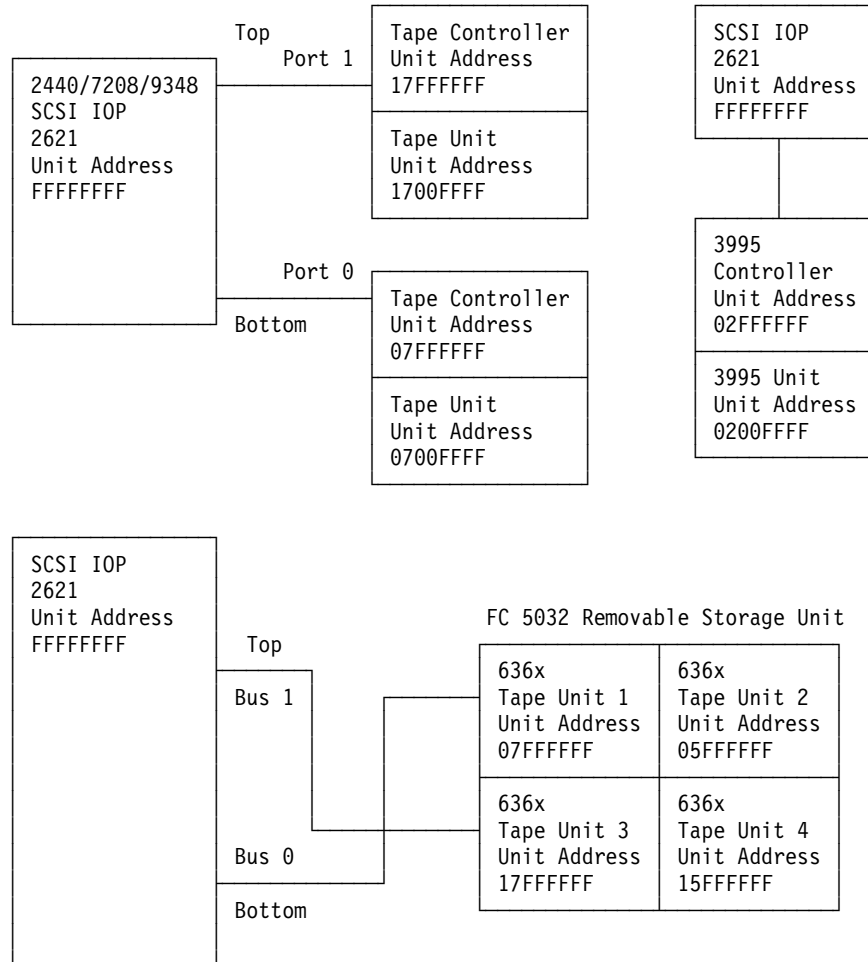
The type 2621 SCSI I/O processor provides support for the following:

- 2440 Tape Unit
- 3995 AS/400 Optical Library Dataserver
- 636x Tape Units in the FC 5032 Removable Storage Unit

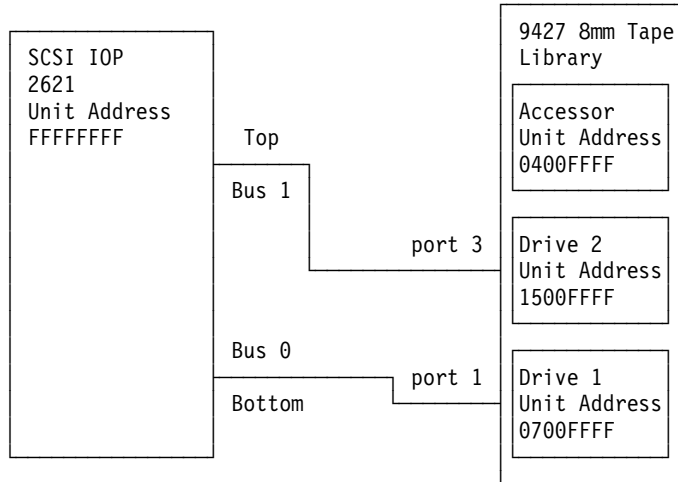
- 7208 Tape Drive
- 9348 Tape Unit
- 9427 8-mm Tape Library

The SCSI I/O processor maps the unit addresses as follows:

SCSI I/O Processor Unit Address Assignments



Locations and Addresses



Tape I/O Processor (Type 2644) Addressing Scheme

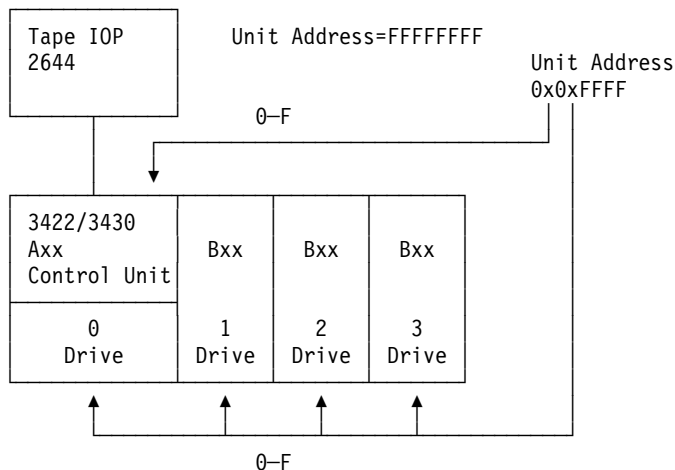
The tape I/O processor (type 2644) provides support for the 3422, 3430, 3480, and 3490 Tape Units. The second character of the unit address is the control unit number and the fourth character is the drive address. For more information on the address for the alternate IPL device see "Determining the Load-Source Disk and Alternate IPL Device" on page 759.

Note: There must *not* be a tape unit installed with address 0.

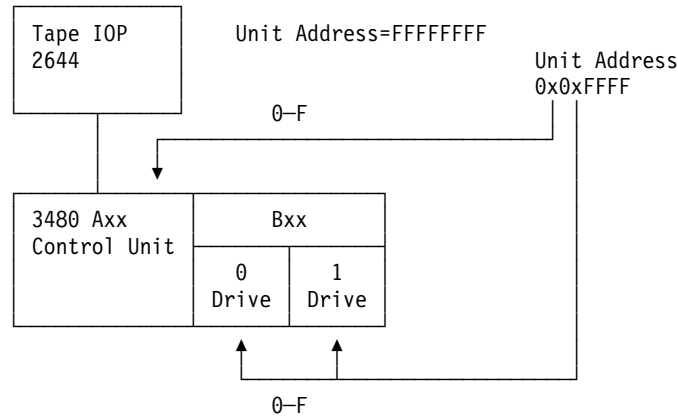
Assume that you have a tape I/O processor with one 3430 Tape Unit; the tape I/O processor maps the unit addresses as follows: 3430 control unit UA=00FFFFFF, 3430 device 1 UA=0000FFFF, 3430 device 2 UA=0001FFFF, 3430 device 3 UA=0002FFFF, and 3430 device 4 UA=0003FFFF.

Tape I/O Processor (Type 2644) Unit Address Assignments

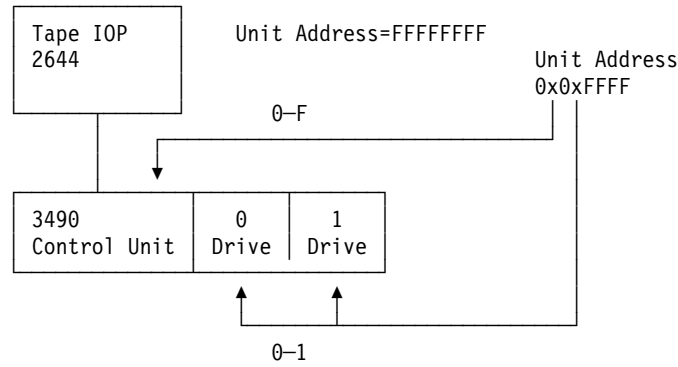
3422/3430 Tape Drives



3480 Tape Drive



3490 Tape Drive



Type 2718 IOA, 2729 IOA, and 6534 IOP Addressing

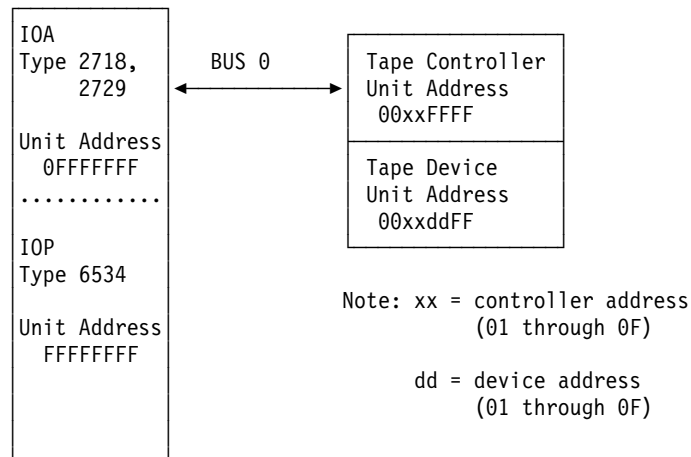


Figure 53. 2718 IOA, 2729 IOA, and 6534 IOP to tape unit

Locations and Addresses

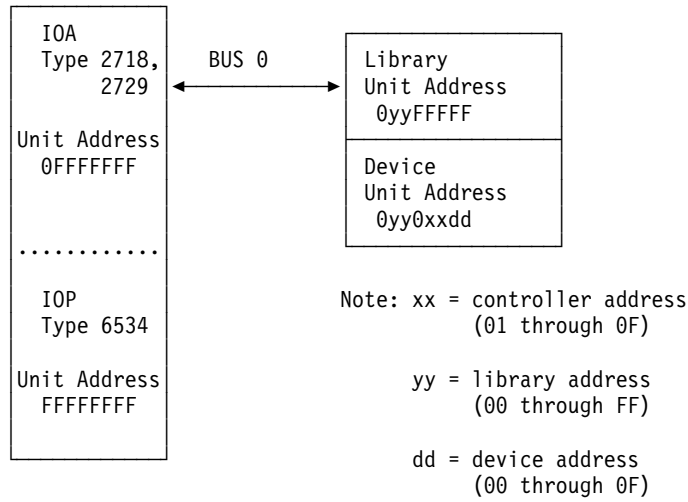


Figure 54. 2718 IOA, 2729 IOA, and 6534 IOP to tape or optical library

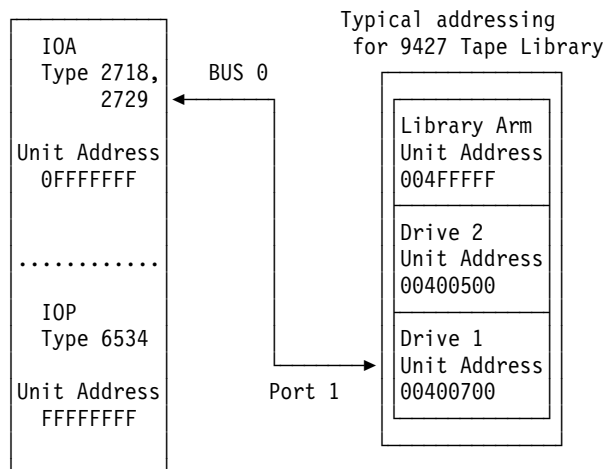


Figure 55. Typical addressing

Type 6501 IOP Addressing

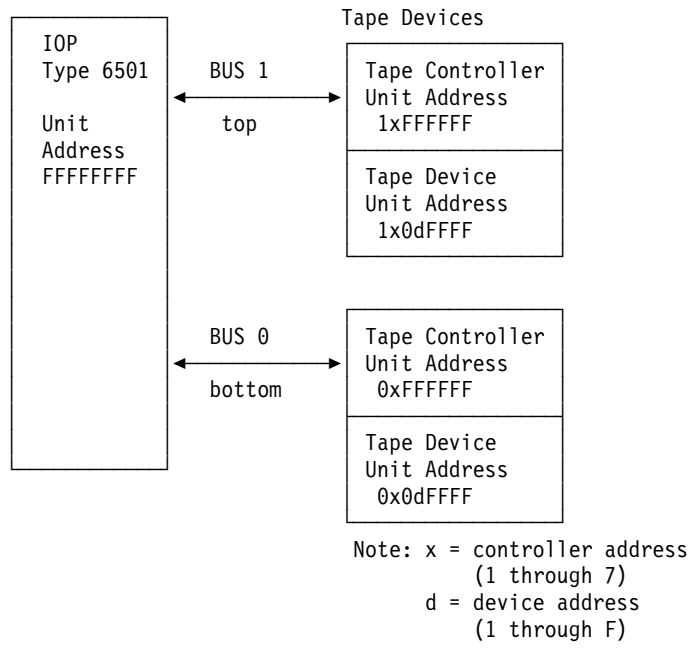


Figure 56. 6501 IOP to tape units

Locations and Addresses

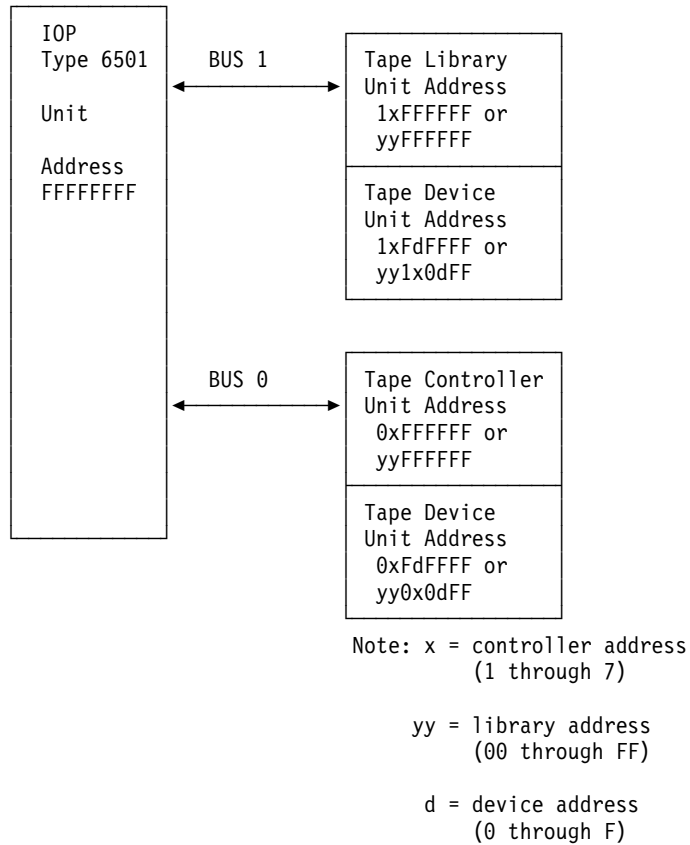


Figure 57. 6501 IOP to tape library

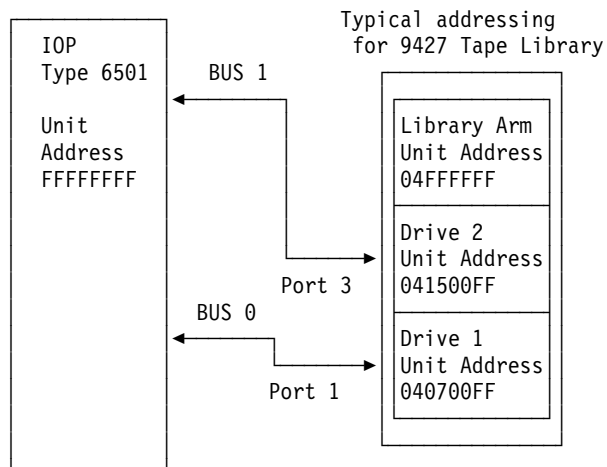


Figure 58. Typical addressing

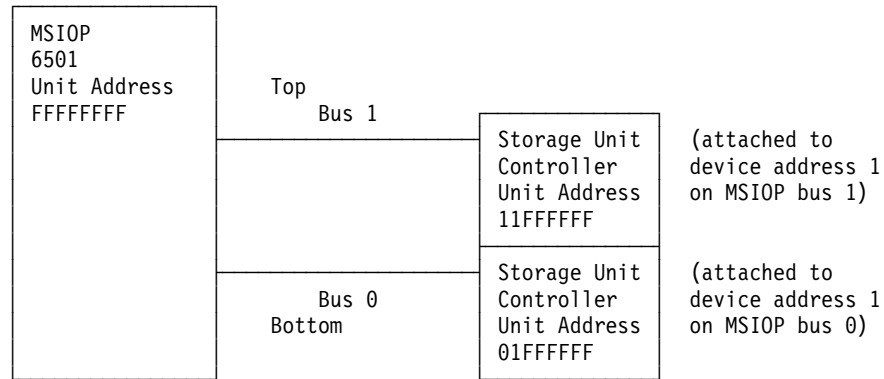


Figure 59. 6501 IOP to storage units

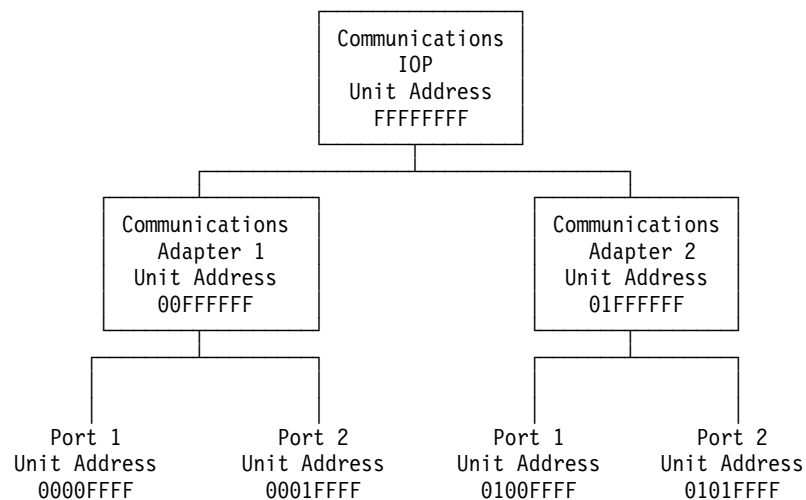
I/O Bus Addressing Schemes

The unique schemes for each subsystem are described on the following pages.

Communications I/O Processor Unit Addressing Scheme

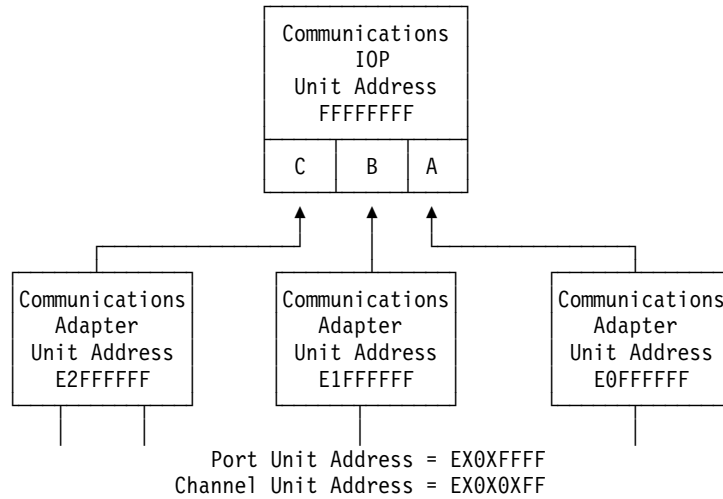
This example, for an SRC that is displayed on the control panel, shows a communications I/O processor with two I/O adapters and two ports.

When the system indicates the I/O processor, the 4 bytes of unit address (UA) for the I/O processor contain hex FFFFFFFF (the unit address points back to the I/O processor). For an I/O adapter, the first byte of the unit address is the I/O adapter number-1, the second through fourth, hex FFFFFFFF. For a port, the first byte is the I/O adapter number-1, the second byte is the port number-1 and the third and fourth, hex FFFF. For example, in the following hardware configuration, the communications I/O processor maps the unit addresses as follows:



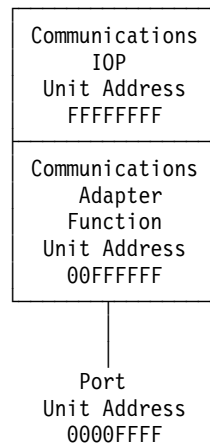
In the following example for an SRC that is displayed on the control panel, port 2 on the communications adapter would map its unit address as E201FFFF. The fourth channel from the communications adapter would map its unit address as E10004FF.

Locations and Addresses



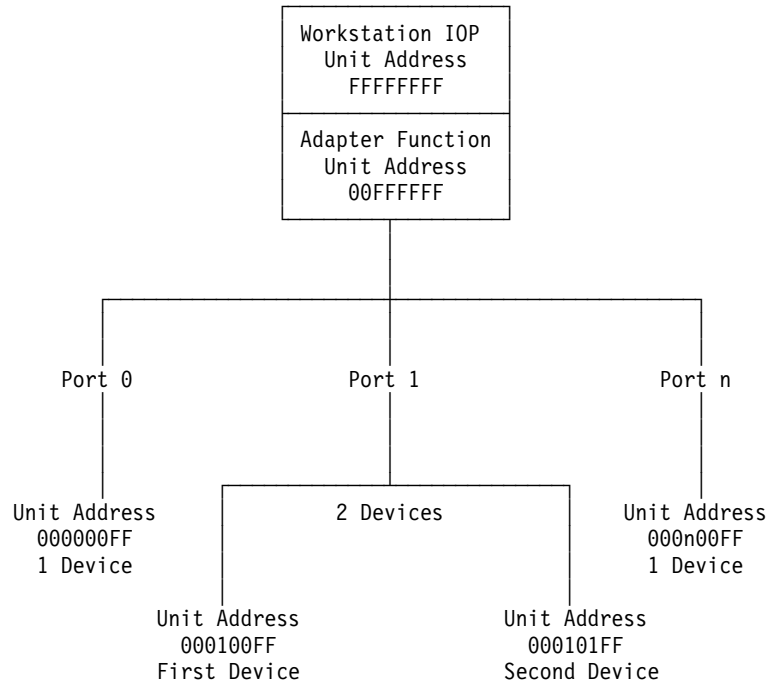
Assignments for Local Area Networks

Local Area Networks



Twinaxial Workstation I/O Processor Unit Addressing Scheme

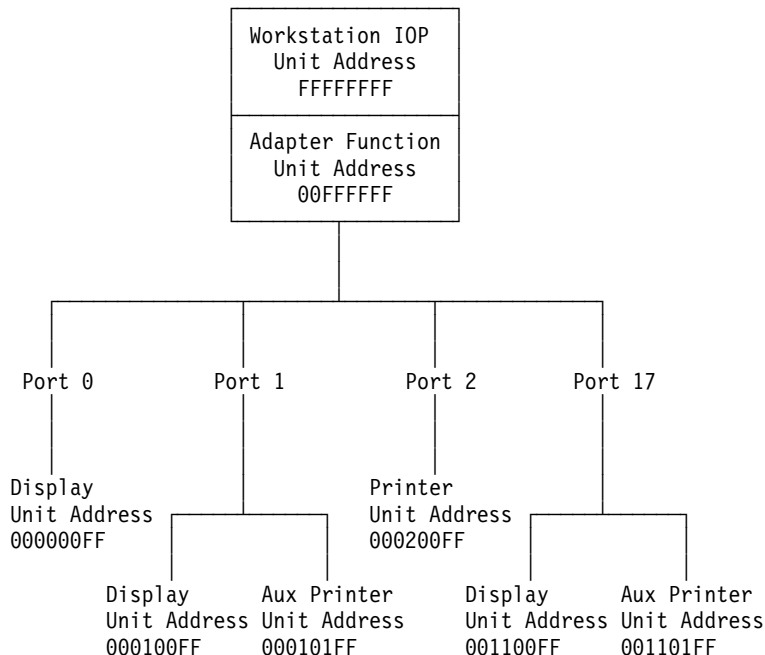
The example for a twinaxial workstation I/O processor SRC displayed on the control panel is described below. When the system indicates the I/O processor, the 4 bytes of unit address for the I/O processor always contain hex 00FFFFFF. The workstation I/O processor knows a device by its port and station address. So for a device, the first byte of the unit address is hex 00. The second byte is the port number (from 0 to 7). The third byte is the station address (from 0 to 6). The fourth byte is hex FF.



ASCII Workstation I/O Processor Unit Addressing Scheme

The example for an ASCII workstation I/O processor SRC that is displayed on the control panel is described below. When the system indicates the I/O processor, the 4 bytes of unit address for the I/O processor always contain hex 00FFFFFF. The workstation I/O processor knows a device by its port and station address. So, for a device, the first byte of the unit address is hex 00. The second byte is the port number (from 00 to 11). The third byte is the station address (from 00 to 01). The fourth byte is hex FF. The primary device always has a station address of 00. It may be a display or a printer (if attached through a modem, the primary device can only be a display). Each port may have an auxiliary printer attached if the primary is a display, and its station address is always 01. The ASCII workstation I/O processor maps the unit addresses as follows:

SRC Address Formats



SRC Address Formats

Use this section to determine the IOP, IOA or device address from either a control panel or a console display.

1. Was the SRC and addressing information obtained either from a control panel display or the Main Storage Dump Manager screen?

No **Yes**

↓ Go to step 7 of this procedure.

2. Are you using the Service Action Log?

No **Yes**

↓ Go to step 5 of this procedure.

3. Are you using OS/400 communication-diagnostic panels that are displayed by the commands VFYCMN, WRKPRB, or ANZPRB?

No **Yes**

↓ Go to step 13 of this procedure.

4. Go to step 10 of this procedure.

5. Display the FRU details for the problem that you are attempting to fix. The location information in the field-replaceable unit detail is only available for IOPs, IOAs, and devices.

Is the field-replaceable unit an IOP, IOA, or device *and* is there location information in the Location field of the display?

No **Yes**

↓ Use the location information and return to the procedure that sent you here.

6. Go to "Hexadecimal Product Activity Log Data" in the *AS/400 Service Functions* to obtain the address information. When that procedure instructs you to return to the previous procedure, return to step 8 of this procedure.

SRC Address Formats

7. Addressing information is in the Bus-Bus-Bus-Bus/Card-card/board-board (BBBBCcbb) format as follows:
 - If the last 2 characters of function 12 (word 2) are 60:
 - The IOP address is in function 14 (word 4) in the format “BBBBCcbb”.
 - The device address is the 8 characters of function 15 (word 5) in the format “abcd efgh”.
 - If the last 2 characters of function 12 (word 2) are 13, 17, 27, or 29:
 - The IOP address is in function 13 (word 3) in the format “BBBBCcbb”.
 - The device address is the 8 characters of function 14 (word 4) in the format “abcd efgh”.
 - If the last 2 characters of function 12 (word 2) are 62:
 - The IOP address may be in function 17 (word 7) in the format “BBBBCcbb”.
 - The device address may be the 8 characters of function 16 (word 6) in the format “abcd efgh”.
8. The BBBBCcbb format is the hexadecimal direct select address of a card position in the system unit, expansion unit or expansion tower. The format definition is:
 - BBBB—System Bus
 - Cc—System Card
 - bb—System Board
9. Go to step 12 of this procedure for IOA and device address information.
10. Addressing information is in the Bus/Board/Card format.

Note: This format shows the system bus number in decimal form.

If no address information is available in the console error message, check the product activity log entry that is associated with the console error message. Figure 60 is an example of a product activity log display for a storage device. Other devices (for example, workstations or communications) have similar displays. For more information about the product activity log, see “Product Activity Log” in *AS/400 Service Functions*.

```

Display Address Information for Resource

Name          Type      Model    Serial      Resource
Storage       6607     050     83-00834   DD001

Physical Location
Frame ID . . . . . : 1

Device Position . . . . . : L01

Logical Address:
SPD Bus:
System Bus . . . . . : 1
System Board . . . . . : 0
System Card . . . . . : 1
Storage:
I/O Adapter . . . . . : 0
I/O Bus . . . . . : 0
Controller . . . . . : 1
Device . . . . . : 0
```

Figure 60. Product Activity Log display example

In the above example, the contents of “Storage” are defined as follows:

SRC Address Formats

Reference

Description

I/O Bus

This is the SCSI bus to which the device is connected.

I/O Adapter

This is the adapter that the I/O bus connects to on the I/O processor.

Controller

This is the logical controller for the addressed device.

Device

This is the *logical* device that is attached to the *logical* device controller.

- Use Figure 61 to understand how addresses in the Bus/Board/Card format relate to the Bus-Bus-Bus-Bus/Card-Card/Board-Board format. You can also use Figure 61 to understand how addresses in the Bus/Board/Card format relate to the direct select addresses used in "System Unit Locations and Addresses" on page 695.

Note: When converting from Bus/Board/Card format to Bus-Bus-Bus-Bus/Card-Card/Board-Board format, the numbers must be converted from Decimal to Hexadecimal.

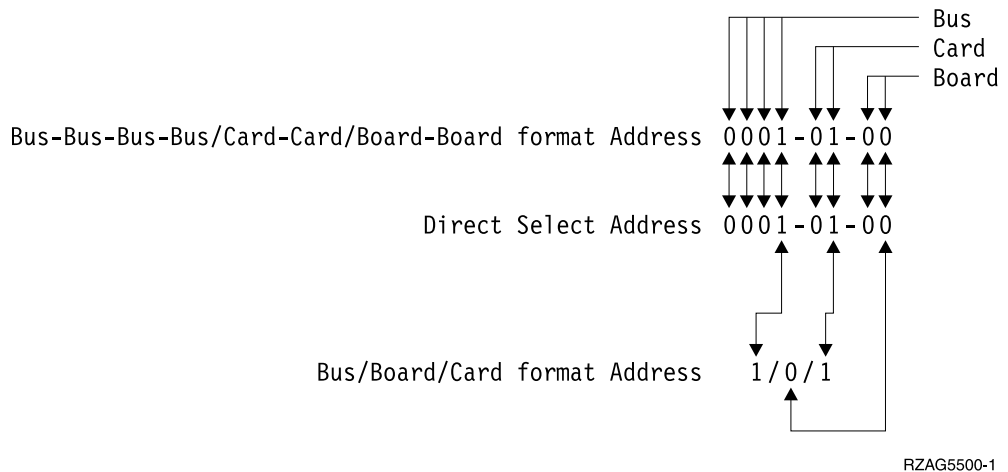


Figure 61. Format Conversion

- Unit (Device) Address Definitions are explained in an "abcd efgh" format. For example, if the unit address is 0100 FFFF or 0001 00FF, the address relates to the "abcd efgh" format as follows:

Disk Unit example
without I/O adapter
(Address Type A)

0 1 0 0 F F F F
↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑
a b c d e f g h

OR

Disk Unit example
with I/O adapter
(Address Type B)

0 0 0 1 0 0 F F
↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑
a b c d e f g h

Note: Type A IOPs that do not have the additional adapter addressing are 2621, 2624, 2644, 6112, 6500, 6501, 6502, 6512, 6513, 6530, 916x, and 918x. All other IOPs or storage adapters have the additional adapter addressing and use the Type B address format.

SRC Address Formats

The characters “abcd efgh” can have different meanings, depending on the subsystem that reports the problem. However, they define the information that is contained in the unit (device) address as follows:

Communications	Disk, Tape, or Optical without I/O adapter address (Type A)
a I/O Bus	a I/O Bus
b Adapter	b Controller
c 0	c 0
d Port	d Device
e 0	efgh FFFF
f Channel	
gh FF	

Workstation	Disk, Tape, or Optical with I/O adapter address (Type B)
a I/O Bus	a I/O Adapter
b Adapter	b I/O Bus
cd Port	cd Controller
e 0	ef Device
f Device	gh FF
g 0	
h Session	

Note: If the unit (device) address appears as FFFF FFFF, the address cannot be determined.

13. OS/400 communication-diagnostic panels that are displayed by the commands VFYCMN, WRKPRB, and ANZPRB use the following address format:

x1 x2 x3x4

Table 42. Decimal Address Values

Value	Description
x1 = System bus	The one, two or three digit decimal representation of the hexadecimal Bus value of the Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address at the top of Figure 61 on page 742.
x2 = System board	The one or two digit decimal representation of the hexadecimal Board value of the Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address at the top of Figure 61 on page 742.
x3 = System card	The one or two digit decimal representation of the hexadecimal Card value of the Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address at the top of Figure 61 on page 742.
x4 = Adapter location	The one or two digit decimal representation of the hexadecimal b Adapter value of the Communications unit address value in step 12 on page 742.

Return to the information that sent you to this procedure.

This ends the procedure.

SRC Address Formats

Hardware SRC Formats

Table 43. SRC format examples (other formats exist; if necessary contact your next level of support)

SRC word number	Panel Function	IOP SRC Format 13	IOP SRC Format 17	Device SRC Format 27	LIC SRC Format 60	LIC SRC Format 61	LIC SRC Format 62	LIC SRC Format 63
1	11	TTTT RRRR	TTTT RRRR	tttt rrrr	A6xx RRRR	B6xx RRRR	ww00 RRRR	A600 RRRR
2	12	MIGV EP13	MIGV EP17	MIGV EP27	MIGV EP60	MIGV EP61	MIGV EP62	MIGV EP63
3	13	BBBB Ccbb	BBBB Ccbb	BBBB Ccbb	PPPP 0000	cccc cccc	cccc cccc	AAAA BBBB
4	14	aaaa aaaa	aaaa aaaa	aaaa aaaa	BBBB Ccbb	pppp pppp	pppp pppp	CCCC DDDD
5	15	TTTT LMMM	TTTT LMMM	tttt lmmm	aaaa aaaa	qqqq qqqq	RRRR rrrr	EEEE FFFF
6	16	uuuu uuuu	ttt lmmm	TTTT LMMM	ttt mmmm	qqqq qqqq	aaaa aaaa	GGGG HHHH
7	17	uuuu uuuu	ZZZZ rrrr	ZZZZ RRRR	ssss ssss	0000 0000	BBBB Ccbb	JJJJ KKKK
8	18	uuuu uuuu	ssss ssss	ssss ssss	NNNN 0000	0000 0000	ttt lmmm	TTTT 0MMM
9	19	uuuu uuuu	uuuu uuuu	uuuu uuuu	0000 0000	0000 0000	ZZZZ ZZZZ	SSSS SSSS

For further definition of the "Logical Address Format" - see *AS/400 Service Functions* "Logical Address Format" information.

AAAA

Type of I/O Bus (see Logical Address Format - field 'A')

aaaa Unit address

BBBB System Bus Number (see Logical Address Format - field 'B')

BBBBCcbb

Bus, bus, bus, bus, card, card, and board, board address (Direct Select Address or DSA)

CCCC System Board Number (see Logical Address Format - field 'C')

cccc cccc

Component reference code. Format 62 varies by component.

DDDD

System Card Number (see Logical Address Format - field 'D')

EEEE (see Logical Address Format - Unit Address type - field 'E')

FFFF (see Logical Address Format - Unit Address data - field 'F')

GGGG

(see Logical Address Format - Unit Address data - field 'G')

HHHH

(see Logical Address Format - Unit Address data - field 'H')

JJJJ (see Logical Address Format - Unit Address data - field 'J')

KKKK	(see Logical Address Format - Unit Address data - field 'K')
0MMM	Model number of failing device (i.e. MMM='001')
SSSSSSSS	System Reference Code - this SRC is used to determine why the primary console failed to respond.
PPPP	Cause code
Immm	Level indicator plus 3"digit model number of failing device
LMMM	Level indicator plus 3"digit model number (for example, 0001)
MIGV EP	General system status.
NNNN	Number of disk device facilities that are missing
PPPP PPPP	Programming reference code
qqqq qqqq	Programming reference code qualifier
rrrr	Outboard failing unit reference code (URC)
RRRR	Unit reference code (URC)
ssss	Serial number of failing unit
tttt	Outboard failing unit type number (for example, 6607)
TTTT	Type number or card identification number (hex)
uuuu	Unit-specific data
ww	SRC type
ZZZZ	Reserved

Note: Function 20-3 displays the machine type (940x), model number, and processor feature code.

Reclaim IOP Cache Storage

1. If you are not already using dedicated service tools, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
2. Reclaim the cache adapter card storage by doing the following:
Did you get to DST with a Type D IPL?
Yes No
↓ Go to step 2d on page 746 of this procedure.
 - a. Select the *Work with disk units* option.
 - b. Select the *Reclaim IOP cache storage* option.
 - c. Follow the on-line instructions to reclaim cache storage. The system will Automatically perform an IPL to a Disk Configuration Warning Report

Reclaim Storage

screen. Take the option to display the report. Because the Reclaim Cache Storage was selected after a D-IPL, the system will now require another Reclaim Cache Storage to be performed.

- d. Select the *Work with disk units* option.
- e. Select the *Work with disk unit recovery* option.
- f. Select the *Reclaim IOP Cache Storage* option.
- g. Follow the on-line instructions to reclaim cache storage. Depending on the reason for performing the Reclaim IOP Cache procedure, there may be a message requiring the ASP be cleared before performing this option, or a message stating the number of lost sectors.

Note: If there are lost sectors, some objects may be damaged. The customer may have to load the damaged objects again. (see the *Backup and Recovery* for more information.)

Note: When Reclaim IOP Cache Storage is performed on the MFIOIP, the MFIOIP will perform a Reset/Reload which causes CXXX XXXX codes to be displayed on the system control panel. The DST console will then have a blank screen with 01 B displayed on the system control panel for up to 15 minutes. This will be followed by SRC A600 5082 on the system control panel. When the SRC A600 5082 is displayed, Function 21 must be performed to recover the DST console. DO NOT perform any type of System power down or IPL before doing the Function 21.

This ends the procedure.

Storage I/O Card Modes and Jumpers

The 2748 I/O card can run in either Compression mode or Enhanced mode. The tailstock of the I/O card is marked with a C, indicating compression mode, and an E, indicating enhanced mode. Three pins on the tailstock determine the mode of the card, depending on which of the pins have a jumper placed on them.

You can determine and set the mode of the I/O card by locating the three pins on the card's tailstock.

You can also switch the mode of the I/O card by changing the location of the jumper on the card's tailstock.

The jumper may be moved at any time, but changes only take effect during a system IPL.

When an error regarding the mode of the Storage I/O card appears, the error message indicates whether the jumper is missing or overridden.

- If the error message is CPPEA20, the I/O card has overridden the mode set by the jumper. See Mode Jumper has been Overridden.
- If the error message is CPPEA21, the I/O card has detected that the jumper is missing. See Mode Jumper is Missing.

Determining and Setting the Mode of an I/O Card

The 2748 I/O Card supports two modes, compression and enhanced.

Mode	Description
------	-------------

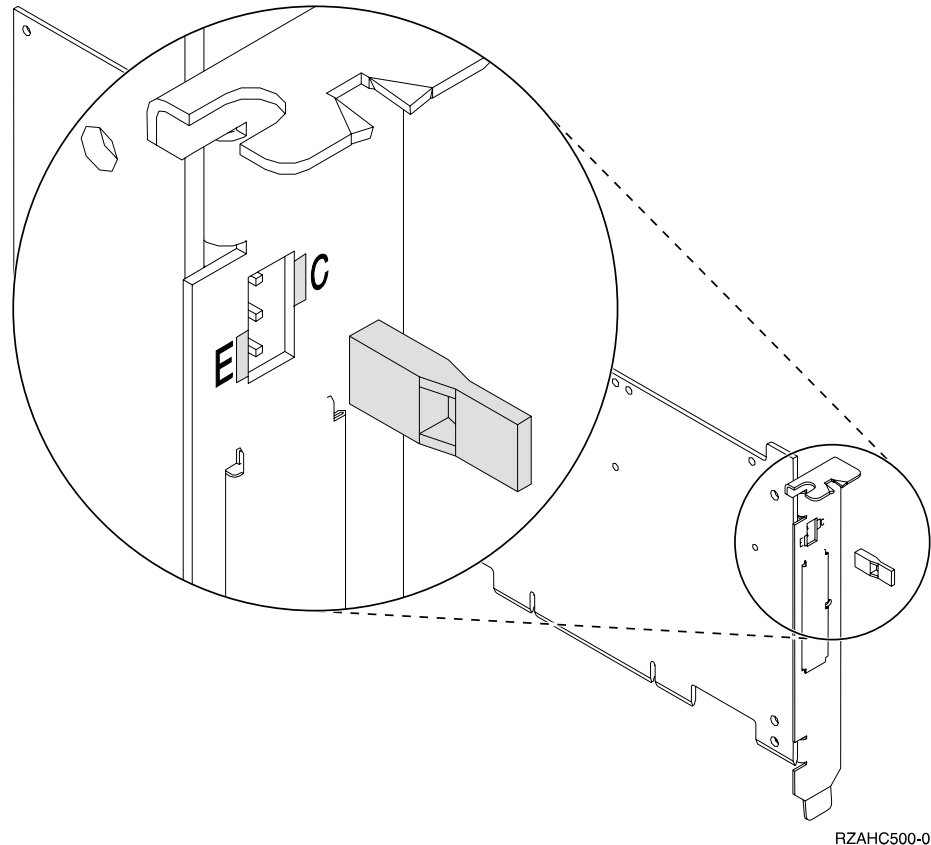
Compression Mode

Compression mode should only be used when you wish to run Integrated Hardware Disk Compression. In compression mode, the write cache size is 4MB.

Enhanced Mode

Enhanced mode has an enhanced write cache size. In Enhanced mode, the write cache size is 26MB. Enhanced mode also provides support for Extended Adaptive Cache (via attachment of a Read Cache Device) and Extended Adaptive Cache Simulator.

Refer to the illustration below while performing this procedure.



Set the mode of the card to Compressed (C) by placing the jumper on the top and middle pins. Set the mode of the card to Enhanced (E) by placing the jumper on the middle and bottom pins.

Switching the Mode of an I/O Card

If the mode jumper is not in the desired position (See Determining and Setting the Mode of an I/O Card) do the following:

1. Power off the system, ensuring that no jobs are currently processing. (See "Starting and Stopping the System" in Chapter 1 of *Basic System Operation, Administration, and Problem Handling*).
2. Move the mode jumper to the position that is desired. See Determining and Setting the Mode of an I/O Card.

Note: The mode jumper is accessible without requiring the removal of the I/O Card.

Reclaim Storage

3. Select the IPL type and mode.
4. Power on the system.

Mode Jumper has been Overridden

The error message **CPPEA20** appears when the mode jumper has been overridden. This is due to cache data that is in a conflicting mode.

To begin correcting this error, examine the mode jumpers in the tailstock section of the Storage I/O card.

If the mode jumper is not in the desired position(See Determining and Setting the Mode of an I/O Card), do the following:

1. Power off the system, ensuring that no jobs are currently processing. (See "Starting and Stopping the System" in Chapter 1 of *Basic System Operation, Administration, and Problem Handling*).
2. Move the mode jumper to the position that is desired. See Determining and Setting the Mode of an I/O Card.

Note: The mode jumper is accessible without requiring the removal of the I/O Card.

3. Select the IPL type and mode.
4. Power on the system.

This ends the procedure.

If the mode jumper is in the desired position and any other I/O card or device SRCs occurred at about the same time as this error, Contact your IBM service center.

If the mode jumper is in the desired position and no other I/O card or device SRCs occurred at about the same time as this error, then power the system down normally and IPL (see "Starting and Stopping the System" in Chapter 1 of *Basic System Operation, Administration, and Problem Handling*).

Mode Jumper is Missing

The error message **CPPEA21** appears when the mode jumper is missing from the Storage I/O card.

1. Locate the jumper.
2. Power off the system (see "Starting and Stopping the System" in Chapter 1 of *Basic System Operation, Administration, and Problem Handling*).
3. Install the jumper in the correct position (see "Determining and Setting the Mode of an I/O Card" on page 746).
4. Power on the system.

This ends the procedure.

Manually Removing the Tape Cartridge

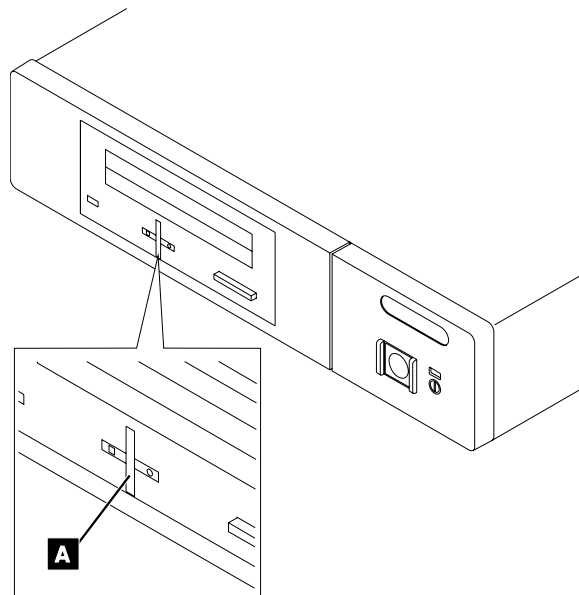
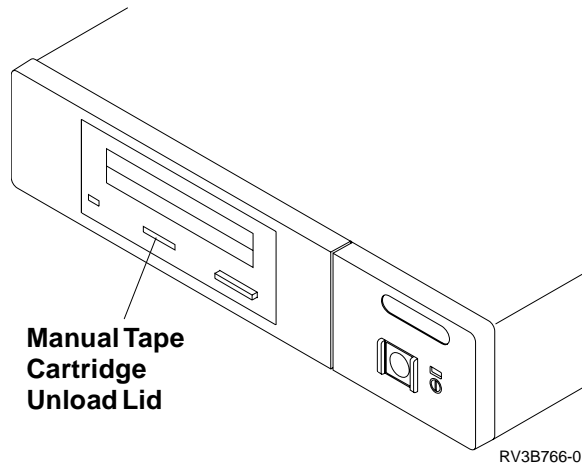
1/4 inch Tape Cartridge (Type 6335)

Attention: This procedure is very delicate and may damage or destroy the tape cartridge. Use this procedure only when you have attempted the other options for removing the tape cartridge.

Removing Tape Cartridge

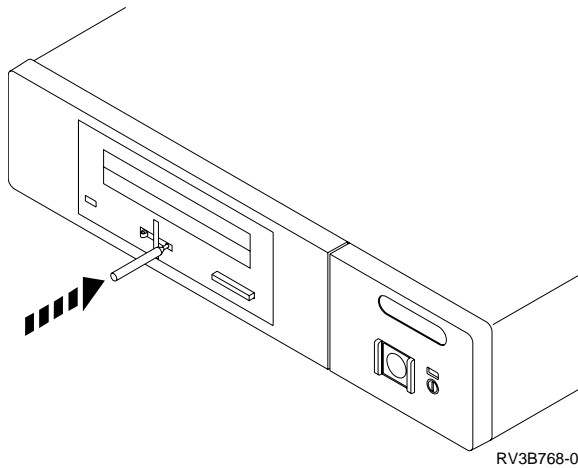
The following procedure describes how to remove a tape cartridge manually from an internal 1/4 inch tape unit. This procedure may be required if a defective tape cartridge or tape unit has caused the cartridge ejection function to fail. The procedure may also be needed if the data on the tape cartridge is either critical or sensitive and the customer can not afford its loss.

1. Power off the tape unit.
2. Carefully lift and turn the manual tape cartridge unload lid **A**.

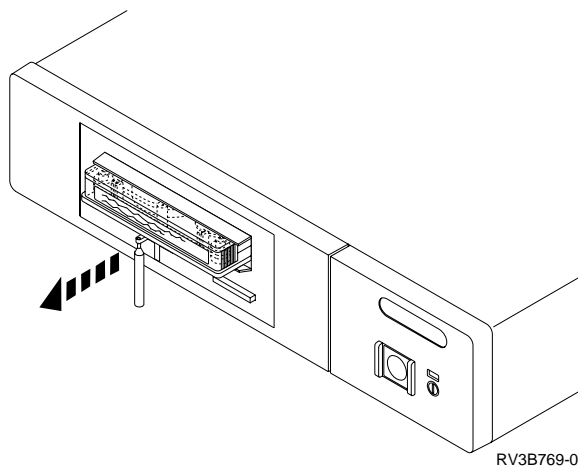


3. Insert a solid metal rod (like a bristol wrench) into the manual tape cartridge unload hole and push in until it stops and the arm appears.

Removing Tape Cartridge



4. Pull the arm out until it stops. Insert the solid metal rod into the hole of the arm and pull out until the tape cartridge comes out.



5. Remove the tape cartridge.
6. Push the arm back in until it stops, turn the manual tape cartridge lid back to the starting position and push it back in place.

6383, 6385, 6386 Tape Cartridge

Attention: This procedure is very delicate and may damage or destroy the tape cartridge. Use this procedure only when you have tried the other options for removing the tape cartridge.

The following procedure describes how to remove a tape cartridge manually from a 6383, 6385, or 6386 tape unit. You may need this procedure if a power failure or tape unit failure prevent the tape cartridge from ejecting.

The procedure for removing a tape cartridge varies for the following two conditions:

- Standby position - with the bridge moved away from the cartridge.
- Locked position - with the bridge engaged to the cartridge.

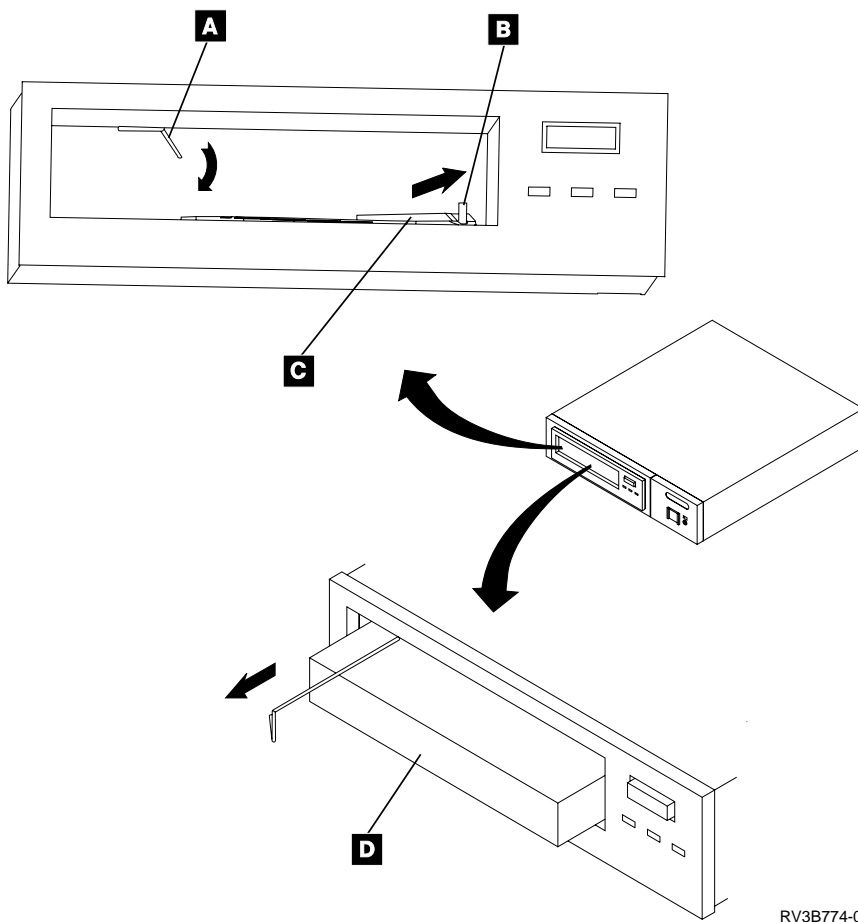
To determine which position the tape unit is in, open the tape unit door and check the location of the bridge.

Locked Position

1. Power off the tape unit.
2. Open the tape unit door.
3. Locate the metal axle **B** inside the tape unit. Look towards the lower right corner.
4. Insert a pointed object (like a pen or screwdriver) into the tape unit and push the axle inward.
5. Push the bridge **C** to the right.
The tape unit is now in standby position. Continue with "Standby Position".

Standby Position

1. Power off the tape unit.
2. Open the tape unit door.
3. Locate the hook shaped metal rod **A** inside the tape unit in the upper left corner.
4. Insert a pointed object (like a pen or screwdriver) into the tape unit and push the metal rod downward.
5. Pull the metal rod forward until the cartridge ejects.
The cartridge **D** is pushed out the tape unit door and can be removed.



Removing Tape Cartridge

8-mm Tape Cartridge (6390)

Attention: This procedure is very delicate and may damage or destroy the tape cartridge. Use this procedure only when you have attempted the other options for removing the tape cartridge.

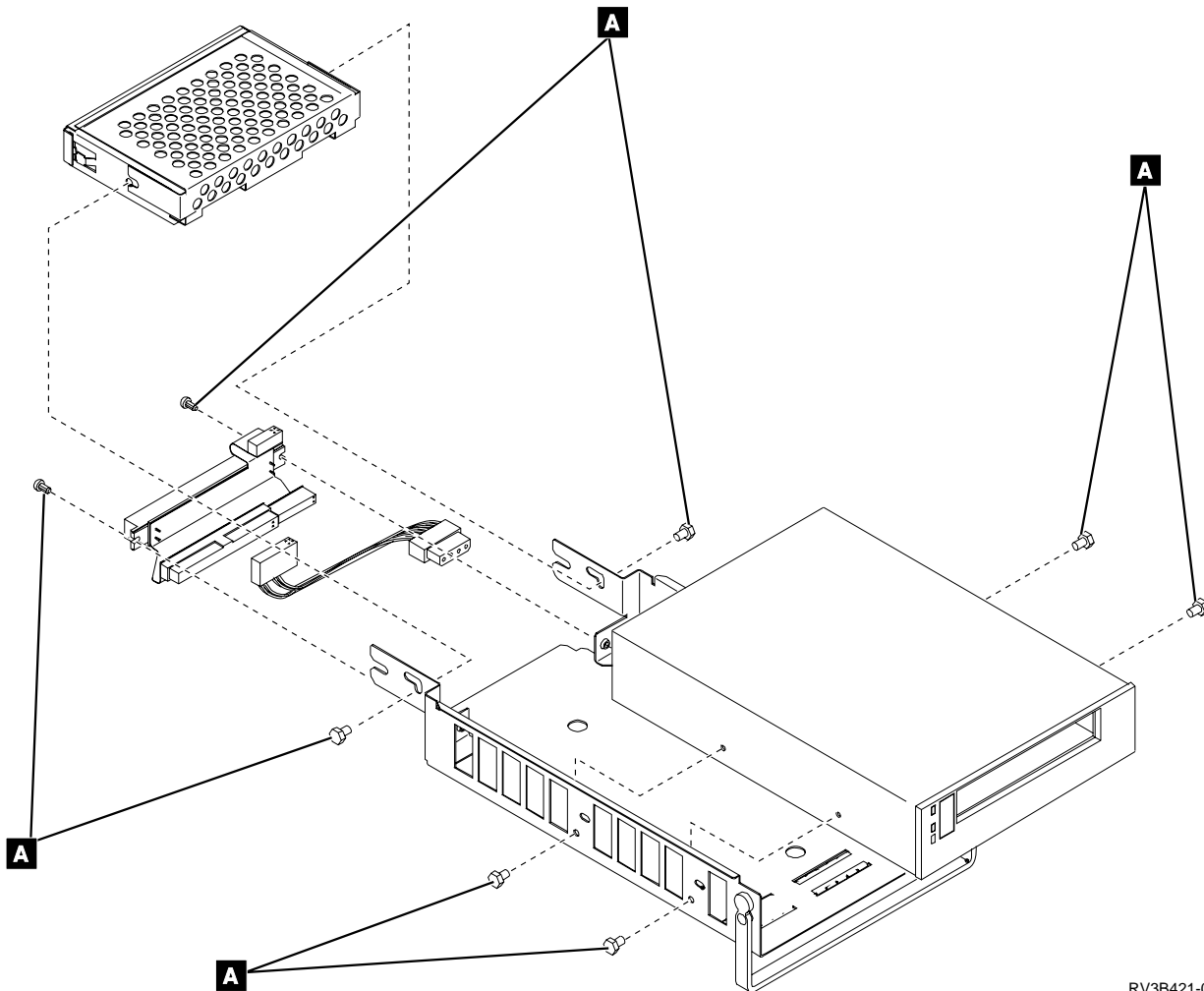
The following procedure describes how to remove a tape cartridge manually from an internal 8-mm tape unit. This procedure should be used if a defective tape cartridge or tape unit has caused a failure of the tape ejection function. The procedure should also be used if the data on the tape cartridge is critical or sensitive and the customer can not afford its loss.

1. Is the 8-mm tape drive in a tray as shown below?

Yes **No**

↓ Go to step 4 of this procedure.

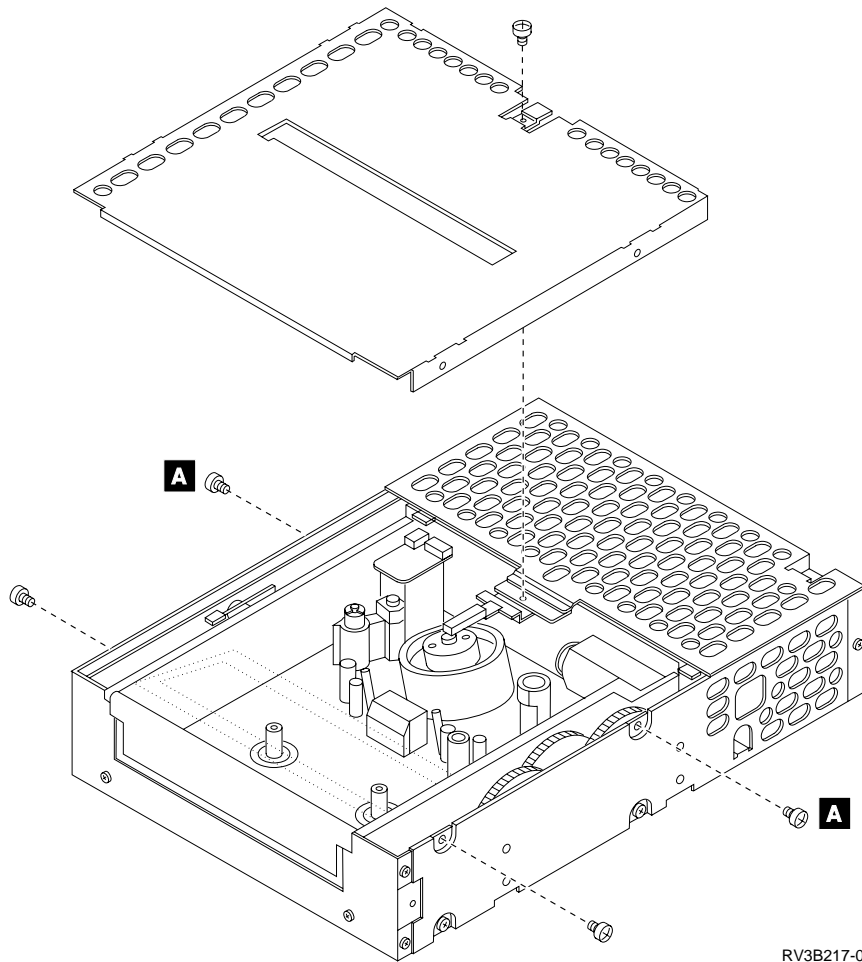
2. Remove the tape unit from the system (see "Chapter 6. Removal and Installation Procedures" on page 793).
3. Remove the screws **A** to remove the tape drive from the tape tray.



RV3B421-0

4. Remove the screws from the top cover of the drive assembly. Screws **A** may not be present.

Removing Tape Cartridge



RV3B217-0

5. Inspect the tape and tape cartridge. There are two positions for the tape:
 - If a tape is unloaded correctly, it is tight across the opening of the tape cartridge as shown. It should not touch any tape guides in the drive assembly.
 - Loaded (touching) on the tape guides.

Is the tape unloaded correctly?

No **Yes**

↓ Go to step 9 of this procedure.

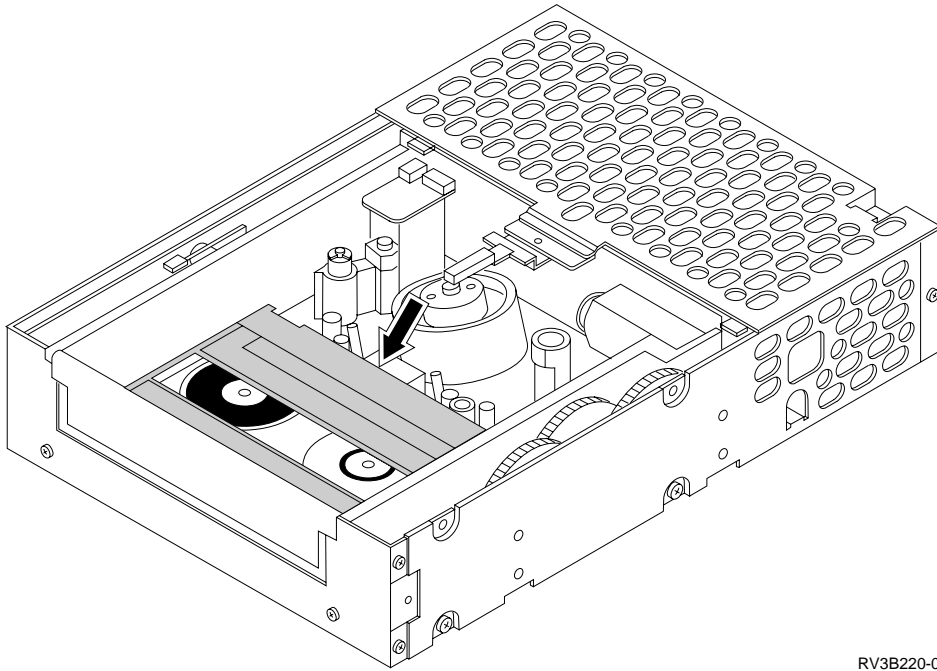
6. The drive assembly may need assistance to unload the tape. Two options are available:
 - Cutting the tape
To perform this option, continue with step 7 of this procedure.
 - Using manual actions to unload the tape from the tape guides
To perform this option, go to step 8 of this procedure.

Note: The instructions listed in step 7 of this procedure may damage the tape and can result in data loss from that tape cartridge. The customer should be made aware of this possibility before these procedures are attempted.

7. **Attention:** The following step will destroy the data and the tape cartridge.

Removing Tape Cartridge

Cut the tape at a convenient location. Go to step 9 of this procedure to remove the tape cartridge from the drive assembly.

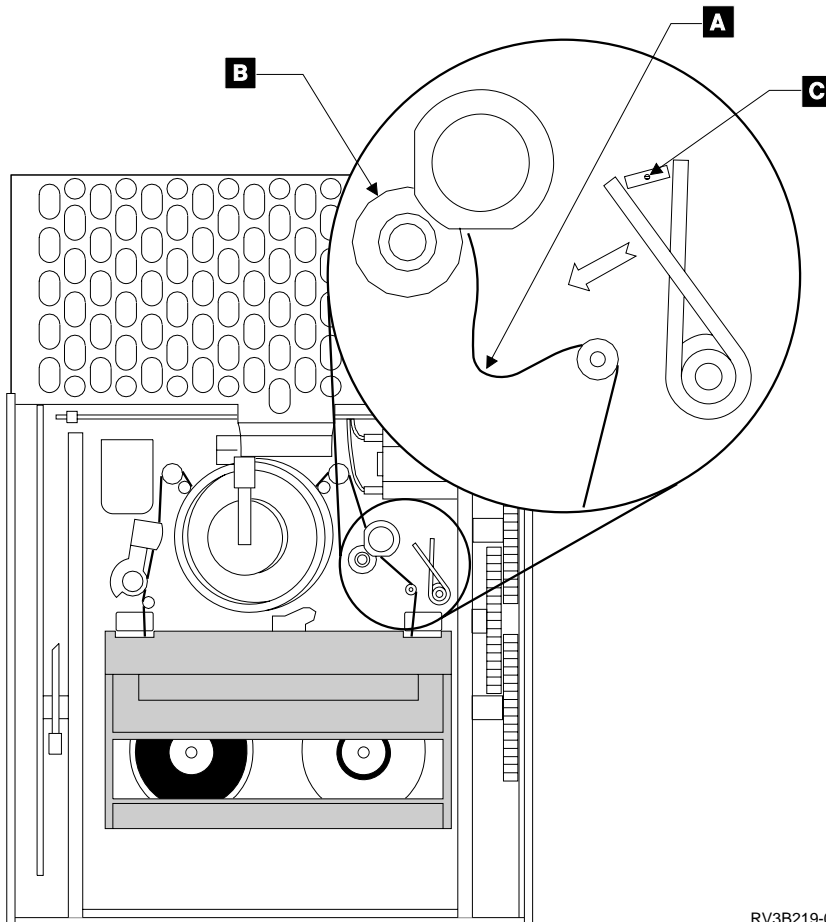


RV3B220-0

8. Perform the following:
 - a. Loosen the tape as shown **A**. Make sure not to damage or crease the tape. If the pinch roller **B** is engaged, push the pinch roller spring bracket as shown **C**. This releases the pinch roller and provides a gap from which the tape can be removed.

Note: Use a smooth, clean, rounded tool to loosen and lift the tape off the tape guides.

Removing Tape Cartridge

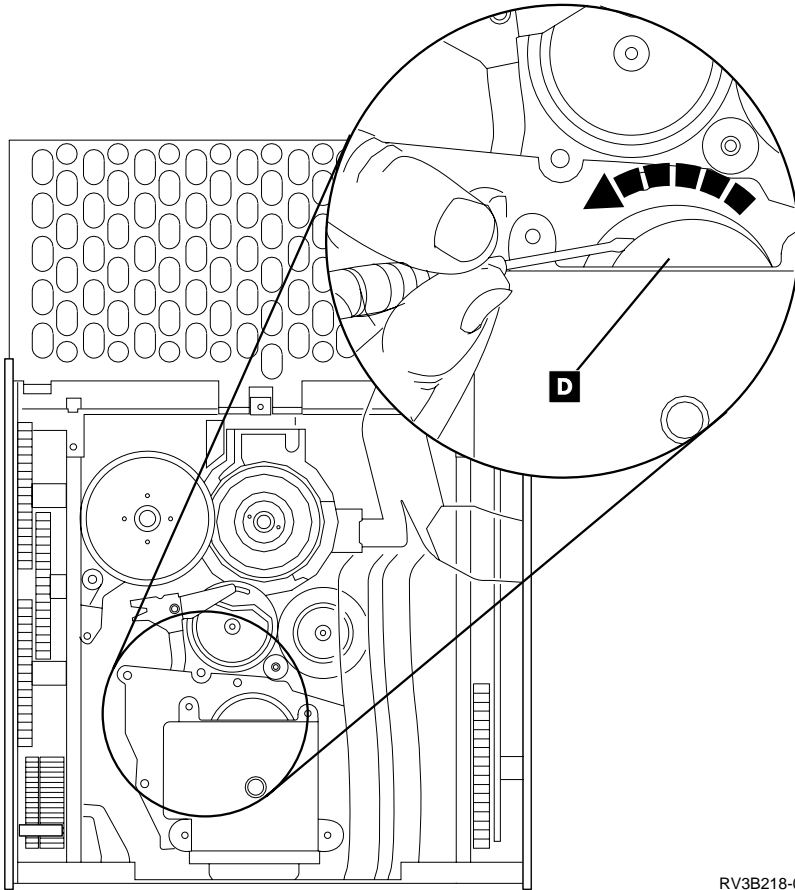


RV3B219-0

- b. Turn the drive assembly over. Remove the five screws from the bottom cover of the drive assembly. These screws are similar to the screws on the top cover.
- c. Wind the tape into the tape cartridge by following these steps:
 - 1) Using a small screwdriver, push and hold the reel motor gear **D** to the right as far as possible.
 - 2) Rotate the reel motor gear counter-clockwise while also maintaining pressure by holding the gear to the right.
 - 3) Continue to rotate the gear until all of the tape is wound into the tape cartridge and the tape is tight across the opening.

Note: Make sure that the tape does not catch on the guide pins.
- d. Continue with the next step of this procedure.

Removing Tape Cartridge

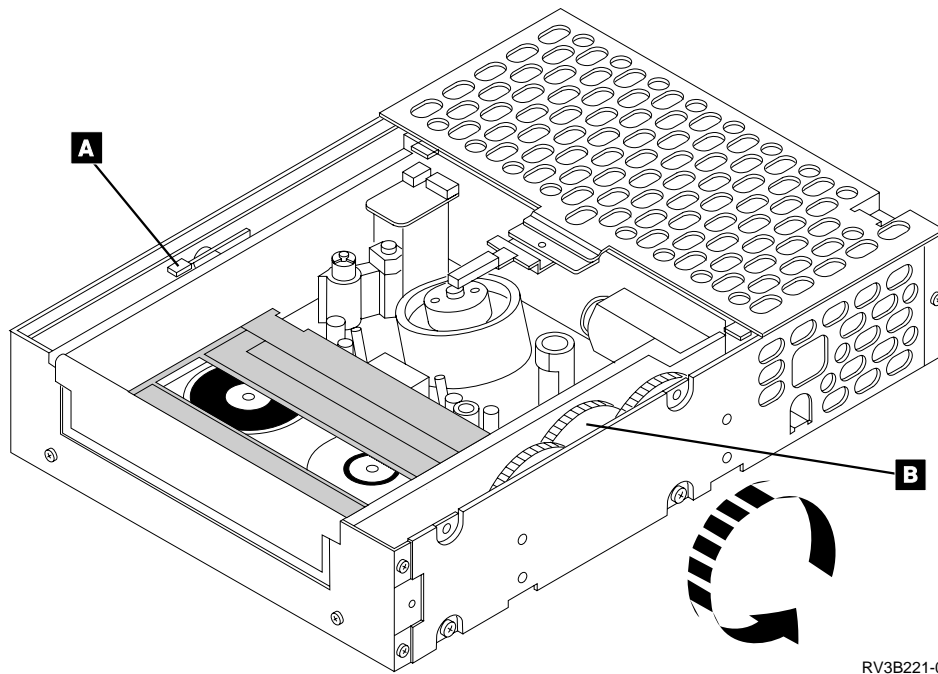


RV3B218-0

9. Find the lock release tab **A** and the cassette loading gear **B**.
10. Using your index finger, gently press down the lock release tab until it clicks.
11. Using the thumb of your other hand, roll the cassette loading gear toward the front of the drive assembly until the tape cartridge is ejected.

Note: Removed cartridges should not be reused.

This ends the procedure.



Important Continuously Powered Main Storage (CPM) Information

Attention: Component damage will occur if main storage, MC regulators, battery charger, or battery are removed and Continuously Powered Main Storage (CPM) is enabled.

CPM becomes enabled if the system loses ac power. The batteries supply power to the main storage cards when the system power is off.

Performing repair actions without disabling CPM causes system hardware failures.

Disabling CPM will cause the loss of data in main storage.

See "SPCN-PIP5" on page 623 for the correct procedure to disable CPM.

Note: CPM will be available at the next IPL.

Important Cryptographic I/O Processor Information

Attention: The type 2620 or type 2628 cryptographic I/O processor should not be removed or disconnected except by qualified IBM service personnel. Performing this action *for any reason* causes the loss of the primary encryption key.

Before disconnecting or removing the cryptographic I/O processor, ensure that the customer has access to a record of the primary encryption key. After any service action that involves disconnecting or removing the processor, the customer must reinstall the primary encryption key. This is the only way that the customer can access the data encryption function. Refer the customer to this document for more information:

Removing Tape Cartridge

IBM Common Cryptographic Architecture Services/400 Installation and Operating Guide,
SC41-0102

Setting the System Date and Time

See *AS/400 Service Functions* for information about setting system date and time.

Hexadecimal Product Activity Log Data

See *AS/400 Service Functions* for information about the Hexadecimal Product Activity Log.

Determining the Primary and Alternate Console

If you are looking for the primary or the alternate console on a secondary partition, then go to “Locating a Secondary Partition’s Console” on page 783. Otherwise, continue with this procedure.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Compare the following list of cards with the cards in your system. The first match you find will be the primary console. The second match you find will be the alternate console.

Note: If the alternate console is a 6180 card, and there is a workstation at port 1 address 0, then the port 1 address 0 workstation is an alternate console. In this case, there can be a second alternate console. The second alternate console will be the next match on the list.

Table 44. Models 640, 730 and S30

2699	With Client Access Console in Slot B of MFIOP (S01 & S02)
6180	in slot C of MFIOP (S01 & S02)
6141	Slot S03
6050	Slot S03
6141	Slot S04
6050	Slot S04
6141	Slot S05
6050	Slot S05

Note: The 2745 Twinax I/O Adapter can serve as the system console in a secondary partition, but not in the Primary partition.

Table 45. Models 650, 740, S40, and SB1

2699	With Client Access Console in Slot B of MFIOP (S02 & S03)
6180	in slot C of MFIOP (S02 & S03)
6141	Slot S04
6050	Slot S04
6141	Slot S05
6050	Slot S05

Table 45. Models 650, 740, S40, and SB1 (continued)

6141	Slot S06
6050	Slot S06

Note: The 2745 Twinax I/O Adapter can serve as the system console in a secondary partition, but not in the Primary partition.

Determining the Load-Source Disk and Alternate IPL Device

Introduction

If you have a system configuration list that shows the load-source disk unit and the alternate IPL device, use that information. If not, use the following information and, when found, make a note of the locations (see “System Unit Locations and Addresses” on page 695).

Finding the Load-Source Disk on Systems without Mirrored Protection

The load-source disk is disk unit drive 1 in the system unit. It attaches internally to the storage device IOP function on the multiple function I/O processor (MFIOP).

What You Should Know about Load-Source Disks on Systems with Mirrored Protection

If the AS/400 system auxiliary storage pool (ASP) (ASP1) has mirrored protection, it has two load-source disks. These disks are equals and contain the same data. The AS/400 can use either disk as its source for IPL data; it uses the disk that first reports to the service processor. The system starts the IPL with this device and later synchronizes the second load-source disk with the first.

If the first load-source disk fails after the Licensed Internal Code determines that the system has mirrored protection, the Licensed Internal Code performs the IPL by using the second load-source disk.

If the first load-source disk fails before the Licensed Internal Code determines that the system has mirrored protection, the IPL stops with a system reference code (SRC) displayed.

If the system starts the IPL on a load-source disk that contains defective data, the Licensed Internal Code attempts to start the IPL from the second load-source disk. If the second attempt fails, the IPL stops with an SRC displayed.

Finding the Load-Source Disks on Systems with Mirrored Protection

When the system auxiliary storage pool (ASP1) has mirrored protection, the system has two disk units that are load-source disks.

Use the *Work with disk units* option under dedicated service tool (DST) or system service tool (SST) to display the configuration.

Determining Load-Source, Alternate IPL

Alternate IPL Device

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Attention: If the system has logical partitions, this procedure is for the Primary partition **only**. To locate the alternate IPL device for a secondary partition see “Locating a Secondary Partition’s Load Source” on page 784.

The process of performing an IPL from removable media (tape or optical) is an alternate or Type D IPL. The device that contains the IPL media is the alternate IPL device. The system searches for the alternate IPL device in a specific sequence (see “Search Sequence for the Alternate IPL Device”).

The alternate IPL device is attached either internally (in the system unit) or attached externally to the system. For more information on how the internal and external devices attach, see “Internal Devices” and “External Devices” on page 761.

The system configuration list shows the alternate IPL devices. For information on how to print the system configuration list, see “Hardware Service Manager” in the *AS/400 Service Functions* information.

Note: The system configuration list will not show all of the external device possibilities that you can use for an alternate IPL. See “External Devices” on page 761 for more information.

Search Sequence for the Alternate IPL Device

The system attempts to IPL from the device that was last used for an alternate IPL. If that device is ready and contains IPL media, the system begins an IPL.

If that device does not contain IPL media or is not available, the system searches for another alternate IPL device. The system attempts an IPL from the first alternate IPL device it finds that is ready and contains IPL media.

The system uses the following search sequence:

1. Internal device attached to the MFIOIP with a unit address of 7.
2. Internal device attached to the MFIOIP with a unit address of 6.
3. External device attached to the Tape IOP with a controller address of 7.
4. External device attached to the Feature IOP with a controller address of 7.

If the system cannot find a device to use as the alternate IPL device, it displays an SRC on the control panel.

Note: The SRC that is displayed, is for the most severe error that is found during the search sequence for the alternate IPL device. There may not be an association between the error and the alternate IPL device that you are using. Before using the displayed SRC to analyze the problem, ensure that the alternate IPL device is ready and contains the correct IPL media.

Internal Devices

If the alternate IPL device is internal (in the system unit), it attaches to the MFIOIP with a unit address of 7, or 6. The location of the MFIOIP varies depending on the system model.

Determining Load-Source, Alternate IPL

- For Models 640, 730, and S30, the location of the MFIOP that attaches the alternate IPL device is card position 1.
- For Models 650, 740, S40, and SB1, the location of the MFIOP that attaches the alternate IPL device is card position 2.

For more information on card positions, see “System Unit Locations and Addresses” on page 695.

External Devices

If the alternate IPL device is external to the system unit, it attaches to a tape or feature IOP. The location of the input-output processor (IOP) varies depending on the system model.

- For Models 640, 730, and S30, the location of the IOP that attaches the external alternate IPL device is card position 3 or 4.
- For Models 650, 740, S40, and SB1, the location of the IOP that attaches the external alternate IPL device is card position 4 or 5.

If the IOP has more than one port, only the bottom port supports the alternate IPL device.

The external alternate IPL device must have a controller address of 7. For most devices, the controller comes with the address preset to 7, and you cannot alter it. For devices that have changeable addresses, use the following information:

- For 34xx and 35xx tape devices that are attached to a type 6501 or 6534 IOP, you must set the SCSI address to address 0.
- For a 7208 model 342 device attached to a type 6534 IOP, the SCSI address must be set to 0.
- For a 34xx tape device that is attached to a type 2644 IOP, you must set the controller address to address 7. You must also set the device address to address 0 or 8.

Note: Device address 8 can be used only when there is no device at address 0.

- For an IBM 9427 8mm Tape Cartridge Library, you must set the tape library address for the drive that is used as the alternate IPL device to address 0.

For the location of the address switch on external devices, see the information in the device installation service manual.

Powering Off and Powering On the System or Expansion Tower

Powering Off the System

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Attention: Power off and power on of a system with multiple partitions are different than a system with a single partition. Read and understand the power off and power on procedures referenced when a procedure directs you to power on or power off a system or partition.

If the system is operating under Dedicated Service Tools (DST), power off the system by selecting the *Power off the system* option on the Start a Service Tool display.

Power Off, On

If the system is operating under OS/400, enter the *PWRDWNSYS* command to power off the system.

Note: For consoles that run Client Access, a delayed power-off operation by using the *PWRDWNSYS* command is required. You **must** stop all applications, including console applications, and subsystems that are running, before the delayed power-off operation is complete.

If you cannot use these methods, you can power off the system by using the "Control Panel Power Button" procedure.

Control Panel Power Button

Attention: Using the control panel Power pushbutton to power off the system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

1. Open the control panel cover.
2. The system must be in Manual mode to power off. To select Manual mode, see "Selecting IPL Type, Mode, and Speed" on page 765.
3. Press the Power button (white) on the control panel.
The Data-Function display shows **O?** (the international power-off symbol), and the ? is blinking.
4. Press the Power button (white) on the control panel again.

Note: To cancel the power-off operation, do not press the Power button a second time. Instead, press any other control panel button.

5. The Power On light starts blinking as the system powers off. The light stops blinking and stays off when the power-off operation is complete.

Does the system power off successfully?

No **Yes**

↓ **This ends the procedure.**

6. Perform the following:
 - a. Press the ↑ or the ↓ button until function 08 is shown in the Function display.
 - b. Press the Enter button.
 - c. SRC A100 8008 is on the Data display.
7. Press the Power button (white) on the control panel.
The Data-Function display shows **O?** (the international power-off symbol), and the ? is blinking.
8. Press the Power button (white) on the control panel again.
The system powers off, and the Power On light goes off and remains off.

Note: To cancel the power-off operation, do not select function 08. Instead, press any other control panel button.

This ends the procedure.

Powering Off a System With Logical Partitions

Determine if the system must be powered off or if only the secondary partition that you are servicing must be powered off by using the following table as a guide.

The Service Action is:	Go to:
A power or system power control network problem.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition".
A processor, system storage or processor clock problem.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition".
A problem with any resource owned by the Primary partition.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition".
The SRC came from the system control panel.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition".
The part to remove or install or isolate is in the system unit. The part to remove or install or isolate is in the system expansion unit.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition".
The part to remove or install or isolate is in an expansion tower. • AND The expansion tower can be powered down using the Hardware Service Manager in the Secondary partition that you are servicing.	Power off the secondary partition using the "Powering Off a Secondary Partition" on page 764, then power off the expansion tower using the "Expansion Tower Power Procedure" on page 766.
The part to remove or install or isolate is in an expansion tower. • AND The expansion tower cannot be powered off from the secondary partition that owns it. The tower can only be powered off using the Hardware Service Manager in the Primary partition.	Power off the secondary partition using the "Powering Off a Secondary Partition" on page 764, then power off the expansion tower using the "Expansion Tower Power Procedure" on page 766.
Powering off a secondary partition failed.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition".
From the Primary partition you were instructed to power down the system.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition".

Powering Off a Logical Partition System Using the Control Panel or Primary Partition

Attention: This procedure will result in powering off the entire system including all secondary partitions. Be certain that all secondary partitions are able to be powered off at this time. Do not continue with this procedure until the customer will allow all logical partitions to be powered off.

Note: Abnormal IPL's in the secondary partitions can result from powering off the Primary partition. To avoid abnormal IPLs in secondary partitions, power off all secondary partitions, when possible, before powering off the Primary partition.

Power Off, On

If the Primary partition is under Dedicated Service Tools (DST), power off the system from the Primary partition by selecting the *Power Off the System* option on the *Start a Service Tool (SST)* display of the Primary partition's console.

If the Primary partition is operating under OS/400, from the Primary partition's console enter the *PWRDWNSYS* command to power off the system.

If you cannot use these methods, you can power off the system by using the procedure "Control Panel Power Button" on page 762.

Note: For consoles on the Primary partition that run Client Access, a delayed power-off operation by using the *PWRDWNSYS* command is required. You **must** stop all applications, including console applications, and subsystems that are running in **all** logical partitions, before the delayed power-off operation is complete.

Attention: Using the control panel power push-button to power off the system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

Powering Off a Secondary Partition

Attention: Powering off a secondary partition will not power off any expansion tower(s) that the partition owns. If it is necessary to power off the expansion tower(s) owned by the secondary partition, use the "Expansion Tower Power Procedure" on page 766. Power off the secondary partition(s) before powering off the expansion tower(s) owned by the logical partition(s).

If the secondary partition is operating under Dedicated Service Tools (DST), power off the logical partition by selecting the *Power Off the System* option on the *Start a Service Tool (SST)* display of the secondary partition's console.

Note: To locate the secondary partition's console or alternative console go to "Locating a Secondary Partition's Console" on page 783.

If the secondary partition is operating under OS/400, from the logical partition's console enter the *PWRDWNSYS* command to power off the secondary partition.

Note: For consoles on the secondary partition that run Client Access, a delayed power-off operation by using the *PWRDWNSYS* command is required. You **must** stop all applications, including console applications, and subsystems that are running in the **secondary** partition before the delayed power-off operation is complete.

If the secondary partition fails to power off **or** if the console of the secondary partition is not functioning:

1. Go to the console of the Primary partition.
2. From the *Use Dedicated Service Tools (DST)* screen, select the *Work with System Partitions* option.
3. At the *Work with System Partitions* screen:
 - a. Select *Work with Partition Status*.
 - b. Type option 7 *Power off Delayed* and press enter.

If the secondary partition fails to power off then go to "Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 763.

Powering On the System

1. Open the control panel cover.
2. Press the Power (white) button on the control panel.
3. The Power On light starts blinking as the system is powered on. The light stops blinking and stays on when power on is complete.
- 4.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

If the system has multiple partitions, some secondary partitions may not power on if they have been configured to *Hold*. To determine if a secondary partition has been configured to *Hold* check the *Sys IPL Action* for the partition on the *Work with partition status* screen. See “Accessing a Logical Partition’s Panel Functions” on page 787. If you need to IPL a secondary partition with a *Sys IPL Action* of *Hold* see “Powering On a Secondary Partition”.

This ends the procedure.

Powering On a Secondary Partition

Attention: Powering on a secondary partition will not power on any expansion I/O towers that the logical partition owns. If it is necessary to power on expansion towers owned by the secondary partition, use the “Expansion Tower Power Procedure” on page 766 before powering on the secondary partition.

1. Go to the console of the Primary partition.
2. From the *Use Dedicated Service Tools (DST)* screen select the *Work with system partitions* option.
3. At the *Work with system partitions* screen:
 - a. Select *Work with Partition Status*.
 - b. Type option 1 *Power On* next to the logical partition that you want to IPL and press enter.

Selecting IPL Type, Mode, and Speed

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions and you are working in a secondary partition see “Selecting IPL Type and Mode for a Secondary Partition” on page 788.

This function allows you to **select** the IPL Type, IPL Mode and IPL speed. Systems with a keystick must be in Manual mode to perform this function. System power must be off to change IPL speed.

1. Pressing Enter **once** puts you into the change IPL type (A, B, C, or D) operation and, on systems without a keystick, the IPL mode (M or N).

Note: On systems with a keystick, select the mode by engaging the keystick and pressing the *Mode* button to scroll through the four operating modes (Manual, Normal, Auto, and Secure). A lit mode light indicates the active mode.

Power Off, On

- Pressing the Enter button **twice** puts you into the operation for overriding the system IPL speed (F, S, V) for the next IPL.

Note: Changing IPL speed from the control panel affects all IPLs until the next Power-On Reset IPL. Subsequent IPLs use the system-defined value. You can set the system-defined IPL speed with the CHGIPLA CL command.

For systems with an electronic keystick: When first selected, function 02 enters the Change IPL Type display. For example (where each () represents 1 character):

Table 46. Function 02 Select IPL **Type** for Systems with an Electronic Keystick

Function/Data	Description
02 _ _ _ _ _	Use increment or decrement button and scroll to function 02.
02 _ _ _ A _ _	Press ENTER once to enter Function 02 Select IPL Type display. Use the increment or decrement buttons to scroll through the valid IPL types A, B, C, and D. Pressing Enter saves the selected IPL type and exits Function 02.

For system types that do not use a keystick, the IPL mode (M or N only) also displays. This appears in the eighth character position of the *Function/Data* display. For example (where each () represents 1 character):

Table 47. Function 02 Select IPL **Type and Mode** for Systems without an Electronic Keystick

Function/Data	Description
02 _ _ _ _ _	Use increment or decrement button and scroll to Function 02.
02 _ _ _ A _ N	Press ENTER once to enter function 02 Select IPL Type and Mode display. Use the increment or decrement buttons to scroll through valid IPL Type and Mode combinations (A_N, B_N, C_N, D_N, A_M, B_M, C_M, D_M). Pressing Enter saves the selected IPL Type and Mode combination and exits Function 02.

Table 48. Function 02 Select IPL **Speed** for Systems with or without an Electronic Keystick

Function/Data	Description
02 _ _ _ _ _	Use increment or decrement button and scroll to function 02.
02 _ _ _ _ V _	With system power off push ENTER twice to enter the Select IPL Speed display. Use the increment or decrement button to scroll through the valid speeds, which are: 02 _ _ _ _ V _ 02 _ _ _ _ F _ or 02 _ _ _ _ S _.
	<ul style="list-style-type: none"> • F: Fast Override • S: Slow Override • V: Use system-defined speed.
	Press Enter to activate the override (F or S) or to cancel it (V), and to exit the Select IPL Speed display.

Expansion Tower Power Procedure

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, then all operations on the console refer to the console of the logical partition in which you are working.

Note: To locate a secondary partition's console go to "Locating a Secondary Partition's Console" on page 783.

Use this procedure only to power off an expansion tower when you are performing one of the following:

- Removing or replacing a failing IOP within an expansion tower.
- Adding, moving, removing, or replacing a feature card on a bus within an expansion tower.

Do not use this procedure on the system unit or the integrated expansion unit.

Do not use this procedure to replace disk units. For disk units, use device concurrent maintenance.

Do not use this procedure for Feature 504x towers. If you are powering off a 504x tower then power off the system unit. Go to "Powering Off and Powering On the System or Expansion Tower" on page 761.

Attention: Perform this action only with the assistance of the customer.

1. Check to see that no other towers are powered off at this time.

Attention: During this procedure only one tower connected to this system can be powered off! You must not have more than one tower powered off at any given time during this service action!

2. Are you working in an **FC 5066** expansion tower?

No **Yes**

↓ **Power off only the unit** (FC 5065) that you are servicing.

Attention: Only one unit may be powered off at any given time!

Continue with the next step of this procedure.

3. Do you know the location of the failing IOP or where to add, move, remove, or replace the feature card?

Note: The SPCN number in the expansion tower control panel is equal to the Frame ID under *Packaging Resources*.

Yes **No**

↓ Go to "System Unit Locations and Addresses" on page 695 to determine the position information and then continue with step 4.

4. Verify that the hardware (IOP's/feature cards) contained in the expansion tower that you are powering off matches what is shown on the system by performing the following:
 - a. From the SST or DST menu, select the *Start a service tool* option.
 - b. Select the *Hardware service manager* option.
 - c. Select the *Packaging Hardware Resources (systems, frames, cards,...)* option.

Power Off, On

Note: If you have only the resource name, select the *Locate Resource by Resource Name* option and display the *Associated packaging resource(s)* for the selected resource. Use the Frame ID shown for the selected resource in step 4d.

- d. Select the *Hardware contained within package* option for the Frame ID of the Expansion Unit. Ensure that all of the resources displayed match the resources in the expansion tower that you are powering off.
5. Work with the customer to end all bus activity by performing one of the following:

Note: If multiple logical partitions own IOPs on the bus, then the customer will be directed to end all of the bus activity in each of those partitions.

- If the expansion tower does not contain disk unit IOPs, work with the customer to end all jobs and vary off all devices, lines, and controllers for that expansion tower.
- If the expansion tower contains disk unit IOPs and the disk units are **not** mirrored to disk units in other expansion towers, work with the customer to end all communications activities to these disk units by ending all subsystems.
- If the expansion tower contains disk unit IOPs and these disk units **are** mirrored to disk units in other expansion towers, you do not need to end all subsystems. Mirroring will assist during the service action.
- If the system has a non-redundant (single hub configuration) OptiConnect bus, work with the customer to end all jobs and vary off the QSOC resources on the affected system.

Note: Use the WRKOPCACT command to work with the QSOC resources on the affected system.

- If the system has a redundant (dual hub configuration) OptiConnect bus, you do not need to end subsystems or vary off the resources. Redundancy will assist during the service action.
6. Power off the expansion tower by performing the following:

Attention: If any console for a logical partition resides on the bus that you are powering off, then powering off the bus will result in the loss of that partition's console. **If this condition exists** for the partition that you are working in, you will need to perform this procedure from the primary partition's console.

- a. Use the system console and get to the SST or DST menu. Select the *Start a service tool* option.
- b. Select the *Hardware service manager* option.
- c. Select the *Packaging Hardware Resources (systems, frames, cards,...)* option.
- d. From the Packaging Hardware Resources display, specify the *Concurrent Maintenance* option for the expansion tower that you are powering off, then press the power off **PF** key.

Note: If resources on the bus are active you will receive a message indicating which resources are in use and the expansion tower will not power off. Return to step 5 of this procedure and ensure that all resources on the bus are varied off. Follow the instructions on the screen for locating the active resources and varying them off.

Note: If the system has logical partitions and multiple logical partitions own IOPs on the bus, then you must do the power off from the

Primary partition's console. When instructed to power on the expansion tower, do it from the console of the Primary partition.

- e. The Confirm Power Off display appears. Follow the instructions on the display.

Note: You may be directed to perform a function 68 to power the tower down **and** a function 69 to power the tower back on, or you may be directed to do only a function 69 to power the tower back on. **Make a note of what you were instructed to do at this time!** You will need this information to complete the repair.

Ensure that the frame ID displayed is correct for the expansion tower that you intend to power off, and press the Enter key.

- f. Wait for the expansion tower to power off. This may take several minutes depending on the I/O configuration and number of buses in the system power control network.

When the power off action is initiated, DST reports that the expansion tower is powered off successfully. However, to ensure that the expansion tower is actually powered off; verify that **one** of the two air moving devices (AMD) in the expansion tower has stopped and that the power LED indicator on the expansion tower control panel is off.

Note: If the expansion tower contains disk IOPs, an attention SRC may appear on the control panel. Note the following:

- Ignore the SRCs if the expansion tower completes the power off procedure.
- If the expansion tower does not power off in the maximum time allowed, the system may be hung. You must power off the entire system from the control panel to do the repair.

7. When the expansion tower is powered off, disconnect the power cord.
8. Remove or replace the failing item or add, move, remove, or replace the feature card.

Notes:

- a. On OS/400 V4R3 and earlier, a failing IOP or feature card that is removed can be re-installed **only** in the original position.
 - b. Ensure that you replace the failing IOP, IOA, or feature card with the same type and model.
 - c. When IOPs and feature cards are moved or removed, ensure that the configuration rules are followed. (For example, two empty card positions are not allowed between IOPs or feature cards.)
 - d. When adding, moving, or removing IOPs or feature cards that occupy multiple card positions, such as the Integrated Netfinity Server for AS/400 IOPs, pay special attention to the configuration rules so that no occupied card locations are left in an electrically open condition (there are not two empty card positions between IOPs or feature cards).
9. Perform the following:
 - a. Reconnect the AC power cord.

Note: The tower will automatically power on however, you will need to finish the steps in this procedure to complete the power on and restore the system to normal operation.

- b. Were you instructed to perform a function 69 to power the tower on?

Power Off, On

Yes **No**

↓ Go to step 9f of this procedure.

c. Are you working on a system that has multiple partitions?

Yes **No**

↓ Perform the function 69 (with the control panel set to Manual Mode) from the control panel (See “Control Panel Functions” in the *AS/400 Service Functions* information). Then, go to step 10 of this procedure.

d. Are you working in the Primary partition?

No **Yes**

↓ Perform the function 69 (with the control panel set to Manual Mode) from the control panel (See “Control Panel Functions” in the *AS/400 Service Functions* information). Then, go to step 10 of this procedure.

e. Perform function 69 from the *Work with partition status* screen in the Primary partition. Then, go to step 10 of this procedure.

f. If the Packaging Hardware Resources display is available, specify the *Power on* option for the expansion tower you were working on and press the Enter key.

g. If the Packaging Hardware Resources display is **not** available, select (with the control panel set to Manual Mode) the SPCN control panel function to power on the expansion tower.

Note: See “Control Panel Functions” in the *AS/400 Service Functions* information.

1) Select function 07 and press enter.

2) Increment to 01 and press enter.

This will send out a Rack Power On command on the SPCN Network which will restore power to the expansion tower, which has become powered off.

10. From the Packaging Hardware Resources display of the partition that you are working on, select the *Associated Logical Resource(s)* option for the expansion tower.

The Logical Hardware Resources Associated a Packaging Resource display shows the status of devices and IOPs.

11. When all expected resources appear with an operational status, work with the customer to bring the system to the operational state.

Note: For V4R3, a resource that has been removed will show a status of *Not Connected*. For earlier systems the status will show as *Disabled*.

Work with the customer to restart all bus activity:

- Start all subsystems that were ended.
- Vary on all devices, lines, and controllers for the expansion tower that was powered off.
- Start customer applications.

This ends the procedure.

System/370 Interface Information

Introduction

The System/370-type sequences are specifically for the 3422/3430 and 3480/3490 Tape Units. Therefore, the attachment of other System/370 devices is not valid.

Use this information when you are sent here by the System/370 Interface Cable Wrap Test in "Tape I/O Processor Problem Isolation Procedures" on page 638.

Cable Wrap Test

The cable wrap test first checks to determine if all bits can be reset to zero. Any bits remaining at an *up* level (failing to reset) cause the error display in Figure 62 to appear. The failing bit is sometimes named a *hot* bit. For the bus lines, the bits represent bus bits 0 through 7. For the tag lines, the bits represent the specific tag lines as shown by the abbreviations to the right of the bit layout.

In Figure 62, the *Active Tag lines equal* field has a hexadecimal character (translate to equal 8 binary bits) 40 in it. This means that either Address Out or Address In is always *hot*.

Channel Cable Wrap Test

The channel cable wrap test did not clear these lines:

Active Tag lines equal (in hexadecimal) . . . : 40
Active Bus lines equal (in hexadecimal) . . . : 00

Bit Number	Tag lines Out	In	Bus Lines Out	In
0	OP --	OP	0 --	0
1	ADR --	ADR	1 --	1
2	HLD/SEL --	DSC/SEL	2 --	2
3	SUPR --	REQ	4 --	4
4	SRV --	SRV	5 --	5
5	CMD --	STA	6 --	6
6	DAT --	DAT	7 --	7
7	CHMSYNC --	MRK	3 --	3

Press Enter to continue.

Figure 62. Example Display Only

Table 49 shows the interface line names for the tag line abbreviations in this error display.

Table 49. Interface Line Names

Abbreviation	Line Name	Cable
OP	Operational Out/In	Tag
ADR	Address Out/In	Tag
HLD	Hold Out	Tag
DSC	Disconnect In	Tag

System/370 Interface

Table 49. Interface Line Names (continued)

Abbreviation	Line Name	Cable
SEL	Select Out/In	Tag
SUPR	Suppress Out	Tag
REQ	Request In	Tag
SRV	Service Out/In	Tag
CMD	Command Out	Tag
STA	Status In	Tag
DAT	Data Out/In	Tag
CHM SYNC	Chim Sync (Mark 0 Out)	Tag
MRK	Mark 0 In	Bus

The cable wrap test also activates (switches on) each outbound bus and tag line and waits for a response on the wrapped inbound line. After a period of time, the cable wrap test continues until all outbound lines have been wrapped. The results are then displayed on the error display. Figure 63 is an example of the display that appears when any bit in the bus or tag line fails to respond. The failing bit is sometimes named a *dead* bit.

When the expected data does not match the actual data, the bit pattern shown indicates the bit in the bus or tag line that is in error. For the bus lines, each pattern represents a byte of data sent on the bus. This byte represents bus bits 0 through 7. For example, if the actual data under the expected pattern of A5 is 85, then the failing bus bit is bit 2.

```

Channel Cable Wrap Test

Bus (flags and bit patterns):

Flags          *
Expected  5A  A5  80  40  20  10  08  04  02  01  FF
Actual    5A  85  80  40  20  10  08  04  02  01  FF

Tag (bit patterns):

SE/SE
OP/OP  AD/AD  HD/DC  SP/RE  SR/SR  CD/ST  DA/DA  CMS/MI
Expected  80    40    20    10    08    04    02    01
Actual    80    40    20    10    08    04    82    01

Press Enter to continue.

```

Figure 63. Example Display Only

Table 50 on page 773 shows the interface line names for the tag line abbreviations in this error display.

Table 50. Interface Line Names

Abbreviation	Line Name	Cable
OP	Operational Out/In	Tag
AD	Address Out/In	Tag
SE	Select Out/In	Tag
HD	Hold Out	Tag
DC	Disconnect In	Tag
SP	Suppress Out	Tag
RE	Request In	Tag
SR	Service Out/In	Tag
CD	Command Out	Tag
ST	Status In	Tag
DA	Data Out/In	Tag
CMS	Chim Sync (Mark 0 Out)	Tag
MI	Mark 0 In	Bus

Note: An asterisk above the expected pattern means that a Bus In parity check occurred on that pattern, or that the pattern was in error. If the data in the *Expected* and *Actual* rows is the same, there could be a problem with the parity bit.

For the tag lines, the bits represent the specific tag lines, as shown by the abbreviations above the *Expected* and *Actual* data. For example, if the *Actual* data under the *Expected* pattern of 02 is an 82, this means that the Op Out or Op In tag line was switched on.

If a new cable is not available, use the “Card and Channel Wrap Layout (Type 2644)” on page 778 and a multimeter to test for the continuity of each line and for short circuits between lines.

Repair a failing line by exchanging it with one of the lines not used (see “System/370 Channel Bus Cable Pin Layout (Type 2644)”).

System/370 Channel Bus Cable Pin Layout (Type 2644)

In Table 51, the *Card Connector Pin* column identifies the 78-pin connector on the back of the tape I/O processor card (type 2644), which is found in the card enclosure.

Table 51. System/370 Channel Bus Cable Pin Layout (Type 2644)

Line Name	Card Connector Pin
Bus Out bit P	9
Bus Out bit P ground	10
Bus In bit P	47
Bus In bit P ground	46
Bus Out bit 0	69
Bus Out bit 0 ground	68

System/370 Interface

Table 51. System/370 Channel Bus Cable Pin Layout (Type 2644) (continued)

Line Name	Card Connector Pin
Bus In bit 0	5
Bus In bit 0 ground	6
Bus Out bit 1	7
Bus Out bit 1 ground	8
Bus In bit 1	67
Bus In bit 1 ground	66
Bus Out bit 2	49
Bus Out bit 2 ground	48
Bus In bit 2	25
Bus In bit 2 ground	26
Bus Out bit 3	27
Bus Out bit 3 ground	28
Bus In bit 3	45
Bus In bit 3 ground	44
Bus Out bit 4	21
Bus Out bit 4 ground	22
Bus In bit 4	23
Bus In bit 4 ground	24
Bus Out bit 5	63
Bus Out bit 5 ground	62
Bus In bit 5	3
Bus In bit 5 ground	4
Bus Out bit 6	43
Bus Out bit 6 ground	42
Bus In bit 6	65
Bus In bit 6 ground	64
Bus Out bit 7	1
Bus Out bit 7 ground	2
Bus In bit 7	41
Bus In bit 7 ground	40
Mark 0 Out	29
Mark 0 Out ground	30
Mark 0 In	61

Table 51. System/370 Channel Bus Cable Pin Layout (Type 2644) (continued)

Line Name	Card Connector Pin
Mark 0 In ground	60

System/370 Channel Tag Cable Pin Layout (Type 2644)

In Table 52, the *Card Connector Pin* column identifies the 78-pin connector on the back of the tape I/O processor card (type 2644), which is found in the card enclosure.

Table 52. System/370 Channel Tag Cable Pin Layout (Type 2644)

Line Name	Card Connector Pin
Address Out	17
Address Out ground	18
Address In	39
Address In ground	38
Command Out	37
Command Out ground	36
Status In	77
Status In ground	78
Service Out	73
Service Out ground	74
Service In	55
Service In ground	54
Data Out	33
Data Out ground	32
Data In	15
Data In ground	16
Operational Out	51
Operational Out ground	50
Operational In	59
Operational In ground	58
Select Out	19
Select Out ground	20
Select In	57
Select In ground	56
Hold Out	71
Hold Out ground	72
Disconnect In	53

System/370 Interface

Table 52. System/370 Channel Tag Cable Pin Layout (Type 2644) (continued)

Line Name	Card Connector Pin
Disconnect In ground	52
Suppress Out	75
Suppress Out ground	76
Request In	13
Request In ground	14
Sync	35
Sync ground	34
Clock Out (not used)	70
Clock Out ground (not used)	50
Metering Out (not used)	31
Metering Out ground (not used)	12
Metering In (not used)	11
Metering In ground (not used)	12

Tape I/O Processor Card Connectors

Type 2644

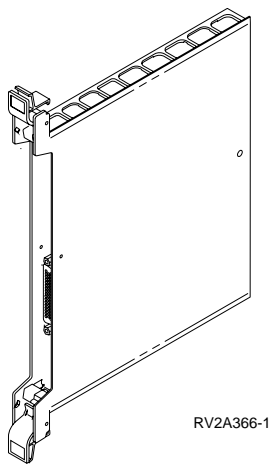


Figure 64. Type 2644 Card Connector

Channel Wrap Block 1

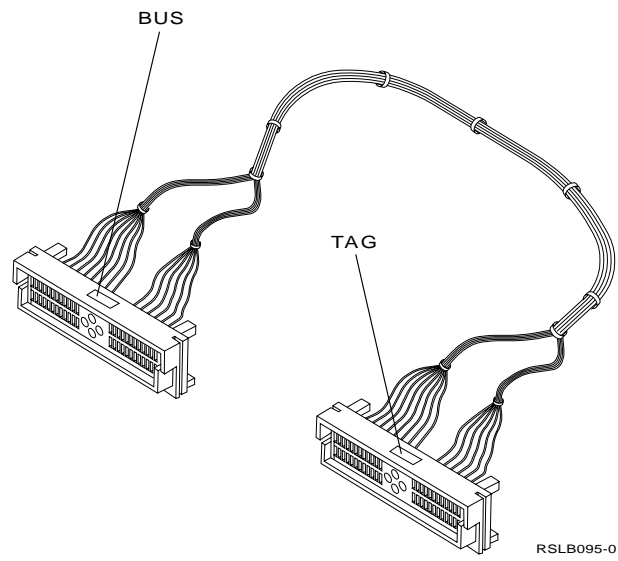


Figure 65. Channel Wrap Block 1, part 62X3403

Channel Wrap Block 2

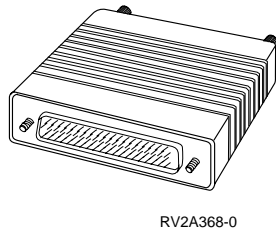


Figure 66. Channel Wrap Block 2, part 6473051

Card and Channel Wrap Layout (Type 2644)

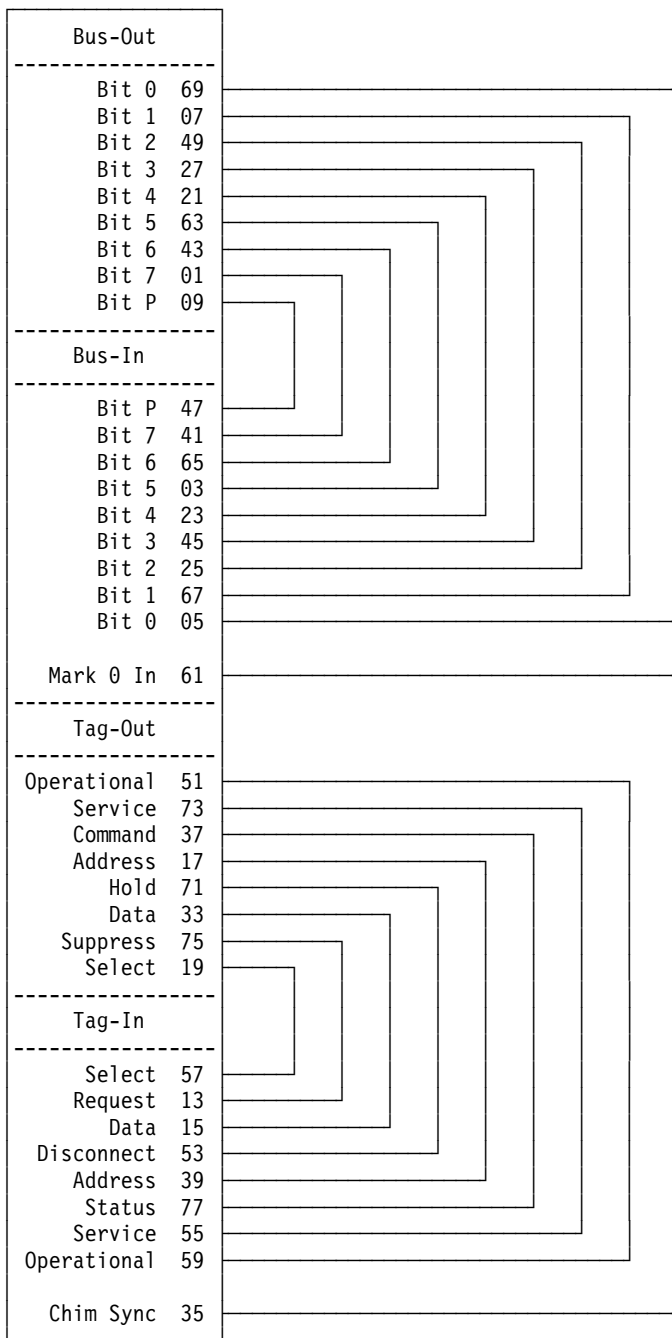


Figure 67. Card and Channel Wrap Layout (Type 2644)

Verifying the Repair

1. Were you sent here after completing a concurrent maintenance procedure?

No **Yes**

↓ Go to "Verify Concurrent Repair." on page 780.

This ends the procedure.

2. Go to “Verify Dedicated Repair.”.

This ends the procedure.

Verify Dedicated Repair.

1. Perform the following:
 - a. Verify that the power cable is plugged into the power outlet.
 - b. Verify that power is available at the customer’s power outlet.
2. Select the IPL type and mode that the customer uses (see Selecting IPL Type, Mode, and Speed in “Powering Off and Powering On the System or Expansion Tower” on page 761).

Note: If you select Normal mode when you power on the system, the *Dedicated service tools* option will not be shown.

3. Start an IPL by powering on the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).

Did the system complete the IPL?

Yes No

- ↓ This may be a new problem. Go to “Starting Point for All Problems” on page 4.

This ends the procedure.

4. Use the service action log to look for any system reference codes (system reference code (SRC)) that are related to this IPL (see “Using the Service Action Log” on page 8).

Are there any SRCs that are related to this IPL?

Yes No

- ↓ Perform the “Verification Procedures” (in the Hardware Service Manager chapter) in the *AS/400 Service Functions* information to verify that the problem is corrected.

The verification procedures only cover removable media, communications and diskette problems.

Then return the system to the customer.

Ensure that the customer verifies the system date and time.

This ends the procedure.

5. Is the SRC the same as the original SRC?

Yes No

- ↓ A new symptom may have occurred.

Use the SRC information and go to “Chapter 2. Unit Reference Codes” on page 59 to determine the cause of the problem.

This ends the procedure.

6. Are there any other failing items that remain to be exchanged?

Yes No

- ↓ Ask your next level of support for assistance.

This ends the procedure.

Verifying Repair

7. Exchange the next failing item listed for this URC.
This ends the procedure.

Verify Concurrent Repair.

1. Was concurrent maintenance just performed on a optical storage unit?
No Yes
↓ The Product Activity Log, in most cases, contains an SRC for the optical storage unit after concurrent maintenance.

Perform the "Verification Procedures" in the *AS/400 Service Functions* information to verify that the problem is corrected.

Then return the system to the customer.
Ensure that the customer verifies the system date and time.
This ends the procedure.
2. Use the service action log to look for any new SRCs (see "Using the Service Action Log" on page 8).
Are there any new SRCs?
No Yes
↓ Go to step 5 of this procedure.
3. Are you working with a tape device?
Yes No
↓ Perform the "Verification Procedures" in the *AS/400 Service Functions* information, to verify that the problem is corrected.

Resources which normally vary on automatically during IPL or which were previously varied on manually, may need to be varied back on after "Verification Procedures" have been completed.

Then return the system to the customer.
Ensure that the customer verifies the system date and time.
This ends the procedure.
4. Perform the "Verification Procedures" in the *AS/400 Service Functions* information, to verify that the problem is corrected.

After the verification test has completed, the tape device description will be set to the "Failed" state because a resource change was detected. You will need to vary the tape device description off and back on before it can be used.

Then return the system to the customer.
Ensure that the customer verifies the system date and time.
This ends the procedure.
5. Is the SRC the same as the original SRC?
Yes No
↓ A new symptom may have occurred.

Use the SRC information and go to "Chapter 2. Unit Reference Codes" on page 59 to determine the cause of the problem.

This ends the procedure.
6. Are there any other failing items that remain to be exchanged?

Yes No

↓ Ask your next level of support for assistance.

This ends the procedure.

7. Exchange the next failing item listed for this URC.

This ends the procedure.

Determining if the System Has Logical Partitions

This procedure instructs the user on how to determine if the system has logical partitions.

1. Go to the Primary partition system console.
2. From the SST or DST screen select the *Work with system partitions* option.
3. At the *Work with system partitions* screen:
 - a. Note the *Partition manager release*.
 - b. Note the *Number of partitions*.
4. Each system will always have (1) Primary partition. Some systems have the Primary partition and one or more other logical partitions configured.

Is the number of partitions one (1)?

No Yes

↓ The system does not have multiple logical partitions. You are working with a system that has a Primary partition only. Return to the procedure, failing item or symbolic FRU that sent you here.

5. The system has multiple logical partitions. Read and understand the "Information About Logical Partitions". Then return to the procedure, Failing Item, or Symbolic FRU that sent you here.

Information About Logical Partitions

Logical Partitions are the distribution of resources within a single AS/400 to make it operate as if it were two or more independent systems.

Note: If the system has logical partitions, then unless otherwise stated in a procedure, Failing Item, or Symbolic FRU the terms: **Console, Alternative Console, IPL, SST, DST, Load Source, Alternate Load Source, Power Off, Power On, Panel Function, Product Activity Log, Service Action Log, Licensed Internal Code Log, and Operating System** refer to the logical partition that you are servicing.

Primary: If you are performing service in the Primary partition, then the terms **Control Panel, Panel, Panel Functions, Power Off, Power On, and System** refer to the system unit and its control panel.

Secondary: If you are performing service in a secondary partition, then the terms **Control Panel, Panel, Panel Functions, Power Off, Power On, and System** refer to the partition status functions available under the *Work with system partitions* option on the SST/DST screen of the secondary partition's console or the Primary partition's console.

Failed Partition: Failures can be reported from the partition that experienced the problem with a resource or from the Primary partition or from a

Verifying Repair

partition that shares the bus. Attempt to service from the failed partition unless otherwise directed.

System Attention Light: For secondary partitions, the system attention light is represented as the partition's *State* on the *Work with Partition Status* screen.

Powering off and on: Power off and power on of a system with multiple partitions are different than a system with a single partition. Read and understand the power off and power on procedures referenced when a procedure directs you to power on or power off a system or partition.

Attention: Doing a dump or re-IPL of the Primary partition will cause all secondary partitions to power down immediately. Be certain that all secondary partitions are able to be powered off at that time. Do not do a dump or re-IPL of the Primary partition until the customer will allow all logical partitions to be powered off. To prevent abnormal IPLs in the secondary partitions, power down all secondary partitions before doing a dump or re-IPL of the Primary partition. See "Powering Off a Secondary Partition" on page 764.

Note: When servicing any logical partition you must use the service documentation that supports the version and release of the logical partition. See "Determining the Release Level of a Logical Partition" on page 783.

Note: On most systems with Logical Partitions, it is common to have one or more "Missing or Non-reporting" system bus resource/s under Hardware Service Manager. See "Missing or Non-reporting System Bus Resources" on page 788 for details.

Procedures for systems with multiple partitions

Determine if a system has logical partitions:

See "Determining if the System Has Logical Partitions" on page 781.

Determine the release level of a logical partition:

See "Determining the Release Level of a Logical Partition" on page 783.

Conversion of secondary partition time and date:

See "Conversion of Secondary Partition Time and Date to Primary Partition Time" on page 786.

Determine which partition owns a FRU or I/O resource:

See "Determining Which Logical Partition Owns a FRU or a System I/O Resource" on page 787.

Locating the console:

See "Locating a Secondary Partition's Console" on page 783.

Locating the alternate console:

See "Locating a Secondary Partition's Console" on page 783.

Accessing panel functions:

See "Accessing a Logical Partition's Panel Functions" on page 787.

Finding the load source:

See "Locating a Secondary Partition's Load Source" on page 784.

Powering off:

See "Powering Off a System With Logical Partitions" on page 762.

Powering on:

See "Powering Off and Powering On the System or Expansion Tower" on page 761.

Closing Related Problems:

See "Closing Related Problems in Other Logical Partitions" on page 786.

IPL type and mode:

See "Selecting IPL Type and Mode for a Secondary Partition" on page 788.

SRC history:

See "Finding the SRC History List for a Secondary Partition" on page 786.

Determining the Release Level of a Logical Partition

This procedure instructs the user on how to determine the release level of the Primary and any secondary partition.

1. From the SST or DST screen of the partition's console or the Primary partition's console, select *Work with system partitions*.
2. At the *Work with system partitions* screen, the number of partitions and the partition manager release are displayed. This is the release level of the Primary partition.
3. At the *Work with system partitions* screen select *Display partition information*.
4. At the *Display partition information* screen select *Display partition release level*.
5. From the *Display partition release level* screen, the partition identifier, name, and version/release level is displayed.

Locating a Secondary Partition's Console

This procedure instructs the user on how to locate a logical partition's console and alternative console in a system that has logical partitions, using the Primary partition's console.

Note: The logical *Partition Identifier (ID)* or *Partition name* is required to perform this procedure.

1. Go to the console of the Primary partition.
2. From the SST or DST screen select the *Work with system partitions* option.
3. At the *Work with system partitions* screen:
 - a. Record the *Partition Manager Release*.
 - b. Record *the number of partitions*.
 - c. Select *Display Partition Information*.
4. At the *Display Partition Information* screen select *Display Allocated I/O Resources*.
 - a. Locate the secondary partition and look for its console. The console and alternative console are tagged on the screen under the logical partition's IOP information. The console is tagged with a (<) character and the alternative console is tagged with a (>) character. Note that the logical partition may not have an alternative console. Note the **logical address** of the console and alternative console. Use the **logical address** to determine where the physical console is located.
5. If the logical partition does not have an alternate console but one is needed:
 - a. Determine if the customer has a work station controller that can be switched to this logical partition.
Does the customer have a work station controller that can be switched?
Yes No

Verifying Repair

- ↓ There is no alternate console for the logical partition.
- b. Have the customer switch the input-output processor (IOP) with an available workstation to the logical partition that requires an alternate console. Have the customer dynamically reconfigure the IOP and note the IOP's physical location.

Locating a Secondary Partition's Load Source

These procedures instruct the user on how to locate a logical partition's load source from the logical partition's console.

Note: The '*' which indicates the secondary partition's load source, is only correct if the partition's configuration has not been changed since the partition was last IPL'd. If the partition's configuration has been changed since the partition's last IPL, then call your next level of support for help in locating the load source for the partition.

1. Are you using the Primary partition's console?

No Yes

↓ From the Primary partition's console, go to "Locating a Secondary Partition's Load Source From the Primary Partition's Console" on page 785.

2. From the secondary partition's console, go to "Locating a Secondary Partition's Load Source From the Secondary Partition's Console".

Locating a Secondary Partition's Load Source From the Secondary Partition's Console

This procedure instructs the user on how to locate a logical partition's load source from the logical partition's console.

1. Go to the console of the logical partition.
2. From the SST or DST screen select the *Start a service tool* option.
3. Select *Hardware Service Manager*
4. Look for the load source. The load source is tagged with a * on the screen under the IOP information. Note that the partition may not have an alternate load source.

Does the logical partition have an alternate load source?

No Yes

↓ Note the **logical address** of the alternate load source. Use the **logical address** to determine where the physical load source is located.

5. Is an alternate load source required?

Yes No

↓ **This ends the procedure.**

6. Determine if the customer has an available alternate load source on an IOP in another logical partition that can be switched to this logical partition.

Does the customer have an available alternate load source that can be switched?

Yes No

↓ There is no alternate load source for the logical partition.

7. Have the customer switch the IOP with an available load source to the logical partition that requires an alternate load source. Have the customer dynamically reconfigure the IOP and note the alternate load source-**physical** location.

Locating a Secondary Partition's Load Source From the Primary Partition's Console

This procedure instructs the user on how to locate a logical partition's load source and alternate load source in a system that has logical partitions, using the Primary partition's console.

Note: The logical *Partition Identifier* or *Partition name* is required to perform this procedure.

Note: The *Partition number* is the last two digits in the logical serial number of the logical partition.

1. Go to the console of the Primary partition.
2. From the SST or DST screen select the *Work with System Partitions* option.
3. At the *Work with System Partitions* screen:
 - a. Record the *Partition management release*.
 - b. Record the number of partitions.
 - c. Select *Display partition information*.
4. At the *Display partition information* screen select *Display Allocated I/O Resources*.
 - a. Locate the secondary partition and look for its load source. The load source and alternate load source are tagged on the screen under the logical partition's IOP information. Note that the logical partition may not have an alternate load source. Note the **logical address** of the load source and alternate load source. Use the **logical address** to determine where the **physical** load source is located.
 - b. If the logical partition does not have an alternate load source and one is needed, perform the following:
 - 1) Determine if the customer has an alternate load source that can be switched to this logical partition.
Does the customer have an available alternate load source that can be switched?
Yes No
↓ There is no alternate load source for the logical partition.
 - 2) Have the customer switch the IOP with an available load source to the logical partition that requires an alternate load source. Have the customer dynamically reconfigure the IOP and note the alternate load source-**physical** location.

Query of Logical Partition Time and Date

1. From the *AS/400 Main Menu* select *Define or Change System Values*.
2. From the *Define or Change System Values* screen, select *Work With System Values*.
3. From the *Work With System Values* screen, type option 5 *Display* for these system values and record the information:
 - QDATE
 - QTIME

Verifying Repair

Conversion of Secondary Partition Time and Date to Primary Partition Time

Use the "Query of Logical Partition Time and Date" on page 785 procedure to determine the time and date values for the Primary partition and any other logical partition that you are working with.

1. Record the difference in time between the Primary partition and each secondary partition with which you are working. Use the following table:

Table 53. Time and Date Conversion Table

Secondary Partition Time and Date		Primary Partition Time and Date (Record immediately after recording secondary partition time and date)	Conversion Value = Primary Time and Date minus the Secondary Time and Date (Primary - Secondary)
Partition Name/Number	Partition Time and Date		

The SAL entry time stamps for any logical partition that you are working with are converted to Primary partition time by adding the conversion value in the last column of the table to the SAL entry time.

Finding the SRC History List for a Secondary Partition

This procedure instructs the user in how to find the SRC history list that is created during an IPL of a secondary partition.

1. From the SST or DST screen on the Primary partition's console select "Work with system partitions".
2. At the Work with system partitions screen select "Display partition information".
3. At the Display partition information screen select "Display secondary partition reference code history". Page down to the partition ID for which you want the reference code history. Use the function key labeled "Include reference code detail" to expand the display of SRC information from only word 11 to all words of the SRC.

Closing Related Problems in Other Logical Partitions

Look in the SALs of other logical partitions where problems may have been logged by the same failing item just replaced. Search the Primary partition. If the failure was I/O related, then search any logical partition that shares the bus with the I/O failure. For any problems that were caused by the failing item just replaced, close the problem. Use the following procedure:

Note: To locate the console for a secondary partition, go to "Locating a Secondary Partition's Console" on page 783.

1. Convert the time and date of the SAL entry for the failing item that you replaced to the Primary partition's time and date by using the conversion procedure "Conversion of Secondary Partition Time and Date to Primary Partition Time".
2. Complete Table 53 by calculating the conversion value for each of the logical partitions that own resources on the same bus.

3. Convert the time and date of SAL entries in those logical partitions to the Primary partition's time and date by adding the conversion value for the SAL's logical partition.
4. If any SAL entries in those logical partitions were logged at approximately the same time and they appear to be related to the problem just repaired, close the entry.

Accessing a Logical Partition's Panel Functions

This procedure instructs the user on how to find panel functions for secondary partitions.

If the panel function required is not available from the console of the secondary partition, then go to the Primary partition's console to access that panel function for the secondary partition.

You must be on the Primary partition's console to:

- Power on a secondary partition.

Note: To locate a secondary partition's console or alternate console go to "Locating a Secondary Partition's Console" on page 783.

1. Go to the console of the secondary partition, or the console of the Primary partition.
2. From the SST or DST screen select the *Work with System Partitions* option.
3. At the *Work with System Partitions* screen:
 - a. Select *Work with Partition Status*.

Additional panel functions and information are available by pressing the function key for:

- *Monitor Partition Status*
- *Work with Partition Configuration*
- *More Options*

For panel functions 11 through 20:

- Press the function key for *Monitor Partition Status*.
- Move the cursor to the line for the partition in which you want to view functions 11 through 19.
- Press the function key for *Include Reference Code Detail*.
- For panel function 20 use the system control panel or option 20 on the *Work with Partition Status* screen.

Determining Which Logical Partition Owns a FRU or a System I/O Resource

This procedure helps you locate the logical partition which owns a FRU or system I/O resource. It is used to direct you to the correct logical partition in which to conduct the repair or exchange action.

Note: If you are locating a FRU, you are required to have the logical address or both the serial and the part number.

1. Go to the console of the Primary partition.
2. From the SST or DST screen select the *Work with System Partitions* option.
3. At the *Work with System Partitions* screen:
 - a. Record the *Partition manager release*.

Verifying Repair

- b. Record the number of partitions.
- c. Select *Display Partition Information*.
4. At the *Display Partition Information* screen select *Display Allocated I/O Resources*.
5. Select ***ALL** for which logical partitions to display, select ***ALL** for the level of detail to display.
6. If the display does not show serial and part information, press the function key for *Display Serial/Part Numbers*.
7. If you are locating a FRU, page forward until you locate the serial number and part number.
If you are locating a resource, page forward until you locate the resource name.
Record the logical partition in which the FRU or resource is located. Press the function key for *Display logical address* to record the logical address of the FRU or resource.

Selecting IPL Type and Mode for a Secondary Partition

This procedure will instruct the user on how to set the IPL type and IPL mode for a secondary partition.

1. Go to the console of the Primary partition.

Note: If the secondary partition is running, you can select the IPL type and IPL mode from the console of the secondary partition. See "Locating a Secondary Partition's Console" on page 783.

2. From the SST or DST screen select the *Work with System Partitions* option.
3. At the *Work with System Partitions* screen:
 - a. Record the *Partition manager release*.
 - b. Record the *Number of partitions*.
 - c. Select *Work With Partition Status*.
 - d. At the *Work With Partition Status* screen the IPL type and IPL mode are options for the secondary partition.

Missing or Non-reporting System Bus Resources

Note: On most systems with Logical Partitions, it is common to have one or more "Missing" or "Non-reporting" system bus resource(s) under Hardware Service Manager.

You need to understand the reason for each "Missing" or "Non-reporting" resource and follow the appropriate recovery action. These can occur for the following reasons:

1. Residual resource names may be left in the Primary partition after the IPL of a secondary partition. During an IPL of a secondary partition, there will be resource names created in the Primary partition for the secondary partition's load source IOP, IOA, and the load device (disk, tape, optical). These resources are temporarily used in the Primary partition during the IPL of the secondary partition. They will then show as "Non-reporting" in the Primary partition anytime after the IPL. These resource names will be reused on subsequent IPLs of the secondary partition.

Recovery action: These resources should be left in the Primary partition. They will be reused each time you IPL the secondary partition. If they are removed, a new resource will be created and the resource name will increment.

2. Residual resource names may be left in Primary or secondary partitions after a re-configuration of resources. When resources are removed from a partition, there are two options;
 - a. The *"Remove"* option will not alter the original resource names. Use this option if the customer intends to switch the resources back to the original partition.

Note: When the *"Remove"* option is selected, the resource names will show as *"Non-reporting"* in the partition from which they were removed after the next IPL of that partition.

Recovery action: Work with the customer to understand why the *"Remove"* option was selected. The resources should not be altered if the customer intends to switch the resource back to the partition from which they were removed.

- b. The *"Remove and clear hardware resource(s)"* option will remove the resource names permanently. If they are removed and the resource is switched back to the original partition, a new resource will be created and the resource name will increment. This will cause problems with the device descriptor that uses this resource. For example, if **TAP01** is being used by multiple partitions.
3. The system's logical partition configuration may leave residual resources in the event that the system partition information becomes corrupted. When this happens, all I/O resources are defaulted into the Primary partition until the logical partition configuration for the entire system has been recovered. After the configuration has been corrected or recovered, the resource names will remain in the Primary partition in a *"Non-reporting"* status.

Recovery action: Your next level of support will help you to recover the system logical partition configuration. Work with the customer to remove the residual resources that were defaulted in to the Primary partition as a result of the corruption.

4. A resource has failed or has been removed from the system.

Recovery action: Continue with the normal problem determination procedures.

Verifying Repair

Part 2. Repair and Parts

Chapter 6. Removal and Installation Procedures

Models 640, 650, 730, 740, S30, S40, and SB1 Rack		Models 650, 740, S40, and SB1 System Unit	
Component Removal and Installation Procedures	794	Processor Backplane	814
AC Module	795	Procedure	814
Procedure	795	Models 650, 740, S40, and SB1 Rear Cage	
AMDs (Air Moving Devices)	795	Removal	816
Procedure	795	Procedure	816
Battery	796	Models 640, 730 and S30 SPD Board.	816
Procedure	796	Procedure	816
Battery Charger	797	Models 640, 730 and S30 Storage Expansion	
Procedure	797	Unit	819
Battery Power Unit - External	797	Procedure	819
Procedure	797	FC 5065 or 5066 Expansion Tower Removal and	
Cards	798	Installation Procedures	819
Procedure	798	AMDs (Air Moving Devices)	819
Cards-Cache, Type 4700 and 6503	800	Parts Catalog References.	819
Parts Catalog References.	800	Procedure	819
Procedure	800	Battery	820
Control (Op) Panel Card.	800	Parts Catalog References.	820
Procedure	800	Procedure	820
Control (Op) Panel Battery	801	Battery Charger	821
Procedure	801	Parts Catalog References.	821
Covers	801	Procedure	821
Procedure	801	Cards-PCI in FC 5065 or 5066	821
Disk Unit — Dedicated and Concurrent	802	Parts Catalog References.	821
Procedure	802	Procedure	821
Concurrent Maintenance-Removal and		Cards Addendum	822
Installation	802	Cache Battery Pack, For Type 2740, 2748	822
Procedure	802	Cache Directory Card, For Type 2740, 2748	824
Dedicated Maintenance-Removal and		Cards-Cache, Type 4010	825
installation	804	Cards-PCI Type 4758 Battery Replacement	
Procedure	804	Procedure	826
Integrated Netfinity Server for AS/400 (Type		Cards-PCI Type 4758 Disablement Procedure	827
6616)	805	Control Panel-NB1	828
Integrated Netfinity Server for AS/400 (Type		Parts Catalog References.	828
6617)	805	Procedure	828
ISO-MAKO Interposer Card	805	Covers	828
Procedure	805	Parts Catalog References.	828
LAN/WAN IOP Card — Type 2810	806	Procedure	828
Procedure	806	Device Boards – DB1 and DB2.	830
Power Supply	806	Parts Catalog References.	830
Procedure	806	Procedure	830
Power Supply Subframe.	807	Device Board – DB3	831
Procedure	807	Parts Catalog References.	831
Regulator.	808	Procedure	831
Procedure	808	Disk Unit — Dedicated and Concurrent For FC	
Removable Media	809	5065 or 5066.	833
Procedure	809	Parts Catalog References.	833
REM4 SCSI Jumper Card	809	Procedure	833
Procedure	809	Concurrent Maintenance-Removal and	
REM8 SCSI Redrive Card	810	Installation	833
Procedure	810	Dedicated Maintenance-Removal and	
SPCN card	811	Installation	835
Procedure	811	Power Distribution Backplane	836
Models 640, 730 and S30 System Unit Backplane	811	Parts Catalog References.	836
Procedure	811	Procedure	836
		Power Supply	837

System Unit Remove and Install

Parts Catalog References.	837	Procedure	853
Procedure	837	Disk Unit (Concurrent)	855
Removable Media — Dedicated and Concurrent	838	Procedure	855
Parts Catalog References.	838	Disk Unit (Dedicated)	858
Procedure	838	Procedure	859
Tower Card Assembly-CB1	840	Disk Unit – Removal from Tray	860
Parts Catalog References.	840	Procedure	860
Procedure	840	File Server IOP - Type 6506.	863
FC 9251 – Models 650, 740, S40, and SB1 System		Integrated Netfinity Server for AS/400 - Type	
Unit I/O Tower, FC 507x – Bus Expansion Tower,		6616	865
and FC 508x – Storage Expansion Tower Removal		Integrated Netfinity Server for AS/400 (Type	
and Installation Procedures.	841	6617)	867
AC Module and AMD	841	Procedure	868
Procedure	841	Micro Channel Adapter for a Wireless LAN IOA	
AMD	842	or IOP.	869
Procedure	842	Power Supply	869
Battery Power Unit	843	Procedure	869
Procedure	843	Removable Media (Concurrent)	870
Battery Power Unit (2-Part).	844	Procedure	871
Procedure	844	Removable Media (Dedicated).	872
Battery Power Unit - External	846	Procedure	872
Procedure	846	Removable Media Enclosure	873
Cards	848	Procedure	873
Procedure	849	SCSI Redrive Card–9251 Base I/O Tower	874
Cards–Cache, Type 4700 and 6503	850	Procedure	874
Parts Catalog References.	850	Storage Expansion Unit Backplane	875
Procedure	850	Procedure	875
Card Enclosure.	851	SPCN Optical Adapter	876
Procedure	851	Procedure	876
Control Panel	852	Upper Disk Unit Enclosure Backplane	877
Procedure	852	Procedure	877
Covers	853		

If removing a FRU from the system unit uses the same procedure as removing the FRU from the expansion unit, you will find the procedure in the system unit section of this chapter. If a FRU has a unique removal procedure in an expansion unit, you will find that procedure the expansion unit section of this chapter.

Attention: It is not always necessary to power off the system to exchange a field replaceable unit (FRU). You will be directed through a concurrent exchange, if possible, for disk or removable media storage units. For other FRU types, see “Expansion Tower Power Procedure” on page 766.

Models 640, 650, 730, 740, S30, S40, and SB1 Rack Component Removal and Installation Procedures

This is the starting point for all remove procedures in the 1.6 meter rack. Perform the following steps.

Attention: It is not always necessary to power off the system to exchange a field replaceable unit (FRU). You will be directed through a concurrent exchange, if possible, for disk or removable media storage units.

1. Find the location of the part you are replacing in “System Unit Locations and Addresses” on page 695.
2. If you are removing a disk unit or removable media unit, you may be able to use the concurrent procedures and keep the system up and running.
3. Find the FRU you are removing in this section and follow the procedures.

4. When you have completed the remove procedure, install the FRU by reversing the remove procedure unless otherwise noted.
5. After exchanging an item, see “Verifying the Repair” on page 778.

AC Module

Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
2. Disconnect the power cord.
3. Remove the rear cover (see “Covers” on page 801).

Refer to “Models 640, 730 and S30 Final Assembly - Rear” on page 924 and perform the following steps.

4. Remove the Battery Backup EMC access plate (see either “Assembly 3: Model 640, 730 and S30 Final Assembly - Rear” on page 922 or “Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear” on page 938).
5. Remove the AC module.

This ends the procedure.

AMDs (Air Moving Devices)

Procedure

Do not power off the system.

Note: When you install the new AMD, some force is required to insert the AMD past the spring-loaded flap.

Front AMDs

1. Remove the front cover (see “Covers” on page 801).

Refer to “Models 640, 730 and S30 Final Assembly - Front” on page 920 and perform the following steps.

2. Remove the Bulk Power EMC access plate (see either “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916 or “Assembly 8: Models 650, 740, S40, and SB1 Final Assembly - Front” on page 934).
3. On the control panel:
 - a. Select function 7.
 - b. Press the Enter button.
 - c. Select function 0702.
 - d. Press the Enter button.
 - e. Select 07Fx where x is the AMD to be powered off (0=AMD 1, 1=AMD 2, 2=AMD 3, 3=AMD 4).
 - f. Press the Enter button. The green LED on the AMD will turn off.
4. Remove the AMD assembly.
5. The new AMD will automatically power on when it is installed.

Rear AMDs

1. Remove the rear cover (see “Covers” on page 801).

System Unit Remove and Install

Refer to “Models 640, 730 and S30 Final Assembly - Rear” on page 924 and perform the following steps.

2. Remove the Rear AMD EMC access plate (see either “Assembly 3: Model 640, 730 and S30 Final Assembly - Rear” on page 922 or “Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear” on page 938).
3. On the control panel:
 - a. Select function 7.
 - b. Press the Enter button.
 - c. Select function 0702.
 - d. Press the Enter button.
 - e. Select 07Fx where x is the AMD to be powered off (0=AMD 1, 1=AMD 2, 2=AMD 3, 3=AMD 4).
 - f. Press the Enter button. The green LED on the AMD will turn off.
4. Remove the AMD assembly.
5. The new AMD will automatically power on when it is installed.

This ends the procedure.

Battery

Procedure

Attention: Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the card enclosure.

1. **Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 757. Perform “SPCN-PIP5” on page 623. Then return here and continue with the next step of this procedure.
2. If the system is powered on, you do not have to power off the system to perform this procedure.
3. Remove the rear cover (see “Covers” on page 801).

Refer to “Models 640, 730 and S30 Final Assembly - Rear” on page 924 and perform the following steps.

4. Remove the Battery Backup EMC access plate (see either “Assembly 3: Model 640, 730 and S30 Final Assembly - Rear” on page 922 or “Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear” on page 938).
5. Remove the battery.

CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

Note: After you install the new battery, perform "POW-PIP3" on page 568 to ensure correct operation.

This ends the procedure.

Battery Charger

Procedure

Attention: Read "Important Continuously Powered Main Storage (CPM) Information" on page 757.

1. Perform "SPCN-PIP5" on page 623. Then return here and continue with the next step of this procedure.
2. **Do not power off the system.**
3. Remove the rear cover (see "Covers" on page 801).

Refer to "Models 640, 730 and S30 Final Assembly - Rear" on page 924 and perform the following steps.

4. Remove the Battery Backup EMC access plate (see either "Assembly 3: Model 640, 730 and S30 Final Assembly - Rear" on page 922 or "Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear" on page 938).
5. Remove the battery charger.

This ends the procedure.

Battery Power Unit - External

Procedure

1. Look to see if the panel backlight is on to verify that ac power is applied.
2. If the system is either powered off or running on battery power, you must apply ac power to the ac module before continuing with this procedure.
3. Remove the rear cover (see "Covers" on page 801).

For Model 640, 730 or S30, refer to "Models 640, 730 and S30 Final Assembly - Rear" on page 924 or for Model 650, 740, S40, or SB1, refer to "Models 650, 740, S40, and SB1 Final Assembly - Rear" on page 940 and then perform the following steps from the ***** REAR ***** of the system.

4. **Attention:** Removing the external battery power unit charger or cable while the system is running on battery power causes the system to fail and may damage the external battery power unit and the card enclosure.
If the console will accept system commands, the system is **not** running on battery power. Continue with the next step of this procedure.
5. To remove the battery, unplug the cable from the battery charger connector J3.

CAUTION:

The weight of this part or unit is more than 55 kilograms (121.2 pounds). It takes specially trained persons with a lifting device to safely lift this part or unit. (RSFTC206)

System Unit Remove and Install

CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

This ends the procedure.

Cards

Attention: All cards are sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1019).

CAUTION:

The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

Procedure

1. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).

2. Disconnect the power cord.

3. Remove the front or rear cover to access the card you are replacing (see "Covers" on page 801).

4. Are you replacing a memory, regulator, or SPCN card?

No **Yes**

↓

a. **Attention:** Read "Important Continuously Powered Main Storage (CPM) Information" on page 757.

Perform "SPCN-PIP5" on page 623.

b. Then return here and continue with step 5.

5. Are you replacing a card in the front of the system?

No **Yes**

↓

a. For Model 640, 730, or S30, refer to "Models 640, 730 and S30 Final Assembly - Front" on page 918, or for Model 650, 740, S40, or SB1, refer to "Assembly 8: Models 650, 740, S40, and SB1 Final Assembly - Front" on page 934.

b. Continue with step 7.

6. You are removing a card from the rear of the system. For Model 640, 730, or S30, refer to "Assembly 3: Model 640, 730 and S30 Final Assembly - Rear" on page 922 or for Model 650, 740, S40, or SB1, refer to "Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear" on page 938. Continue with step 7.

7. Remove the EMC access plate for the card location that you are accessing.

8. Mark the cables that are attached to the card so you can return them to the correct location during reassembly.

9. Remove the cables attached to the card.

10. Remove the card.

System Unit Remove and Install

11. Are you replacing a Dual-Piece Processor with Interactive Card? (See "Type, Model, and Part Number List" on page 362 for the processor type that you are working on.)

Yes No



This ends the procedure.

12.

- a. On the side of the book there is a rectangular metal cover. Remove this cover by gently squeezing the cover along its long edge and pulling out.
- b. Remove the Interactive Card by pushing it out gently. The card is keyed such that the replacement will only install the correct way.
- c. To assist with label tampering detection, verify that the new parts have the same type numbers as the parts which are currently installed in the customer's machine. To verify the correct interactive card in the customers system:
 - 1) Read the logo label that is covering a module on the front of the interactive card that you removed from the system (this label is square with an IBM logo on it.) See Figure 68.
 - 2) Verify that the **type number** on the above logo label matches the type number of the replacement interactive card.
 - 3) Use the type number from the logo label on the interactive card that you removed from the system to obtain a part number from the "Type, Model, and Part Number List" on page 362.

Note: The part number for the interactive card is the second part number listed in the "Type, Model, and Part Number List" on page 362.

- 4) Compare the part number that you obtained from the "Type, Model, and Part Number List" on page 362 with the part number on the bar code label on the back of the interactive card that you removed from the system.

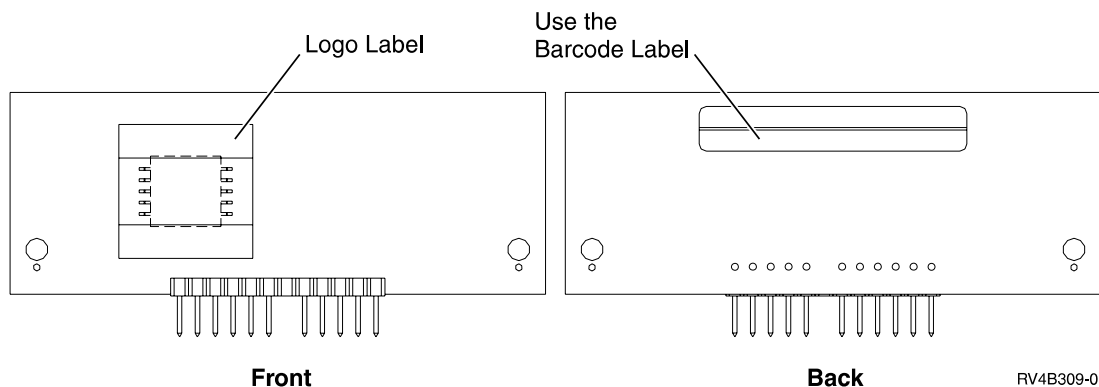


Figure 68. Interactive Card

If the replacement parts do not have a corresponding part in the customer's machine, contact your parts distribution center for a valid substitution string. Report any alteration of the logo label to your next level of support.

System Unit Remove and Install

- d. Assemble the new Interactive card into the new dual-piece processor by reversing this procedure.

Note: Do not install the Interactive card that you removed from the system into the new processor card. Return **both** the interactive card and the processor card that you replaced.

This ends the procedure.

Cards–Cache, Type 4700 and 6503

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

CAUTION:

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

Parts Catalog References

- None

Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 761)
2. Disconnect the power cord.
3. Remove the rear covers (see “Covers” on page 801).
4. Remove the EMC access plate (see either “Assembly 3: Model 640, 730 and S30 Final Assembly - Rear” on page 922 or “Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear” on page 938).
5. Remove the adapter card from the full-size card by doing the following:
 - a. Press the two latch surfaces together to release the latch.
 - b. Rotate the latch downward.
 - c. Pull on the latch to remove the adapter card from the full-size card.

This ends the procedure.

Control (Op) Panel Card

Attention: The control (op) panel is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
2. Disconnect the power cord.
3. Remove the front cover to access the control panel (see “Covers” on page 801).
4. Disconnect the control panel cables.
5. Remove the control panel.

6. Refer to “Assembly 12: All Models Control Panel Assembly” on page 946 and remove the control panel card.

Note: Return the old keys with the circuit card you removed.

7. The system date and time will need to be set after this procedure is completed. See *AS/400 Service Functions*.

Control (Op) Panel Battery

Procedure

CAUTION:

The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM-approved part. Discard the battery as instructed by local regulations. (RSFTC227)

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
2. Disconnect the power cord.
3. Remove the front cover to access the control (op) panel (see “Covers”).
4. Pivot the control panel away from the system.
5. **Model 650, 740, S40, or SB1:** remove the cover on the control panel that covers the cable connectors (see “Assembly 12: All Models Control Panel Assembly” on page 946).
6. **Model 640, 730 and S30:** loosen the battery cover mounting screw and let the battery cover tilt down (see “Assembly 12: All Models Control Panel Assembly” on page 946).
7. Remove the control panel battery from the back of the control panel.
8. The system date and time will need to be set after this procedure is completed. See *AS/400 Service Functions*.

Covers

Procedure

If you are working in a FC 5065 or 5066 expansion tower go to “Covers” on page 828.

For Model 640, 730, or S30 refer to “Assembly 1: Models 640, 730 and S30 Covers” on page 912 or for Model 650, 740, S40, or SB1 refer to “Assembly 7: Models 650, 740, S40, and SB1 Covers” on page 932 then perform the following steps:

- To remove the front and rear covers:
 1. Lift up on the cover.
 2. Pull the cover out and off.
- To remove the top cover:
 1. Remove the cover mounting screws.
 2. If this is a Model 640, 730 or S30 with Storage Expansion unit or a Model 650, 740, S40, or SB1, remove the front and rear top cover EMC access plates.
 3. Slide the cover to the front or rear.
 4. Lift the cover up and off.
- To remove the side cover(s):
 1. Remove the front, rear, and top covers.
 2. Remove the screws from the front and rear of the side cover.

System Unit Remove and Install

3. Lift up on the cover.
4. Pull the cover out and off.

This ends the procedure.

Disk Unit — Dedicated and Concurrent

Attention: The disk unit is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

Procedure

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

1. Are you working in a 507x or 508x expansion tower?
No **Yes**
↓ Go to “Disk Unit (Concurrent)” on page 855 or “Disk Unit (Dedicated)” on page 858.
2. Are you working in a 5065 or 5066 expansion tower?
No **Yes**
↓ Go to “Disk Unit — Dedicated and Concurrent For FC 5065 or 5066” on page 833.
3. Are you removing or installing a disk unit using concurrent maintenance?
Yes **No**
↓ Go to “Dedicated Maintenance-Removal and installation” on page 804.
4. Perform “Concurrent Maintenance-Removal and Installation”.

Concurrent Maintenance-Removal and Installation

Attention: The disk unit is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

Procedure

1. **To remove a disk unit using Device Concurrent Maintenance:**
 - a. Do not power off the system.
 - b. After you have determined the location of the disk unit to replace, remove the cover for access (see “Covers” on page 801).
 - c. Remove the disk unit EMC access plate.
 - For Model 640, 730 or S30 Front, see “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916.
 - For Model 640, 730 or S30 Rear, see “Assembly 3: Model 640, 730 and S30 Final Assembly - Rear” on page 922.
 - For Model 640, 730 or S30 with FC 5055, see “Models 640, 730 and S30 with Expansion Unit Cover” on page 914.
 - For Model 650, 740, S40, or SB1 Front, see “Assembly 7: Models 650, 740, S40, and SB1 Covers” on page 932.
 - For Model 650, 740, S40, or SB1, Rear, see “Assembly 8: Models 650, 740, S40, and SB1 Final Assembly - Front” on page 934.
 - d. Select System Service Tools (SST) if OS/400 is running, otherwise use DST.

System Unit Remove and Install

- e. Select the Start a Service Tool option.
- f. Select the Hardware Service Manager option.
- g. Select Device Concurrent Maintenance.
- h. Enter the correct device location on the Device Concurrent Maintenance display and follow the instructions to concurrently remove a disk unit. The disk unit light will be off and 1xxx 02xx will appear in the Function/Data display on the control panel. At the same time, the bus quiesce light (located below the disk units) will illuminate for about 8 seconds. Whether you use the control panel or bus quiesce light depends on where the disk unit is located. Both types of indicators have the same meaning and operate at the same time.
- i. Remove the disk unit when 1xxx 02xx is on the control panel or when the bus quiesce light is illuminated.
Attention: Three 8-second periods will occur about 15 seconds apart. Remove the disk unit only during one of the 8-second periods of time.
- j. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.
- k. Remove the disk unit from the frame.
- l. To remove the disk drive and logic card from the tray, go to "Disk Unit – Removal from Tray" on page 860.

2. Are you finished with the repair?

No **Yes**

- ↓ Replace the covers that were removed during this procedure and return to the procedure that sent you here.

This ends the procedure.

3. To insert a disk unit using Device Concurrent Maintenance:

Attention: The disk unit is sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1019).

- a. Do not power off the system.
- b. After you have determined the location of the disk unit to replace, remove the cover for access (see "Covers" on page 801).
- c. Remove the disk unit EMC access plate.
 - For Model 640, 730 or S30 Front, see "Assembly 2: Model 640, 730 and S30 Final Assembly - Front" on page 916.
 - For Model 640, 730 or S30 Rear, see "Assembly 3: Model 640, 730 and S30 Final Assembly - Rear" on page 922.
 - For Model 650, 740, S40, or SB1 Front, see "Assembly 7: Models 650, 740, S40, and SB1 Covers" on page 932.
 - For Model 650, 740, S40, or SB1, Rear, see "Assembly 8: Models 650, 740, S40, and SB1 Final Assembly - Front" on page 934.
- d. Select System Service Tools (SST) if OS/400 is running, otherwise use DST.
- e. Select the Start a Service Tool option.
- f. Select the Hardware Service Manager option.
- g. Select Device Concurrent Maintenance.
- h. Enter the correct device location on the Device Concurrent Maintenance display and follow the instructions to concurrently insert a disk unit. 1xxx 01xx will appear in the Function/Data display on the control panel and

System Unit Remove and Install

the bus quiesce light (located below the disk units) will illuminate for about 8 seconds. Whether you use the control panel or bus quiesce light depends on where the disk unit is located. Both types of indicators have the same meaning and operate at the same time.

- i. Insert the disk unit when 1xxx 01xx is on the control panel or when the bus quiesce light is illuminated.

Attention: Three 8-second periods will occur about 15 seconds apart. Insert the disk unit only during one of the 8-second periods of time.

- j. To insert the disk unit, put the disk unit tray part way into the desired slot. Rotate the handle of the tray towards you. Push the disk unit tray completely into the slot and then rotate the handle towards the disk unit tray to latch the disk unit into the slot.

This ends the procedure.

Dedicated Maintenance-Removal and installation

Procedure

Attention: The disk unit is sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1019).

1. To remove a disk unit using dedicated repair, perform the following:

- a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
- b. Disconnect the power cord.
- c. After you have determined the location of the disk unit to replace, remove the cover for access (see "Covers" on page 801).
- d. Remove the disk unit EMC access plate.
 - For Model 640, 730 or S30 EMC access plate, see "Models 640, 730 and S30 with Expansion Unit Cover" on page 914.
 - For Model 640, 730 or S30 Front, see "Assembly 2: Model 640, 730 and S30 Final Assembly - Front" on page 916.
 - For Model 640, 730 or S30 Rear, see "Assembly 3: Model 640, 730 and S30 Final Assembly - Rear" on page 922.
 - For Model 650, 740, S40, or SB1 Front, see "Assembly 7: Models 650, 740, S40, and SB1 Covers" on page 932.
 - For Model 650, 740, S40, or SB1 Rear, see "Assembly 8: Models 650, 740, S40, and SB1 Final Assembly - Front" on page 934.
- e. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.
- f. Remove the unit from the frame.
- g. To remove the disk drive and logic card from the tray, go to "Disk Unit – Removal from Tray" on page 860.

2. Are you finished with the repair?

No **Yes**

- ↓ Replace the covers that were removed during this procedure and return to the procedure that sent you here.

This ends the procedure.

3. To Install a disk unit using dedicated maintenance perform the following:

System Unit Remove and Install

Attention: The disk unit is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Disconnect the power cord.
- c. After you have determined the location of the disk unit to install, remove the cover for access (see “Covers” on page 801).
- d. Remove the disk unit EMC access plate.
 - For Model 640, 730 or S30 EMC access plate, see “Models 640, 730 and S30 with Expansion Unit Cover” on page 914.
 - For Model 640, 730 or S30 Front, see “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916.
 - For Model 640, 730 or S30 Rear, see “Assembly 3: Model 640, 730 and S30 Final Assembly - Rear” on page 922.
 - For Model 650, 740, S40, or SB1 Front, see “Assembly 7: Models 650, 740, S40, and SB1 Covers” on page 932.
 - For Model 650, 740, S40, or SB1 Rear, see “Assembly 8: Models 650, 740, S40, and SB1 Final Assembly - Front” on page 934.
- e. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.
- f. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
- g. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

This ends the procedure.

Integrated Netfinity Server for AS/400 (Type 6616)

Refer to “Integrated Netfinity Server for AS/400 - Type 6616” on page 865 for this procedure.

Integrated Netfinity Server for AS/400 (Type 6617)

Refer to “Integrated Netfinity Server for AS/400 (Type 6617)” on page 867 for this procedure.

ISO-MAKO Interposer Card

Procedure

Refer to “Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear” on page 938 perform the following steps from the ***** REAR ***** of the system.

1. Remove the upper and lower EMC access plates from the rear cage assembly.
2. Remove the EMC brackets from around the rear cage in the following order:
 - Top
 - Left and Right
3. Mark the SPCN card, regulators, memory, and filler cards and their locations in the top and bottom of the rear cage so that you can return the cards to their proper location during reassembly.
4. Remove the SPCN card, regulators, memory, and filler cards from the top and bottom of the rear cage.
5. Remove the mounting screws from the lower part of the rear cage.

System Unit Remove and Install

6. Remove the two Cable EMC access plates from the rear cage.
7. Remove the Air Baffle in the lower center of the rear cage.
8. Unplug the cables attached to the upper left and upper right corners of the Front Cage/Backplane assembly.

LAN/WAN IOP Card — Type 2810

Attention: The main storage cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

Procedure

1. Remove the 2810 card from the system (see “Cards” on page 798).
2. Remove 2 screws from bottom of each side of card (4 screws total).
3. Rotate the bottom rail away from the assembly.
4. Remove the IOA card from the assembly.
5. If you are replacing the IOA card, install the new IOA card into the assembly.
6. If you are replacing the 2810 card, install the IOA card into the new 2810 assembly.
7. Install the 2810 by reversing the removal procedure.
8. After exchanging an item, go to “Verifying the Repair” on page 778.
9. **This ends the procedure.**

Power Supply

DANGER

Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)

Procedure

The new bulk will automatically power on when it is installed.

1. **Do not power off the system.**
2. Remove the front cover (see “Covers” on page 801).

For Model 640, 730 or S30 , refer to “Models 640, 730 and S30 Final Assembly - Front” on page 920 and for Model 650, 740, S40, or SB1, refer to “Models 650, 740, S40, and SB1 Final Assembly - Front” on page 936 and continue with the following steps.

3. Remove the Bulk Power EMC access plate.
4. On the control panel:
 - a. Select manual mode.
 - b. Select function 7.
 - c. Press the Enter button.
 - d. Select function 0703.
 - e. Press the Enter button.
 - f. Select 07Bx where x is the bulk to be powered off (0=Bulk 1, 1=Bulk 2, and so on).
 - g. Press the Enter button. The green LED on the bulk will turn off.
5. Remove the DC power bulk.

This ends the procedure.

Power Supply Subframe

Procedure

1. Print out a rack configuration sheet so that you know where all devices and cards are located in the system rack.
2. **Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 757.
Perform “SPCN-PIP5” on page 623. Then return here and continue with the next step of this procedure.
3. Power the off system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
4. Disconnect the power cord.
5. Remove the front and rear system covers (see “Covers” on page 801).

For Model 640, 730 or S30, refer to “Models 640, 730 and S30 Final Assembly - Front” on page 920 or for Model 650, 740, S40, or SB1, refer to “Models 650, 740, S40, and SB1 Final Assembly - Front” on page 936 and then perform the following steps from the *** **FRONT** *** of the system.

6. Remove the Bulk Power EMC access plate covering the AMDs and bulk power supplies.
7. Remove the screws from the bulk power supplies and AMD assemblies.
8. Slide out the bulk power supplies and AMD assemblies far enough so that they are disconnected from their power connectors.

For Model 640, 730 or S30, refer to “Models 640, 730 and S30 Final Assembly - Rear” on page 924 or for Model 650, 740, S40, or SB1, refer to “Models 650, 740, S40, and SB1 Final Assembly - Rear” on page 940 and then perform the following steps from the *** **REAR** *** of the system.

9. Remove the Battery Backup EMC access plate.
10. Remove the battery.

CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

11. Remove the battery charger.
12. Remove the AC box.
13. Remove the Rear AMD EMC access plate.
14. Remove the rear AMDs.

For Model 640, 730 or S30, refer to “Assembly 3: Model 640, 730 and S30 Final Assembly - Rear” on page 922 or for Model 650, 740, S40, or SB1, refer to “Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear” on page 938 and then perform the following steps from the *** **REAR** *** of the system.

15. Remove the CEC Regulator EMC access plate that covers the power regulators.
16. Mark the regulators and their locations so that you can reinstall them in the proper locations.
17. Remove the power regulators and SPCN card.
18. **Carefully remove the top row of screws that are near the alignment pins inside the CEC Regulator Cage.** Don’t allow the screws to be dropped down inside the system.

System Unit Remove and Install

19. Remove the screws that are near the connectors in the lower left and lower right corners inside the CEC Regulator Cage.
20. Remove the screws in the Top Cage Retaining Bracket located below the SPD cards and remove the bracket.
21. Remove the screws in the Right Cage Retaining Bracket and remove the bracket.
22. Remove the screws in the sides and bottom of the CEC Regulator Cage that mount the cage into the rack. Slide the Regulator Cage out 15 cm (6 inches).
23. Disconnect the power cables that are connected to the lower right and lower left corners of the Backplane.

For Model 640, 730 or S30, refer to “Models 640, 730 and S30 Final Assembly - Rear” on page 924 or for Model 650, 740, S40, or SB1, refer to “Models 650, 740, S40, and SB1 Final Assembly - Rear” on page 940. You should also refer to “Assembly 11: All Models Power Subframe Assembly” on page 944 and then perform the following steps from the ***** REAR ***** of the system.

24. Remove the screws from the top and bottom of the Power Subframe Assembly.
25. Remove the Power Subframe Assembly.
26. Install the new Power Subframe Assembly by reversing the previous steps.

This ends the procedure.

Regulator

Procedure

The system must be powered off before removing and installing regulators 17 or 18.

1. Are you removing a memory control regulator?

Yes **No**

↓ Continue with step 3.

2. **Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 757. Perform “SPCN-PIP5” on page 623. Then return here and continue with the next step of this procedure.
3. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
4. Disconnect the ac power cord.
5. Remove the rear cover (see “Covers” on page 801).

Refer to “Assembly 3: Model 640, 730 and S30 Final Assembly - Rear” on page 922 and perform the following steps from the ***** REAR ***** of the system.

6. Remove the CEC Regulator EMC access plate.
7. Remove the regulator.

This ends the procedure.

Removable Media

Procedure

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

For Model 640, 730 or S30 refer to “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916 or for Model 650, 740, S40, or SB1 refer to “Assembly 16: Final Assembly - 9251 Base I/O, 507x & 508x Expansion Towers” on page 968

Use the figure to determine the location of the internal removable media unit. Record this location for later use.

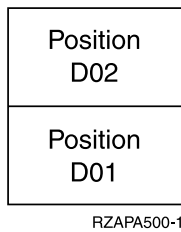


Figure 69. Internal removable media locations for the System CEC Unit

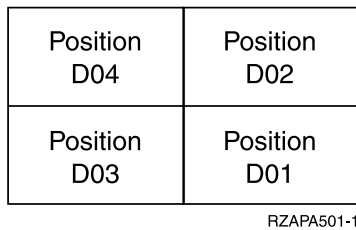


Figure 70. Internal removable media locations for the System Base I/O Tower

Perform the steps in “Removable Media (Concurrent)” on page 870.

REM4 SCSI Jumper Card

Procedure

1. Power the off system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
2. Disconnect the power cord.
3. Remove the front system cover (see “Covers” on page 801).

Refer to “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916 and perform the following steps from the ***** FRONT ***** of the system.

4. Remove the screw from the control panel bracket and pivot the control panel away from the system.
5. Disconnect the two control panel cables and wrap the small cable around the upper frame so that they do not interfere with the removal of other parts.
6. Remove the removable media from the Removable Media Shelf.

System Unit Remove and Install

7. Remove the screws from the Removable Media Shelf.
8. Remove the Removable Media Shelf.

Refer to “Models 640, 730 and S30 Final Assembly - Front” on page 918 and perform the following steps from the ***** FRONT ***** of the system.

9. Remove the mounting screw from the Front Cage EMC access plate and remove the shield.

Refer to “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916 and perform the following steps from the ***** FRONT ***** of the system.

10. Loosen the top row of screws on the top front EMC access plate.
11. Remove the bottom row of screws from the top front EMC access plate.
12. Remove the top front EMC access plate.
13. Reach through the opening and remove the jumper card.

This ends the procedure.

REM8 SCSI Redrive Card

Procedure

1. Power the off system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
2. Disconnect the power cord.
3. Remove the front system cover (see “Covers” on page 801).

Refer to “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916 and perform the following steps from the ***** FRONT ***** of the system.

4. Remove the screw from the control panel bracket and pivot the control panel away from the system.
5. Disconnect the two control panel cables and wrap the small cable around the upper frame so that they do not interfere with the removal of other parts.
6. Remove the removable media from the Removable Media Shelf.
7. Remove the screws from the Removable Media Shelf.
8. Remove the Removable Media Shelf.

Refer to “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916 and perform the following steps from the ***** FRONT ***** of the system.

9. Remove the mounting screw from the Front Cage EMC access plate and remove the shield.

Refer to “Models 640, 730 and S30 Final Assembly - Front” on page 918 and perform the following steps from the ***** FRONT ***** of the system.

10. Loosen the top row of screws on the top front EMC access plate.
11. Remove the bottom row of screws from the top front EMC access plate.
12. Remove the top front EMC access plate.
13. Reach through the opening and remove the jumper card.

This ends the procedure.

SPCN card

Procedure

1. Power the off system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
2. Disconnect the power cord.
3. Remove the rear cover (see “Covers” on page 801).

For Model 640, 730 or S30, refer to “Models 640, 730 and S30 Final Assembly - Rear” on page 924 or for Model 650, 740, S40, or SB1, refer to “Models 650, 740, S40, and SB1 Final Assembly - Rear” on page 940 and then perform the following steps from the *** **REAR** *** of the system.

4. Mark the locations and the cables attached to the SPCN card so that you can reinstall the cables to the proper location.
5. Lift the handles and pull the card out.

This ends the procedure.

Models 640, 730 and S30 System Unit Backplane

CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

Procedure

1. Print out a rack configuration sheet so that you know where all devices and cards are located in the system rack.
2. **Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 757. Perform “SPCN-PIP5” on page 623. Then return here and continue with the next step of this procedure.
3. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
4. Disconnect the power cord.
5. Remove the front and rear system covers (see “Covers” on page 801).

Refer to “Assembly 3: Model 640, 730 and S30 Final Assembly - Rear” on page 922 and perform the following steps from the *** **REAR** *** of the system.

6. Remove the CEC Regulator EMC access plate that covers the power regulators.
7. Mark the regulators and their locations so that you can reinstall them in the proper locations.
8. Remove the power regulators and SPCN card.
9. **Carefully remove the top row of screws that are near the alignment pins inside the CEC Regulator Cage.** Don’t allow the screws to be dropped down inside the system.
10. Remove the screws that are near the connectors in the lower left and lower right corners inside the CEC Regulator Cage.
11. Remove the screws from the Top Cage Retaining Bracket that is located below the SPD cards.
12. Remove the screws in the Right Cage Retaining Bracket and remove the bracket.

System Unit Remove and Install

13. Remove the screws in the sides and bottom of the CEC Regulator Cage that mount the cage into the rack. Slide the Regulator Cage out 15 cm (6 inches).

Refer to “Models 640, 730 and S30 Final Assembly - Rear” on page 924 and perform the following steps from the ***** REAR ***** of the system.

14. Remove the Rear AMD EMC access plate.
15. Note the cable locations on the Backplane so you can reconnect them to the proper location during reassembly.
16. Disconnect the power cables that are connected to the lower right and lower left corners of the Backplane.

Refer to “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916 and perform the following steps from the ***** FRONT ***** of the system.

17. Swing out the control panel, disconnect the two control panel cables, and remove the cables from the cable clamp. Wrap the small cable around the upper frame so that it doesn't fall down into the system.

Refer to “Models 640, 730 and S30 Final Assembly - Front” on page 918 and perform the following steps from the ***** FRONT ***** of the system.

18. Remove the screws from the Front Cage EMC access plate and remove the shield.
19. Mark the cards and card locations in the CEC cage so you can reinstall the cards in the proper locations.
20. Remove the cards from the CEC cage.

Refer to “Models 640, 730 and S30 Final Assembly - Front” on page 920 and perform the following steps from the ***** FRONT ***** of the system.

21. Remove the screws from the bottom front Bulk Power EMC access plate and remove the shield.

Refer to “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916 and perform the following steps from the ***** FRONT ***** of the system.

22. Remove the removable media from the Removable Media Shelf.
23. Remove the screws from the Removable Media Shelf.
24. Remove the Removable Media Shelf.
25. Loosen the top row of screws on the top front EMC access plate.
26. Remove the bottom row of screws from the top front EMC access plate.
27. Remove the top front EMC access plate.

Refer to “Models 640, 730 and S30 Final Assembly - Front” on page 918 and perform the following steps from the ***** FRONT ***** of the system.

28. Remove the screws from the Left CEC Cage Bracket and Right CEC Cage Bracket and remove the brackets.
29. Remove the bottom row of screws from the CEC cage.
30. Refer to Figure 71 on page 813 to see where the cables are connected to the SPD/Disk Unit board.

IMPORTANT: Record the location of the connectors on the SPD/Disk Unit board and the ribbon cables that are plugged into them. Some connectors may not have a cable attached. When the system is reassembled, the cables need to be plugged into the correct connectors.

System Unit Remove and Install

Note: The three power cables (**C**) can be interchanged safely without causing problems when you reinstall the cage.

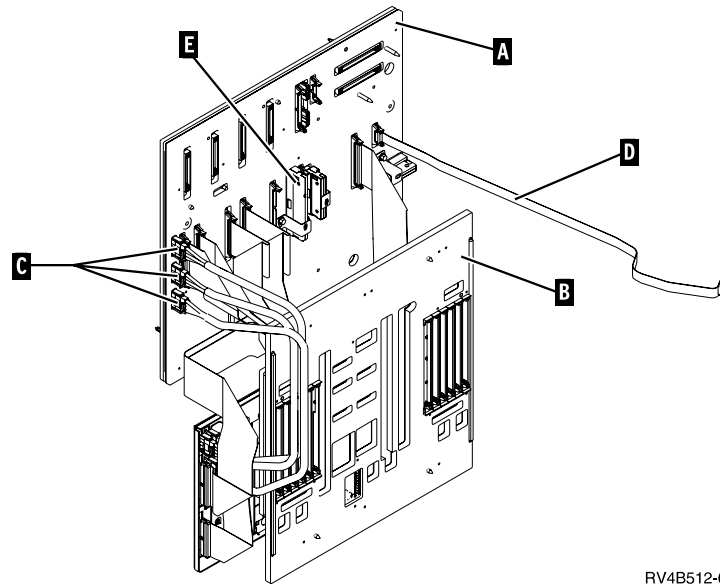


Figure 71. Models 640, 730 and S30 Backplane

- **A** - SPD Board
- **B** - Models 640, 730 and S30 Backplane
- **C** - Power cables.
- **D** - Control Panel cable
- **E** - REM Jumper

31. Disconnect all the cables attached to the SPD/Disk Unit board.

Note: The Control Panel can remain attached to the SPD board. If the system has a storage expansion unit attached to the top of the rack, the cable connecting the storage expansion unit to the SPD board can remain attached.

32. Place the disconnected cables along the left side of the CEC cage.

33. Open the package containing the new Backplane and remove the top piece of packaging material. Place the packaging material on the floor with the side formed to the Backplane up and the flat side down. The packaging material will be used as a cushion during the replacement procedure.

CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

34. **NOTE:** The CEC/Backplane assembly is heavy. Slide the CEC cage part way out of the rack. Use two people to lift the CEC cage/Backplane assembly out of the system and place it on the packaging material with the Backplane side down.

Refer to “Assembly 4: Models 640, 730 and S30 CEC Cage/Backplane Assembly” on page 926 and perform the following steps.

35. Remove all the power and signal cables from the Backplane.

36. Remove the screws inside the CEC cage that mount to the Backplane.

System Unit Remove and Install

37. Remove the CEC cage.
38. Exchange the failing Backplane on the packaging material with the new Backplane from the box so that the connectors on the new Backplane are down.
39. Reinstall the CEC cage/Backplane assembly being sure not damage any cables.
40. Slide the Regulator cage back into the system and replace the screws that were removed in steps 10 on page 811 and 11 on page 811.
41. To complete the replacement, reverse the previous steps starting at step 31 on page 813.

This ends the procedure.

Models 650, 740, S40, and SB1 System Unit Processor Backplane

CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

Procedure

1. Print out a rack configuration sheet so that you know where all devices and cards are located in the system rack.
2. **Attention:** Read "Important Continuously Powered Main Storage (CPM) Information" on page 757. Perform "SPCN-PIP5" on page 623. Then return here and continue with the next step of this procedure.
3. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
4. Disconnect the power cord.
5. Remove the front and rear system covers (see "Covers" on page 801).

Refer to "Assembly 8: Models 650, 740, S40, and SB1 Final Assembly - Front" on page 934 and perform the following steps from the ***** FRONT ***** of the system.

6. Loosen the two thumbscrews on the control panel and swing out the control panel.
7. Disconnect the cables from the control (op) panel assembly.
8. Remove the control panel assembly from the frame.
9. Remove the upper and lower Front Cage EMC access plates.
10. Remove the I/O Tower panel cable from the right EMC bracket.
11. Remove the EMC brackets from around the Front Cage in the following order:
 - Top
 - Left and Right
12. Mark the processor, memory, regulator, and filler cards and their locations in the Front Cage so you can return the cards to their proper location during reassembly.
13. Remove the processor, memory, regulator, and filler cards from the Front Cage.

Refer to "Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear" on page 938 perform the following steps from the ***** REAR ***** of the system.

14. Remove the upper and lower EMC access plates from the rear cage assembly.

System Unit Remove and Install

15. Remove the EMC brackets from around the rear cage in the following order:
 - Top
 - Left and Right
16. Mark the SPCN card, regulators, memory, and filler cards and their locations in the top and bottom of the rear cage so that you can return the cards to their proper location during reassembly.
17. Remove the SPCN card, regulators, memory, and filler cards from the top and bottom of the rear cage.
18. Remove the mounting screws from the lower part of the rear cage.
19. Remove the two Cable EMC access plates from the rear cage.
20. Remove the Air Baffle in the lower center of the rear cage.
21. Unplug the cables attached to the upper left and upper right corners of the Front Cage/Backplane assembly.
22. Remove the 6 'starred' screws that mount the rear cage to the Front Cage/Backplane assembly.
23. **CAUTION:**
The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)
Remove the rear cage assembly from the back of the system.
24. Unplug the cables attached to the lower left and right corners of the Front Cage/Backplane assembly.

Refer to "Assembly 8: Models 650, 740, S40, and SB1 Final Assembly - Front" on page 934 and perform the following steps from the ***** FRONT ***** of the system.

***** IMPORTANT ***** The Front Cage/Backplane assembly is heavier on the rear than it is on the front. The Front Cage/Backplane assembly may tip to the rear if it is not properly handled.

25. Remove the lower mounting screws from the Front Cage/Backplane assembly.
26. Use two people to remove Front Cage/Backplane assembly from the front of the system.
27. **CAUTION:**
The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)
Place the Front Cage/Backplane assembly on the floor in the upright position.
28. Disconnect the control panel cable from Backplane.
29. There are 6 'starred' screws inside the Front Cage/Backplane assembly that mount the Backplane to the cage. From inside the Front Cage, remove five of the 'starred' screws.
30. To prevent the Backplane from falling, hold the back plane to the cage and then remove the last 'starred' screw.
31. Lay the Front Cage face down on the floor so the back plane is on top.
32. Remove the Backplane from Front Cage.
33. Close all of the connector latches on the new Backplane. The latches need to be closed so they do not interfere with the rear cage when it is installed.
34. To complete the replacement, reverse the previous steps beginning with step 26.

This ends the procedure.

System Unit Remove and Install

Models 650, 740, S40, and SB1 Rear Cage Removal

Procedure

Refer to “Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear” on page 938 perform the following steps from the *** **REAR** ***of the system.

1. Remove the upper and lower EMC access plates from the rear cage assembly.
2. Remove the EMC brackets from around the rear cage in the following order:
 - Top
 - Left and Right
3. Mark the SPCN card, regulators, memory, and filler cards and their locations in the top and bottom of the rear cage so that you can return the cards to their proper location during reassembly.
4. Remove the SPCN card, regulators, memory, and filler cards from the top and bottom of the rear cage.
5. Remove the mounting screws from the lower part of the rear cage.
6. Remove the two Cable EMC access plates from the rear cage.
7. Remove the Air Baffle in the lower center of the rear cage.
8. Unplug the cables attached to the upper left and upper right corners of the Front Cage/Backplane assembly.
9. Remove the 6 ‘starred’ screws that mount the rear cage to the Front Cage/Backplane assembly .

CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

10. Remove the rear cage assembly from the back of the system.

This ends the procedure.

Models 640, 730 and S30 SPD Board

Procedure

1. Print out a rack configuration sheet so that you know where all devices and cards are located in the system rack.
2. **Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 757.
Perform “SPCN-PIP5” on page 623. Then return here and continue with the next step of this procedure.
3. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
4. Disconnect the power cord.
5. Remove the front and rear system covers (see “Covers” on page 801).

Refer to “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916 and perform the following steps from the *** **FRONT** ***of the system.

6. Swing out the control panel and disconnect the cables from the control panel.

Refer to “Models 640, 730 and S30 Final Assembly - Front” on page 918 and perform the following steps from the *** **FRONT** *** of the system.

7. Remove the Front Cage EMC access plate .

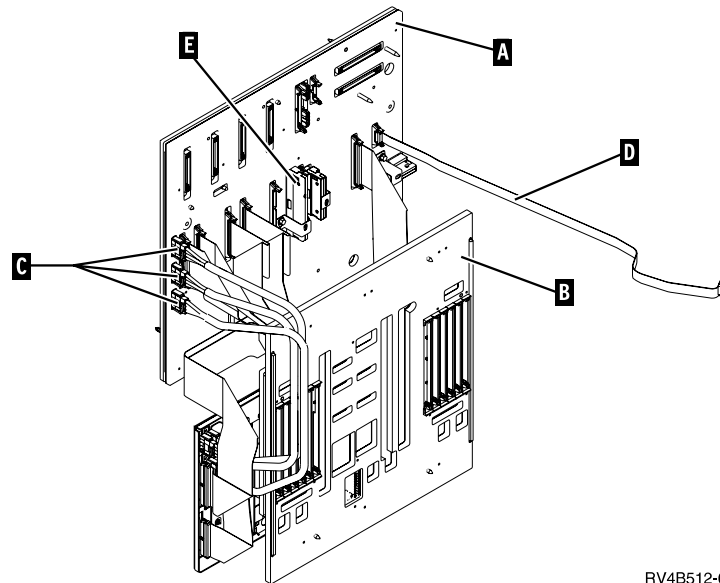
System Unit Remove and Install

8. Mark all of the cards, storage devices, and removable media devices and their locations so that you can return the cards and devices to their proper location during reassembly.
9. Remove the cards, storage devices and removable media devices.

Refer to “Assembly 2: Model 640, 730 and S30 Final Assembly - Front” on page 916 and perform the following steps from the *** **FRONT** *** of the system.

10. Remove the screws that mount the Removable Media Shelf/Cable Assembly in the rack.
11. Remove the Removable Media Shelf.
12. Reach through the space where the Removable Media Shelf was removed and disconnect the cables that are attached to the SPD board.
13. Loosen, but do not remove, the screws on the front load source disk unit cage.
14. Loosen the top row of screws on Load Source EMC access plate and remove the bottom row of screws. Note the position of the alignment pins on the shield. The pins must be seated correctly when the shield is reinstalled.
15. Remove the Load Source EMC access plate.
16. Refer to Figure 72 to see where the cables are connected to the SPD/Disk Unit board.

IMPORTANT: Record the location of the connectors on the SPD/Disk Unit board and the ribbon cables that are plugged into them. Some connectors may not have a cable attached. When the system is reassembled, the cables need to be plugged into the correct connectors. The three power cables (**C**) can be interchanged safely without causing problems.



RV4B512-0

Figure 72. Models 640, 730 and S30 Backplane

- **A** - SPD Board
- **B** - Models 640, 730 and S30 Backplane
- **C** - Power cables.
- **D** - Control Panel cable
- **E** - REM Jumper

17. Unplug all cables from the SPD/Disk Unit board.

System Unit Remove and Install

Refer to “Models 640, 730 and S30 Final Assembly - Front” on page 920 and “Assembly 3: Model 640, 730 and S30 Final Assembly - Rear” on page 922 and then perform the following steps BOTH the *** FRONT *** and *** REAR *** of the system.

18. Record location of each terminator on both the front and rear of the SPD board. When the system is reassembled, the terminators need to be plugged into the correct connector. Remove the terminators from the SPD board.

Refer to “Assembly 3: Model 640, 730 and S30 Final Assembly - Rear” on page 922 and perform the following steps from the *** REAR *** of the system.

19. Mark all of the cards and storage devices and their locations so that you can return the cards and devices to their proper location during reassembly.
20. Remove the cards and storage devices from the SPD/Disk Unit cage.

Note: If the system has a storage expansion unit attached to the top of the rack, storage devices in the expansion unit do not need to be removed.

21. Loosen the bottom row of screws on the filler plate and remove the screws from the top and sides of the plate.
22. Remove the filler plate.
23. Remove the screws that mount through the top of the SPD/Disk Unit board into the load source disk unit cage.
24. Remove the bottom row of screws in filler plate on right side below the SPD cage.
25. Remove the screws from the sides of the SPD/Disk Unit cage.
26. Remove the two **7mm screws** that mount through the SPD board. The screws are located near storage device slot 1 in the disk unit cage and book slot 8 in the SPD cage.

CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

27. **Support the SPD/Disk Unit Cage until it is completely removed from the rack.**
28. Place the SPD/Disk Unit cage on the floor so that the left side (Disk Unit Cage) is down and the right side (SPD cage) is up.
29. Remove the screws that mount through the disk unit part of the cage to the SPD/Disk Unit board.
30. Rotate the SPD/Disk Unit cage so that the right side (SPD cage) is down and the left side (disk unit cage) is up.
31. Remove the screws that mount through the SPD part of the cage to the SPD/Disk Unit board.
32. Remove the SPD/Disk Unit board.
33. If terminators are installed on the SPD/Disk Unit board, remove them and install them on the new SPD/Disk Unit board.
34. Place the new SPD/Disk Unit board onto the cage and reverse the previous steps to reassemble the SPD/Disk Unit cage.
35. Close all the cable connector latches so that they are not damaged when you install the cage into the system. You are now ready to install the cage into the system.

This ends the procedure.

Models 640, 730 and S30 Storage Expansion Unit

CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

Procedure

1. Power the off system and unplug the power cord. Verify that Continuous Power Mainstore is not active.
2. Remove the top cover front and rear EMC access plates (see “Models 640, 730 and S30 with Expansion Unit Cover” on page 914).
3. Loosen the screws in the top cover.
4. Remove the top cover.

Refer to “Assembly 6: Models 640, 730, and S30 Storage Expansion Unit (FC 5055)” on page 930 and perform the following steps.

5. Unlatch the storage devices in the disk unit cage.
6. Remove the terminators and cables attached to the back plane.
7. Remove the screws that mount the back plane to the disk unit cage.
8. Remove the back plane from the disk unit cage.
9. Remove the spacers from the old back plane.
10. Install the new back plane by reversing the previous steps.

This ends the procedure.

FC 5065 or 5066 Expansion Tower Removal and Installation Procedures

AMDs (Air Moving Devices)

Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 954.

Procedure

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 761.)
2. Disconnect the power cord from the expansion tower.
3. Open the rear cover. (See “Covers” on page 828.)
4. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
5. Remove the screw from the EMC access plate for the AMD that you are replacing. For location information, see “FC 5065 and FC 5066 Expansion Towers” on page 708.
6. Remove the AMD by sliding it out of the enclosure while holding the EMC access plate open.
7. Install the AMD by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.

FC 5065 or 5066 Expansion Tower Removal and Installation

Battery

CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 954.

Procedure

Attention: Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the backplane.

1. When the expansion unit is powered on indicated by the green panel light, do NOT power off the system. Go to step 3 of this procedure.
2. If the system is running on battery power, AC power must be applied to all of the power supplies before continuing with this procedure or powered off.
3. Open the rear cover. (See “Covers” on page 828.)
4. **Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the PCI card enclosure.

If the console will accept commands, the system is not running on battery power. Continue with the next step of this procedure.

5. To remove the battery power unit perform the following:

CAUTION:

Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)

- a. Remove the screws from the EMC access plate that is covering the the batteries.
- b. Remove the EMC access plate from the battery enclosure.
- c. Remove the top and bottom screws from the battery unit.
- d. Pull on the ring using two hands to remove the battery power unit.

CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

Remove the battery unit from the frame.

- e. Install the battery power unit by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.

Battery Charger

Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 954.

Procedure

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 761.)
2. Disconnect the incoming AC power cord from the expansion tower.
3. Open the rear cover. (See “Covers” on page 828.)
4. Disconnect all the power cords from the battery charger. (See “FC 5065 and FC 5066 Expansion Towers” on page 708.)
5. Remove the screws that are holding the charger to the frame.
6. Remove the battery charging unit.
7. Install the battery charger by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.

Cards—PCI in FC 5065 or 5066

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

CAUTION:

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

Parts Catalog References

- None

Procedure

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 761.)
2. Disconnect the incoming AC power cord from the expansion tower.
3. Open the rear cover. (See “Covers” on page 828.)
4. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
5. Remove the screws that are holding the PCI card enclosure to the frame.
6. Disconnect the cable from the card that is located in C04 and partially slide the PCI card enclosure out of the tower until it stops.
7. Disconnect the cables that are connected to the PCI card that you are replacing.

Note: Label the cables to ensure correct installation.

8. Record the location of the card that you are removing.

FC 5065 or 5066 Expansion Tower Removal and Installation

9. Remove the screw that holds the card bracket to the enclosure.
10. Pull the card out of the PCI card enclosure.

Note: If you are exchanging a type 4758 PCI Cryptographic Coprocessor, go to “Cards-PCI Type 4758 Disablement Procedure” on page 827.

Note: If you are exchanging a type 2726 or 2741, you must remove the cache card from the original type 2726, 2741 card and install it on the new card. See “Cards-Cache, Type 4010” on page 825.

Note: If you are exchanging a type 2748, you must place the mode jumper in the same location as it is on the card that you are replacing. See “Storage I/O Card Modes and Jumpers” on page 746 for information on mode and jumper locations.

Install the card that you replaced by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.

Cards Addendum

Cache Battery Pack, For Type 2740, 2748

CAUTION:

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

Attention: Power the system down normally prior to replacing the Cache Battery Pack. (see “Powering Off and Powering On the System or Expansion Tower” on page 761)

Parts Catalog References:

- none

Procedure:

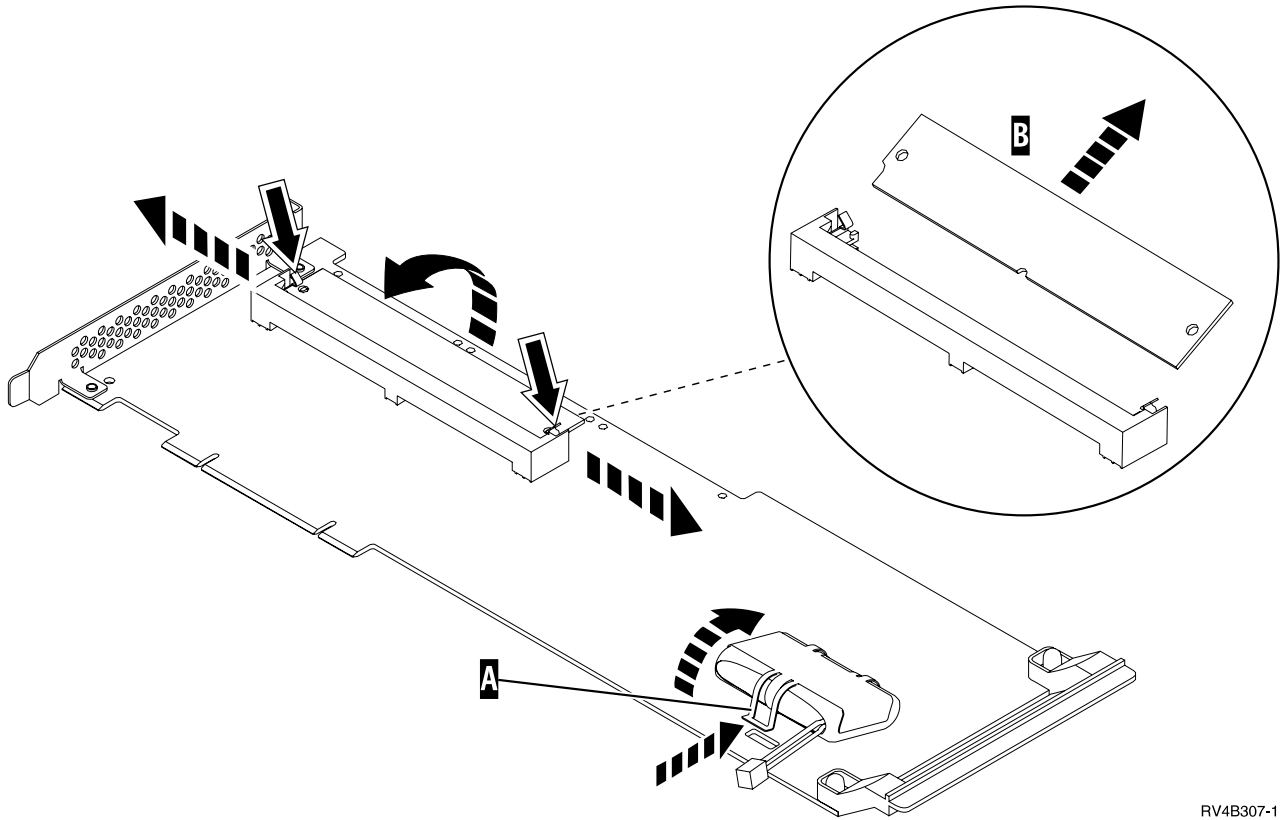
1. Locate the casing **A** that holds the battery pack. See Figure 73 on page 823 and Figure 74 on page 824.
2. Squeeze the casing **A** to remove battery unit from the card.
3. Remove the plug that connects the battery unit and the card.

Note: The plug fits in the board only one way so it can not be inserted incorrectly during the replacement phase.

4. Remove the battery unit from the battery casing.

Note: Save the battery casing. The replacement battery pack will not come equipped with a casing.

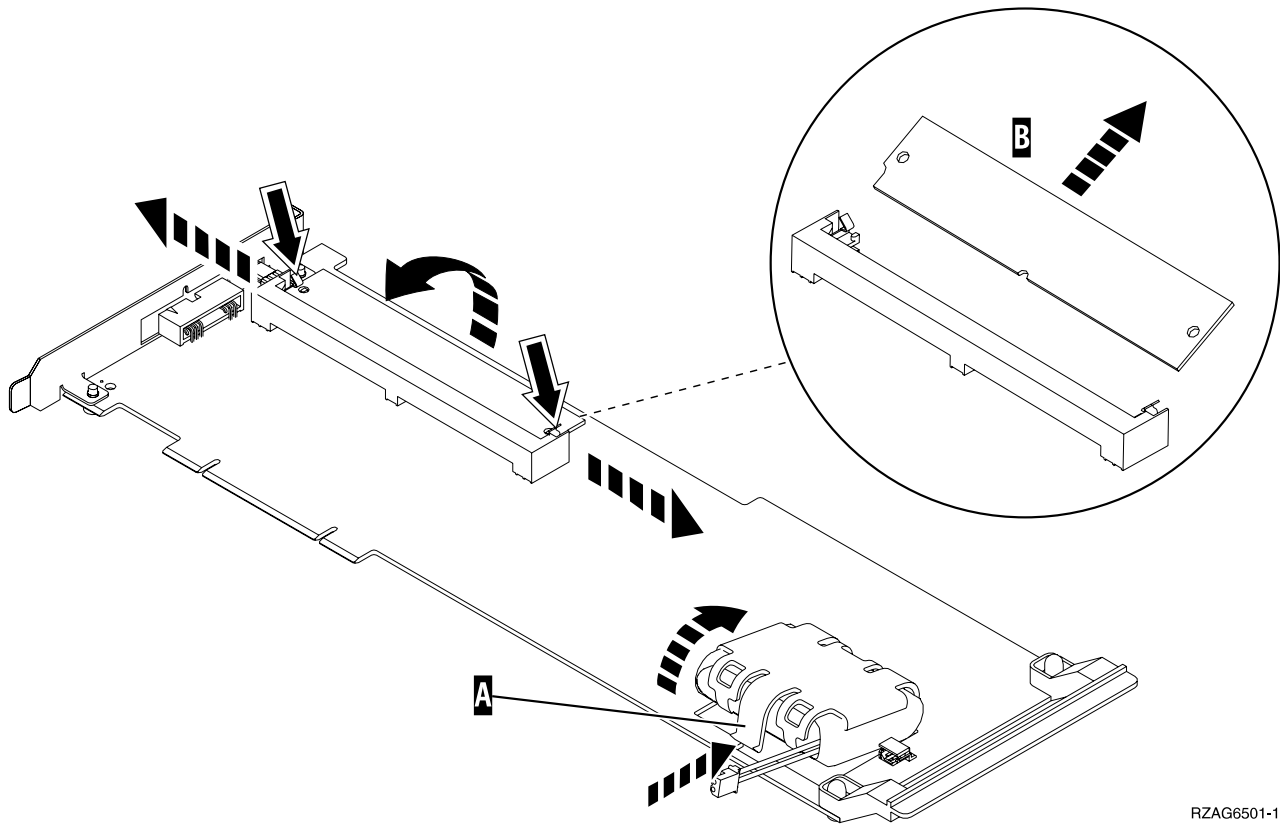
FC 5065 or 5066 Expansion Tower Removal and Installation



RV4B307-1

Figure 73. Cache Battery Pack and Cache Directory Card for Type 2740

FC 5065 or 5066 Expansion Tower Removal and Installation



RZAG6501-1

Figure 74. Cache Battery Pack and Cache Directory Card for Type 2748

This ends the procedure.

Cache Directory Card, For Type 2740, 2748

Attention: All cards are sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1019).

CAUTION:

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

Parts Catalog References:

- none

Procedure:

1. Locate the cache directory card **B**; a small rectangular card mounted on the I/O card. See Figure 73 on page 823 and Figure 74.
2. Spread the tabs on each side of the cache directory card and raise the back of the cache directory card **B** up away from the I/O card. The cache directory card will pivot up about 20°.
3. Pull cache directory card out.

Note: To install the replacement cache directory card, the cache directory card should be wiggled into place at a 20° angle before pushing it down and locking the tabs. Be sure that the holes on each side of the cache directory card are filled by the pegs on the cache card to ensure proper seating.

FC 5065 or 5066 Expansion Tower Removal and Installation

This ends the procedure.

Cards—Cache, Type 4010

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

Parts Catalog References:

- None

Procedure:

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 761)
2. Disconnect the power cord from the system or expansion unit.
3. Remove the covers. (See “Covers” on page 801 or if you are working in a FC 5065 or 5066 expansion tower see “Covers” on page 828.)
4. Remove the EMC access plate.

Note: When installing this EMC access plate in a system unit, ensure that slotted screws are used to secure the shield to the frame.

5. Disconnect the cables that are connected to the PCI card.

Note: Label the cables to ensure correct installation.

6. Record the location of the card being removed.
7. Remove the screw that holds the card bracket.
8. Pull the card out of the system.
9. Remove the alignment pins from the corners of the cache card **A**.
10. Pull the cache card out of the connector at the rear of the Storage IOA card.

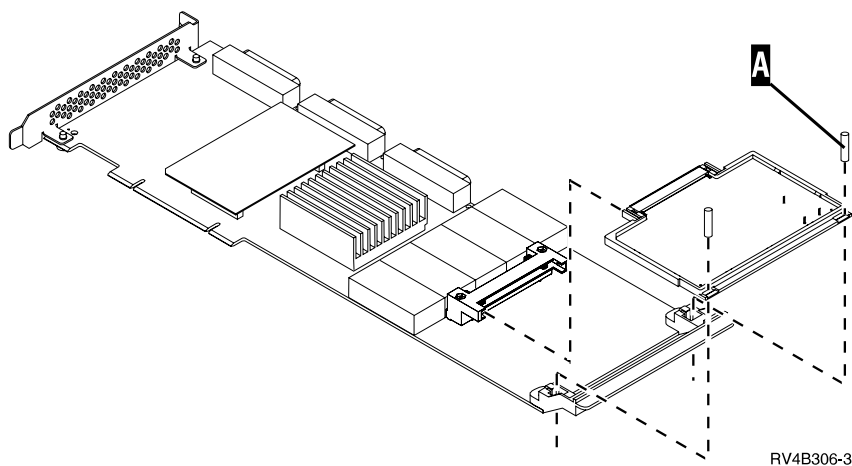


Figure 75. Cache card removal

This ends the procedure.

FC 5065 or 5066 Expansion Tower Removal and Installation

Cards-PCI Type 4758 Battery Replacement Procedure

This procedure demonstrates the proper method for replacing the Type 4758 PCI Cryptographic Coprocessor card's batteries.

CAUTION:

The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM-approved part. Discard the battery as instructed by local regulations. (RSFTC227)

Procedure:

1. Power off the system or expansion tower (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
2. If you are working in an expansion tower disconnect the power cord.
3. Remove the cover from the expansion slots. (See "Covers" on page 801 or if you are working in a FC 5065 or 5066 expansion tower see "Covers" on page 828.)
4. Remove the PCI Cryptographic Coprocessor card from the PCI-bus slot in the unit.
5. Find the location of the two lithium batteries. They are located in adjacent holders, with the left holder above the J3 connector. Refer to the illustration below.

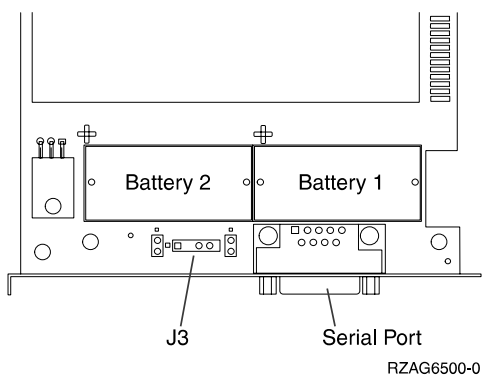


Figure 76. Battery Locations on the 4758 PCI Cryptographic Coprocessor

6. **Attention:** Any loss of battery power erases data stored in the card's protected memory and renders the card useless.
 7. Open the battery replacement kit.
 8. Insert one of the new batteries into the battery tray provided with the kit.
- Note:** The battery '+' must be oriented in the battery tray with the same polarity matching the '+' on the tray.
9. Connect the battery tray's cable to the J3 connector on the 4758 card.

Note: This maintains battery power to the card while the new batteries are installed one at a time. Refer to step 6 of this procedure.

10. Remove the battery warning label which covers Battery 1 and Battery 2. Discard the label.
11. Replace the battery in the Battery 1 position with a new battery.

Note: The battery '+' must be oriented in the holder with the same polarity matching the '+' on the holder.

FC 5065 or 5066 Expansion Tower Removal and Installation

12. Replace the battery in the Battery 2 position with the battery in the battery tray.

Note: The battery '+' must be oriented in the holder with the same polarity matching the '+' on the holder.

13. Remove the battery tray from the J3 connector and discard it.
14. Place the new Battery Warning label (PN 04K9421) over the 2 new batteries which were just installed.
15. Reinstall the card.

This ends the procedure.

Cards-PCI Type 4758 Disablement Procedure

Attention: For security reasons, when replacing the cryptographic coprocessor, use the following procedure.

This procedure demonstrates the proper method for disabling the Type 4758 PCI Cryptographic Coprocessor card. The disablement procedure assures that the contents of the Coprocessor's protected memory are set to zeroes. The cryptographic master key and other data stored in the protected memory will be lost.

CAUTION:

The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM-approved part. Discard the battery as instructed by local regulations. (RSFTC227)

Procedure:

1. Power off the system or expansion tower (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
2. If you are working in an expansion tower disconnect the power cord.
3. Remove the cover from the expansion slots. (See "Covers" on page 801 or if you are working in a FC 5065 or 5066 expansion tower see "Covers" on page 828.)
4. Remove the PCI Cryptographic Coprocessor card from the PCI-bus slot in the unit.
5. Find the location of the two lithium batteries. They are located in adjacent holders, with the left holder above the J3 connector. Refer to the illustration below.

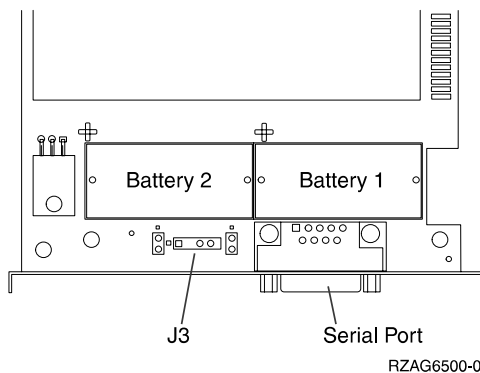


Figure 77. Battery Locations on the 4758 PCI Cryptographic Coprocessor

FC 5065 or 5066 Expansion Tower Removal and Installation

Note: The loss of battery power erases data stored in the card's protected memory and renders the card useless.

6. Remove the battery in the "Battery1" holder (right side).
7. Remove the battery in the "Battery2" holder (left side). When this has been accomplished, the PCI Cryptographic Coprocessor card has been disabled.
8. You can now install the new card.

This ends the procedure.

Control Panel-NB1

Parts Catalog References

- "Assembly 14: Final Assemblies for FC 5065 expansion tower" on page 954.

Procedure

Attention: The control panel is sensitive to electrostatic discharge. (See "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1019.)

1. Power off the expansion tower. (See "Powering Off and Powering On the System or Expansion Tower" on page 761.)
2. Disconnect the power cord from the expansion tower.
3. Open the front cover. (See "Covers".)
4. Pull on the blue handles that are located on each side of the unit and slide it partially out of the tower.
5. Disconnect the control panel cable from the rear of the control panel.
6. Remove the control panel.
7. Install the control panel by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 778.

This ends the procedure.

Covers

Parts Catalog References

- "Assembly 13: Cover Assemblies for FC 5065 and FC 5066 Expansion Towers" on page 950.

Procedure

Note: The front and rear covers will swing open to a little more than 90 degrees. This makes it possible to replace all FRUs, without having to remove the covers.

To open the front or rear covers perform the following:

1. Unlock the cover (front only)
2. Release the cover latching mechanism by pushing in on the blue button "A" that is located midway along the right edge of the cover.
3. Grasp the top, right corner of the cover and pull it towards you to open it.
4. Do you need to remove the cover?

Yes No

↓ **This ends the procedure.**

5. **To remove the cover:**

FC 5065 or 5066 Expansion Tower Removal and Installation

- a. After opening the cover, press down on the lever "B" that is located inside along the top, left side of the cover.
- b. Tilt the top of the cover away from the tower and lift the cover off. See Figure 78 and Figure 79 on page 830.

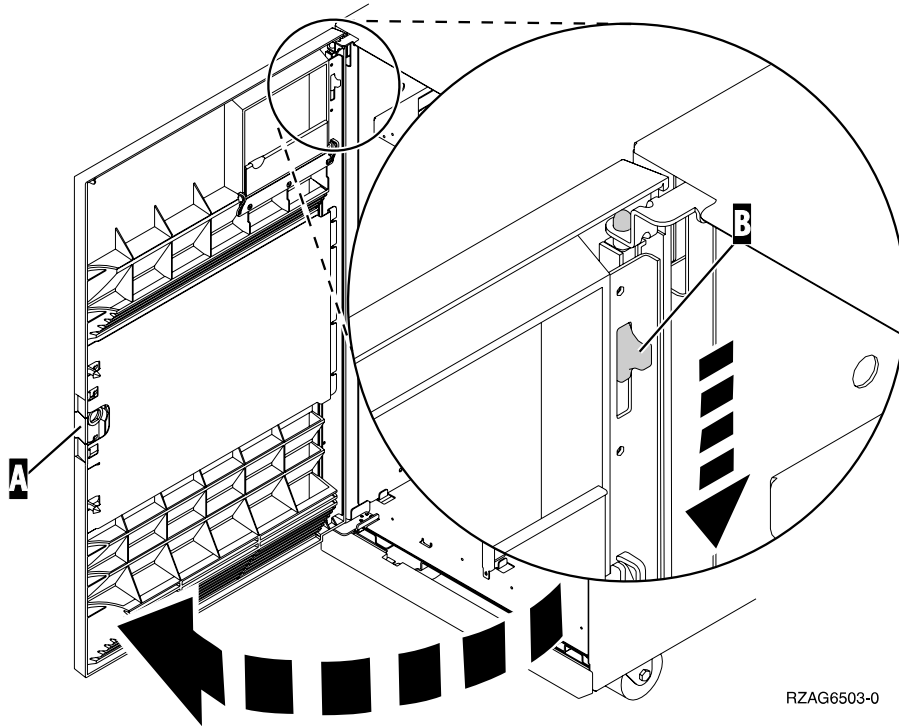


Figure 78. Front Cover - Removal

FC 5065 or 5066 Expansion Tower Removal and Installation

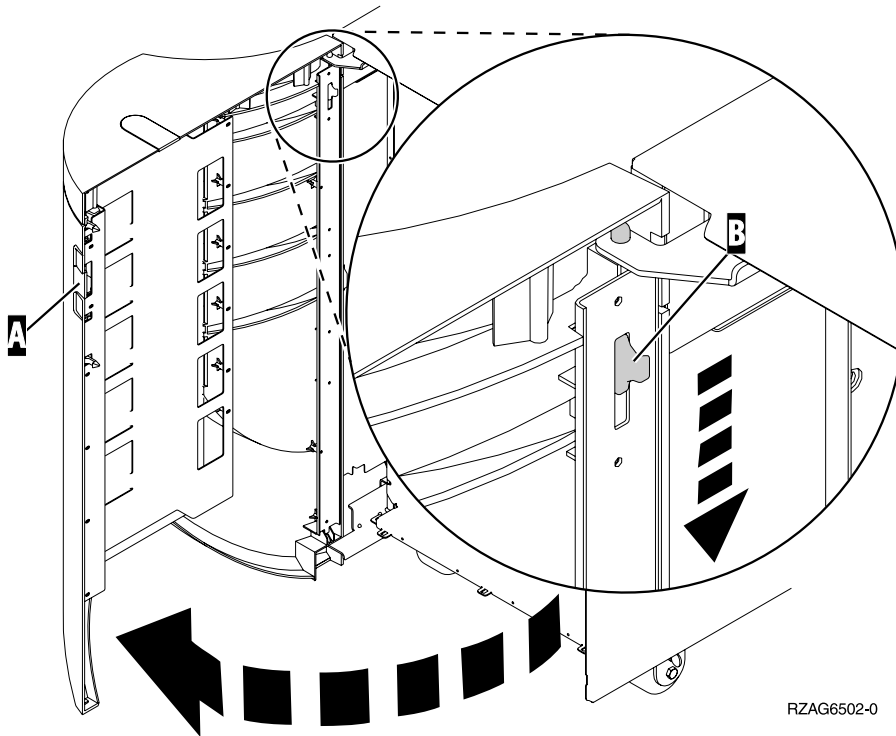


Figure 79. Rear Cover - Removal

This ends the procedure.

Device Boards – DB1 and DB2

Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 954.

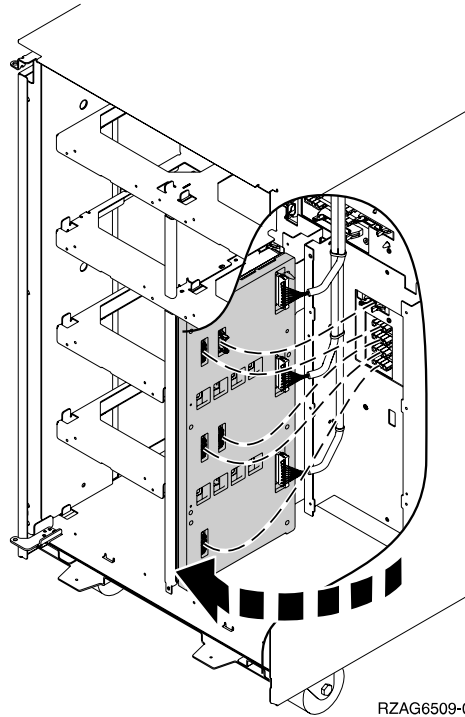
Procedure

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 761.)
2. Disconnect the power cord from the expansion tower.
3. Open the front cover. (See “Covers” on page 828.)
4. From the front of the expansion tower **remove** the following:
 - a. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane that you are replacing. For location information, see “FC 5065 and FC 5066 Expansion Towers” on page 708. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
 - b. Record the locations of the disk units and then remove them from the disk unit enclosures that you just uncovered.

Attention: The disk units are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).
 - c. Remove the screws that hold the disk unit cage assembly in to the frame.
 - d. Remove the two retaining screws that are located inside of the disk unit cage assembly (the top right and bottom left corners).
 - e. Remove the disk unit cage assemblies.

FC 5065 or 5066 Expansion Tower Removal and Installation

- f. Remove the screws that hold the DASD shelf to the frame.
- g. Remove the DASD shelf from the frame.
5. Remove the retaining screw that is holding the DASD board assembly to the frame.
6. Pull the DASD board assembly out until it slides off the guide pins, then rotate the DASD board assembly 90° to remove the cables that are located on the backside of it.



7. Remove the cables from the rear of the DASD board assembly and note their locations.

Note: Both ends of the ribbon cables are marked “LH” or “RH” indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card (The cables will crisscross in the center of the tower).

8. Remove the DASD board assembly.
9. Install the DASD board assembly by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.

Device Board – DB3

Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 954.

Procedure

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 761.)
2. Disconnect the power cord from the expansion tower.
3. Open the rear cover. (See “Covers” on page 828.)

FC 5065 or 5066 Expansion Tower Removal and Installation

4. From the rear of the expansion tower **remove** the following:
 - a. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
 - b. Remove the cables from the disk unit controller cards (IOAs) that are located inside the PCI card enclosure and note their locations.

Note: Both ends of the ribbon cables are marked “LH” or “RH” indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card (The cables will crisscross in the center of the tower).
 - c. Remove the screws that hold the PCI card enclosure in the frame.
 - d. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
 - e. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
 - f. Remove the PCI card enclosure from the frame.
 - g. Remove the screws from the EMC access plate that is located inside the frame and directly above the power distribution board.
 - h. Remove the EMC access plate.
 - i. Reach through the opening and remove the cables from the backside of the base DASD board assembly (DB3).
5. Open the front cover. (See “Covers” on page 828.)
6. From the front of the expansion tower **remove** the following:
 - a. Note the removable media locations and then remove them by pulling out on the handles which are located on each side of the unit.
 - b. Remove the control panel by pulling on the blue handles that are located on each side of the unit and sliding it partially out of the tower. Then, unplug the cable from the rear of the control panel. (See “Control Panel-NB1” on page 828.)
 - c. Unplug the control panel cable from the base DASD board assembly (DB3).
 - d. Remove the two retaining screws that are located inside of the removable media enclosure (the top right and lower left corners).
 - e. Remove the removable media enclosure.
 - f. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane (DB3). For location information, see “FC 5065 and FC 5066 Expansion Towers” on page 708. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
 - g. Record the disk unit locations and then remove them from the disk unit enclosures that you just uncovered.

Attention: The disk units are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).
 - h. Remove the screws that hold the disk unit enclosures to the frame.
 - i. Remove the retaining screws that are located inside the disk unit enclosure.
 - j. Remove the disk unit enclosures.

FC 5065 or 5066 Expansion Tower Removal and Installation

- k. Remove the screws that hold the center support bracket and shelf for the disk unit and removable media enclosure to the frame.
 - l. Remove the support bracket and shelf.
 - m. Remove the base DASD board assembly (DB3).
7. Install the base DASD board assembly by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.

Disk Unit — Dedicated and Concurrent For FC 5065 or 5066

Parts Catalog References

- None.

Procedure

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Attention: The disk unit is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

1. Were you directed here from “Chapter 7. Recovery Procedures” on page 879?

Yes **No**

↓ Go to “Chapter 7. Recovery Procedures” on page 879.

2. After you have determined the location of the disk unit to replace, remove the front covers for access (see “Covers” on page 828).
3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see “FC 5065 and FC 5066 Expansion Towers” on page 708.
4. Are you removing or installing a disk unit using concurrent maintenance?

No **Yes**

↓ Perform “Concurrent Maintenance-Removal and Installation”.

5. Go to “Dedicated Maintenance-Removal and Installation” on page 835.

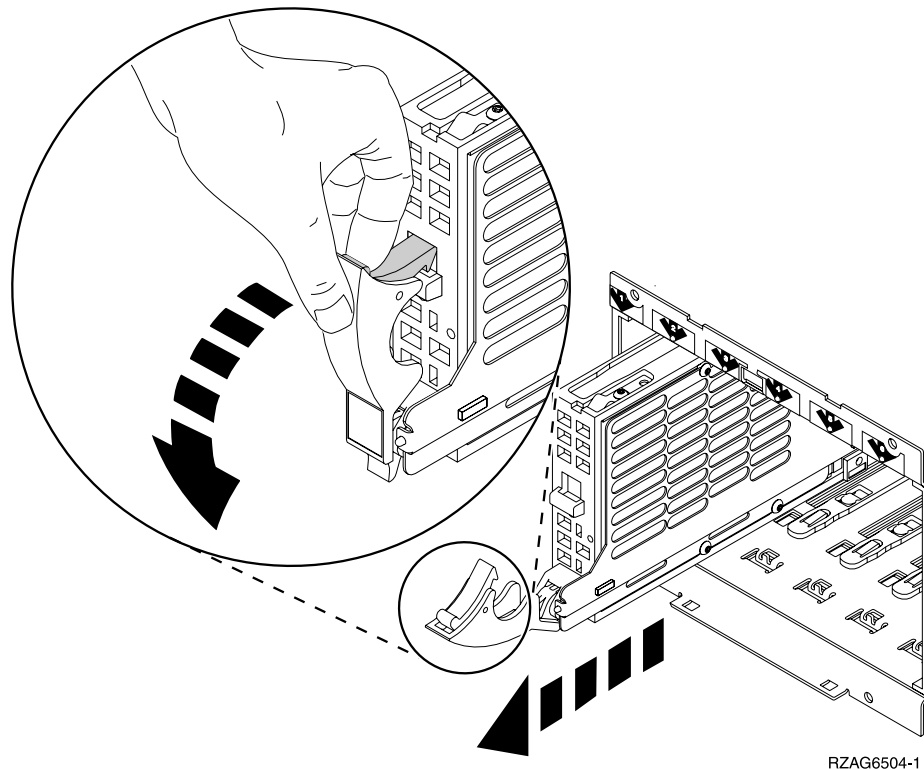
Concurrent Maintenance-Removal and Installation

Procedure:

1. **To remove a disk unit using concurrent maintenance perform the following:**
 - a. Select System Service Tools (SST). If you cannot get to SST, select DST.
Do not perform a system IPL to get to DST.
 - b. Select the *Start a Service Tool* option.
 - c. Select the *Hardware Service Manager* option.
 - d. Select *Device Concurrent Maintenance* and enter the required information in the information fields.
 - e. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out of the tower.

FC 5065 or 5066 Expansion Tower Removal and Installation

Attention: If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.



Note: The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.

Wait another 5 seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out of the tower.

2. Are you finished with the repair?

No **Yes**

↓ Replace the covers that were removed during this procedure and return to the procedure that sent you here.

This ends the procedure.

3. To install a disk unit using concurrent maintenance perform the following:

a. Select System Service Tools (SST). If you cannot get to SST, select DST.

Do not perform a system IPL to get to DST.

b. Select the *Start a Service Tool* option.

c. Select the *Hardware Service Manager* option.

d. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**

e. Slide the unit half-way into the tower. **Ensure that the device does not contact the backplane at this time.**

f. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the

FC 5065 or 5066 Expansion Tower Removal and Installation

handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.

Attention: If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

Note: The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

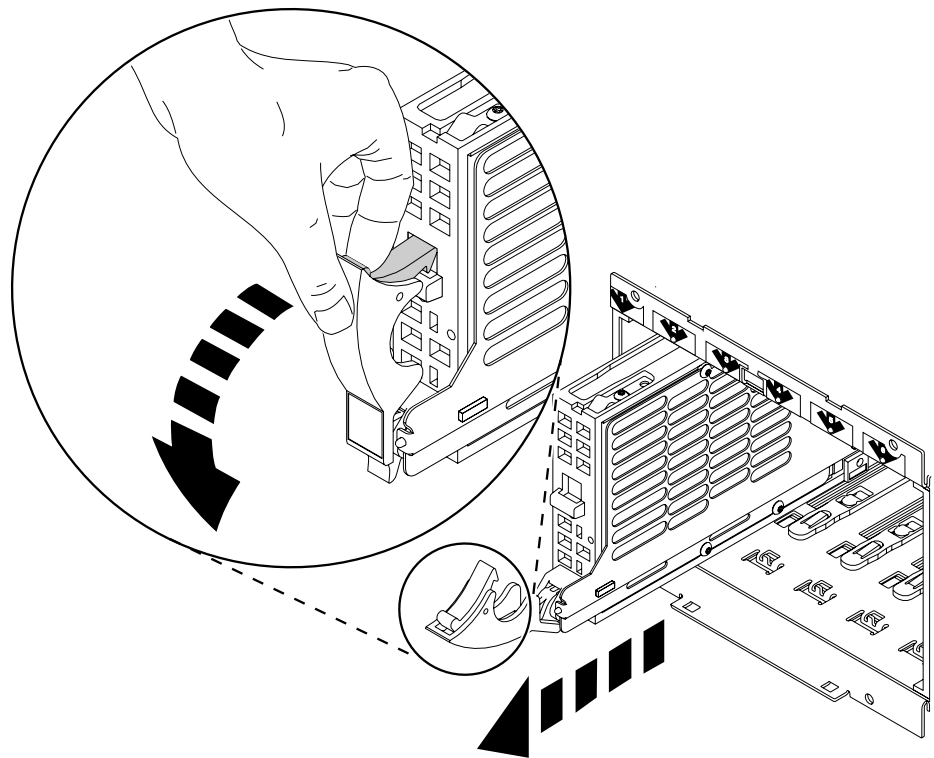
- g. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

This ends the procedure.

Dedicated Maintenance-Removal and Installation

Procedure:

1. **To remove a disk unit using dedicated maintenance perform the following:**
 - a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
 - b. Disconnect the power cord.
 - c. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.
 - d. Remove the unit from the tower.



2. Are you finished with the repair?

No Yes

FC 5065 or 5066 Expansion Tower Removal and Installation

- ↓ Replace the covers that were removed during this procedure and return to the procedure that sent you here.

This ends the procedure.

3. To Install a disk unit using dedicated maintenance perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
- b. Disconnect the power cord.
- c. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.
- d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
- e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

This ends the procedure.

Power Distribution Backplane

Parts Catalog References

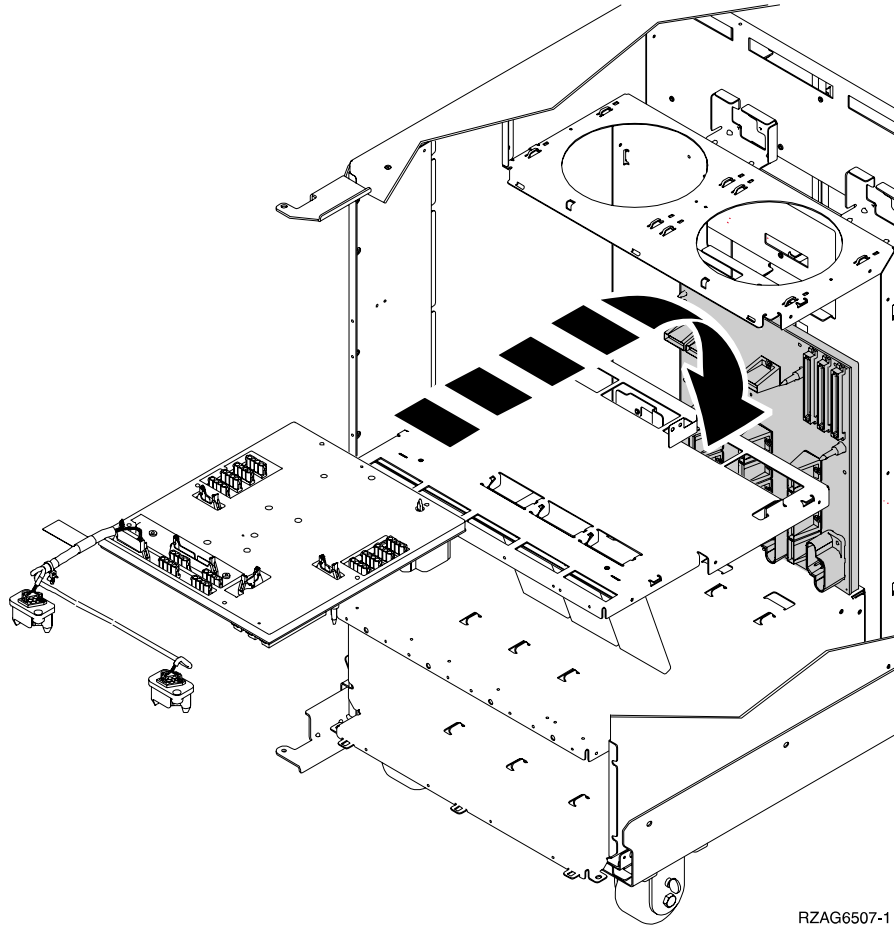
- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 954.

Procedure

1. You **must** remove both disk unit backplanes DB1 and DB2. Perform “Device Boards – DB1 and DB2” on page 830 for each backplane.
After you have removed **both** disk unit backplanes DB1 and DB2 return here and continue with step 3 of this procedure.
2. Open the rear cover. (See “Covers” on page 828.)
3. From the rear of the expansion tower remove the following:
 - a. The EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
 - b. The cables from the disk unit controller cards that are located inside the PCI card enclosure.
Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).
 - c. The screws that hold the PCI card enclosure in the frame.
 - d. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
 - e. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
 - f. The battery charger. (See “Battery Charger” on page 821.)
 - g. The power supplies. (See “Power Supply” on page 837.)
 - h. The blank filler plate(s).
4. From the front of the tower, reach through the frame and remove the cables from the backside of the power distribution backplane and note their locations.
5. From the rear of the tower, remove the mounting screws that hold the power distribution backplane to the frame.

FC 5065 or 5066 Expansion Tower Removal and Installation

- Pull the power distribution backplane slightly towards you and lift it up to remove it from the frame.



- Install the power distribution backplane by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.

Power Supply

Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 954.

Procedure

- Is the system powered on?

Yes	No
↓	Go to step 3.
- Do NOT power off the system.
- Remove the rear cover. (See “Covers” on page 828.)
- Disconnect the power jumper cord from the unit that you are replacing. (See “FC 5065 and FC 5066 Expansion Towers” on page 708.)
- Remove the bottom screw (if installed).
- Rotate the handle from right to left to release the power supply from the frame.

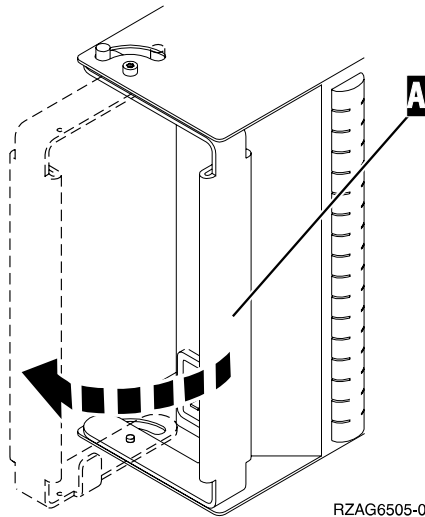
FC 5065 or 5066 Expansion Tower Removal and Installation

DANGER

Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)

Remove the power supply from the frame.

Note: Do not slam the power supply in when installing it into the system. Insert it until the power supply engages the frame, then rotate the handle from left to right.



7. Install the power supply by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.

Removable Media — Dedicated and Concurrent

Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 954.

Procedure

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

1. Remove media (if any) from the device. If the eject button on an optical device is failing and will not open, follow these steps:
 - a. Locate the manual eject hole. The manual eject hole is a small round hole on the face of the unit located next to the eject button.
 - b. Insert a metal rod that is approximately 1.2mm in diameter and at least 35 mm in length (1/16 x 13/8 inches) into the manual eject hole, and push firmly. A straightened paper clip works well.
 - c. The tray will eject out 1/4 to 1/2 inch. Continue by pulling the tray out by hand until the optical media can be removed.
2. Are you removing a unit by using device concurrent maintenance?

Yes No

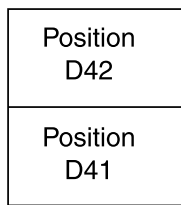


FC 5065 or 5066 Expansion Tower Removal and Installation

- a. Power off the expansion tower. (see “Powering Off and Powering On the System or Expansion Tower” on page 761)
- b. Disconnect the power cord from the expansion tower.
- c. Open the front cover. (See “Covers” on page 828.)
- d. Pull on the handles which are located on each side of the unit and remove the unit.
- e. Install the new device by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.

3. Before exchanging a removable media unit, you must ensure that the unit is not in use and is varied off.
4. Use the figure to determine the location of the internal removable media unit. Record this location for later use.



RZAPA503-1

Figure 80. Internal removable media locations

5. Perform the following:
 - a. Select System Service Tools (SST). If you cannot get to SST, select DST.
Do not perform a system IPL to get to DST.
 - b. Select the *Start a Service Tool* option.
 - c. Select the *Hardware Service Manager* option.
 - d. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**
 - e. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
 - f. Press the Enter key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to pull out firmly on the handles and pull the unit partially out of the tower.
Attention: If you remove the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

Note: The light at the top right of the device will go off and remain off as soon as the device is no longer making contact with the backplane.
 - g. Remove the unit from the tower.
This ends the removal procedure. Continue with the next step of this procedure to install the new unit.
6. Perform the following to **install** a new unit:
 - a. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**
 - b. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
 - c. Slide the unit partially into the tower. **Ensure that the device does not contact the backplane at this time.**

FC 5065 or 5066 Expansion Tower Removal and Installation

- d. Press the Enter key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to push in firmly on the handles and push the unit completely into the frame.

Attention: If you install the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

Note: The light at the top right of the device will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

Did the light on the device go on and remain on?

No **Yes**

↓ After exchanging an item, go to “Verifying the Repair” on page 778. **This ends the install procedure.**

- e. Attempt the device concurrent maintenance procedure again without physically moving the unit.

Did the light above the device go on and remain on?

No **Yes**

↓ After exchanging an item, go to “Verifying the Repair” on page 778. **This ends the install procedure.**

- f. There is a power problem. Either:

- The new unit is defective.
- The backplane was damaged during the device concurrent maintenance procedure.
- There is a new problem with the power subsystem.

This ends the procedure.

Tower Card Assembly-CB1

Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 954.

Procedure

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 761.)
2. Remove the power cord from the expansion tower.
3. Open the rear cover. (See “Covers” on page 828.)
4. From the rear of the expansion tower remove the following:
 - a. The external cables from the rear of the PCI card enclosure and note their locations.
 - b. The EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
 - c. The cables from the top of the PCI cards and note their locations.

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).
 - d. The screws that hold the PCI card enclosure to the frame.

FC 5065 or 5066 Expansion Tower Removal and Installation

- e. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
- f. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
5. Remove the PCI cards from the enclosure and note their locations. (See “Cards–PCI in FC 5065 or 5066” on page 821.)
6. Remove the retaining fasteners (standoffs) that hold the J11, J14, J15, and J16 connectors to the PCI enclosure.
7. Remove the screws that hold the tower card assembly to the PCI card enclosure. See “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 954.
8. Disconnect the top ribbon cable from the tower card assembly and note its location.
9. Turn the PCI card enclosure on to its side. Reach through the opening in the bottom of the enclosure and disconnect the two remaining ribbon cables from the tower card assembly.
10. Slide the tower card forward and tilt the rear edge of the tower card assembly upwards and lift it from the enclosure.
11. Install the tower card assembly by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.

FC 9251 – Models 650, 740, S40, and SB1 System Unit I/O Tower, FC 507x – Bus Expansion Tower, and FC 508x – Storage Expansion Tower Removal and Installation Procedures

The following list contains the feature codes for these towers:

- Base I/O Tower: FC 9251.
- Bus Expansion Tower: FC 507x.
- Storage Expansion Tower: FC 508x.

Your system may not have all of these towers attached.

AC Module and AMD

Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
2. Disconnect the power cord.
3. Remove the rear cover (see “Covers” on page 853).
4. **DANGER**

Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)

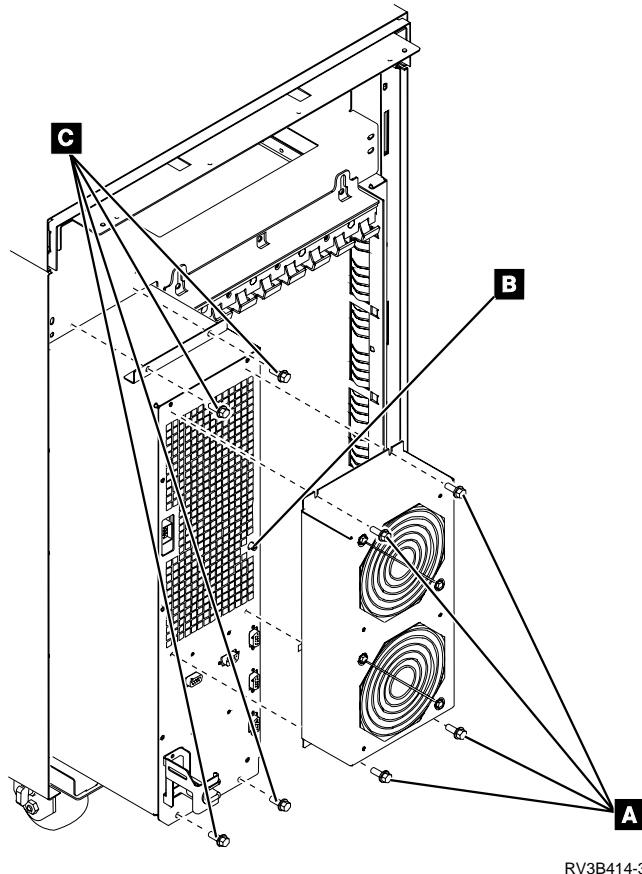
- If there is a power supply or power supplies installed, remove the power supply or power supplies (see “Power Supply” on page 869).
5. Label and remove all cables connected to the ac module, including the power cord.
 6. Remove the AMD assembly by removing the screws **A**.

FC 9251/507x/508x Removal and Installation

7. If a leadscrew **B** is installed in the ac module, turn the leadscrew counterclockwise until it stops.
8. Remove the ac module by removing the screws **C**.
9. Install the parts of the ac module by reversing the removal procedure.
The AC module is spring loaded. Push the AC module to get the screws started.

After exchanging an item, go to "Verifying the Repair" on page 778.

This ends the procedure.



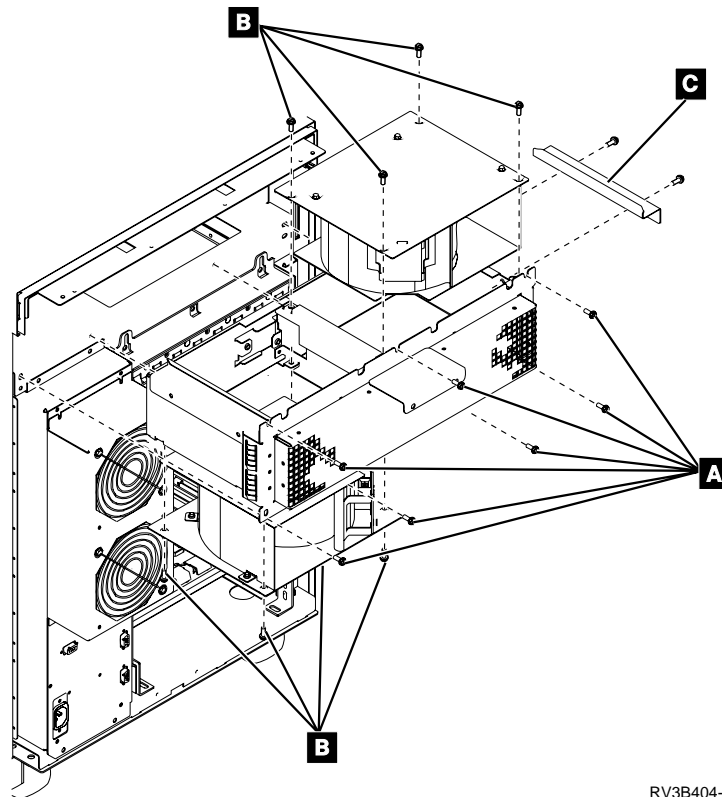
RV3B414-3

AMD

Procedure

1. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
2. Disconnect the power cord.
3. Remove the rear cover (see "Covers" on page 853).
4. Remove the screws **A**.
5. Pull the AMD assembly from the frame.
6. Remove the screws **B** that hold the AMD you are exchanging to the AMD assembly. You may need to remove the blower support bracket **C**.
7. Install the parts of the AMD assembly by reversing the removal procedure.
After exchanging an item, go to "Verifying the Repair" on page 778.

This ends the procedure.



RV3B404-4

Battery Power Unit

Procedure

If you are removing or installing a 2-part battery, see “Battery Power Unit (2-Part)” on page 844.

Attention: Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the card enclosure.

1. If the system has ac power on or if the system is powered on, the control panel backlight will be on.

Is the control panel green backlight on?

No **Yes**

↓ Go to step 3 of this procedure.

2. Check the system ac power for failure and correct any problems found.
3. Remove the front cover (see “Covers” on page 853).
4. Loosen the screws **A**.
5. Remove the screws **B**.
6. Pull out and lift to remove the screen.
7. **Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the card enclosure.
If the console will accept system commands, the system is **not** running on battery power. Continue with the next step of this procedure.
8. Remove the screws **C** to remove the battery power unit.

FC 9251/507x/508x Removal and Installation

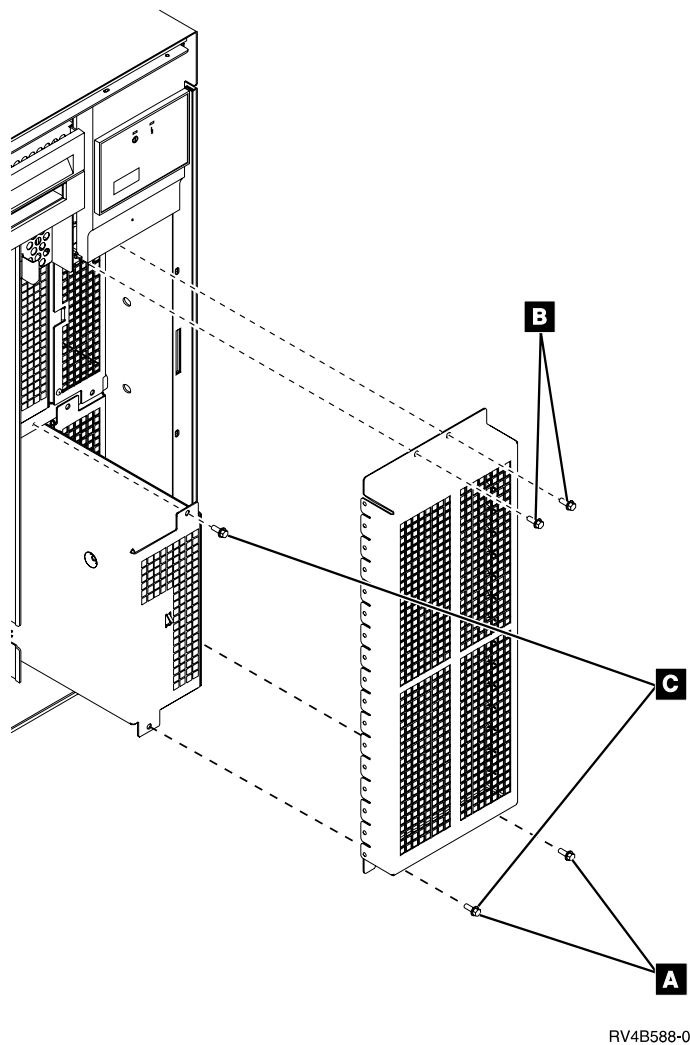
CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

9. Install the battery power unit by reversing the removal procedure.
10. After exchanging an item, go to "Verifying the Repair" on page 778.

This ends the procedure.



Battery Power Unit (2-Part)

Use this procedure to remove the battery power unit that can be separated from the battery power unit charger. Also use this procedure to remove the battery power unit charger.

Procedure

1. Does the system have ac power on?

FC 9251/507x/508x Removal and Installation

You can verify that ac power is applied by looking to see if the panel backlight is on.

No **Yes**

↓ Do not power off the system. Go to step 3 of this procedure.

2. If the system is powered off or running on battery power, ac power must be applied to the ac module before continuing with this procedure.
3. Remove the front cover.
4. Pull out to remove screen **A**.
5. **Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the card enclosure.

If the console will accept system commands, the system is **not** running on battery power. Continue with the next step of this procedure.

6. To remove both the battery power unit charger **E** and the battery power unit **D**, perform the following:

CAUTION:

Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)

- a. Remove the screws **C**.
- b. Pull on the ring and then use two hands to remove the battery power unit and the battery power unit charger.
- c. Loosen the screws **B**.
- d. Separate the battery power unit from the battery power unit charger.

CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

7. To remove only the battery power unit **D**, perform the following:

CAUTION:

Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)

- a. Loosen the screws **B**.
- b. Pull on the ring, then use two hands to remove the battery power unit.

CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

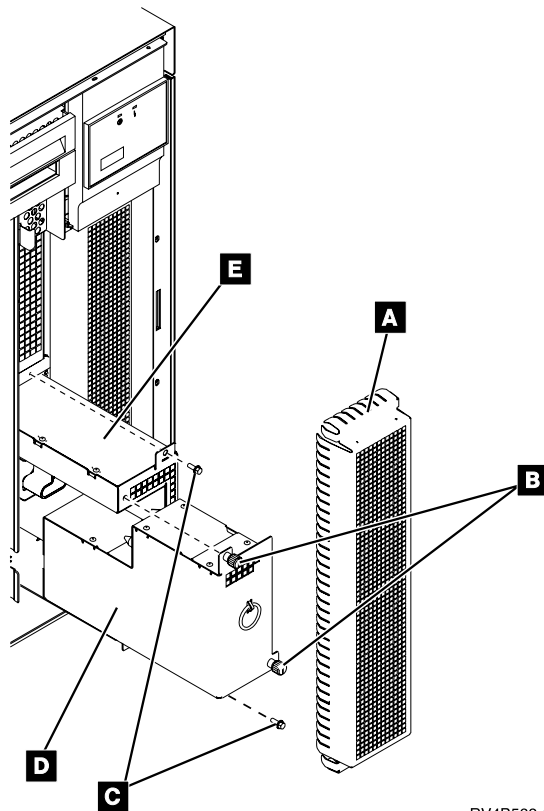
8. Install the battery power unit and the battery power unit charger by performing the following:

FC 9251/507x/508x Removal and Installation

- a. Install the battery power unit charger into the system.
- b. Insert and tighten the screws **C**
- c. Install the battery power unit slowly into the system.
- d. Tighten the screws **B**
- e. Install the screen.
- f. Install the front cover.

After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.



Battery Power Unit - External

Procedure

1. Verify that ac power is applied by looking to see if the panel backlight is on.
Does the system have ac power on?
No **Yes**
↓ Do not power off the system. Go to step 3 of this procedure.
2. If the system is powered off or running on battery power, ac power must be applied to the ac module before continuing with this procedure.
3. Remove the front cover (see “Covers” on page 853).
4. Loosen the screws **A**.
5. Remove the screws **B**.

FC 9251/507x/508x Removal and Installation

6. Pull out and lift to remove the screen.
7. **Attention:** Removing the external battery power unit charger or cable while the system is running on battery power causes the system to fail and may damage the external battery power unit and the card enclosure.
If the console will accept system commands, the system is **not** running on battery power. Continue with the next step of this procedure.
8. To remove the cable **D**, do the following:
 - a. Remove screw **E** on the cable clamp.
 - b. Pull on the cable connector **C** to disconnect the cable from the charger.
 - c. Remove the cable from the cable clamp.
 - d. Remove the battery rear cover.
 - e. Remove the screws **F** and cover.
 - f. Remove the screws **G** and cable clamp.
 - g. Pull on the cable connector to disconnect the cable from the battery.
9. To remove the charger **H**, do the following:
 - a. Remove the screws **I**.
 - b. Pull the charger from the frame.
10. To remove the battery **J**, do the following:

CAUTION:

The weight of this part or unit is more than 55 kilograms (121.2 pounds). It takes specially trained persons with a lifting device to safely lift this part or unit. (RSFTC206)

- a. Remove the battery rear cover.
- b. Pull on the cable connector to disconnect the cable from the battery.

CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

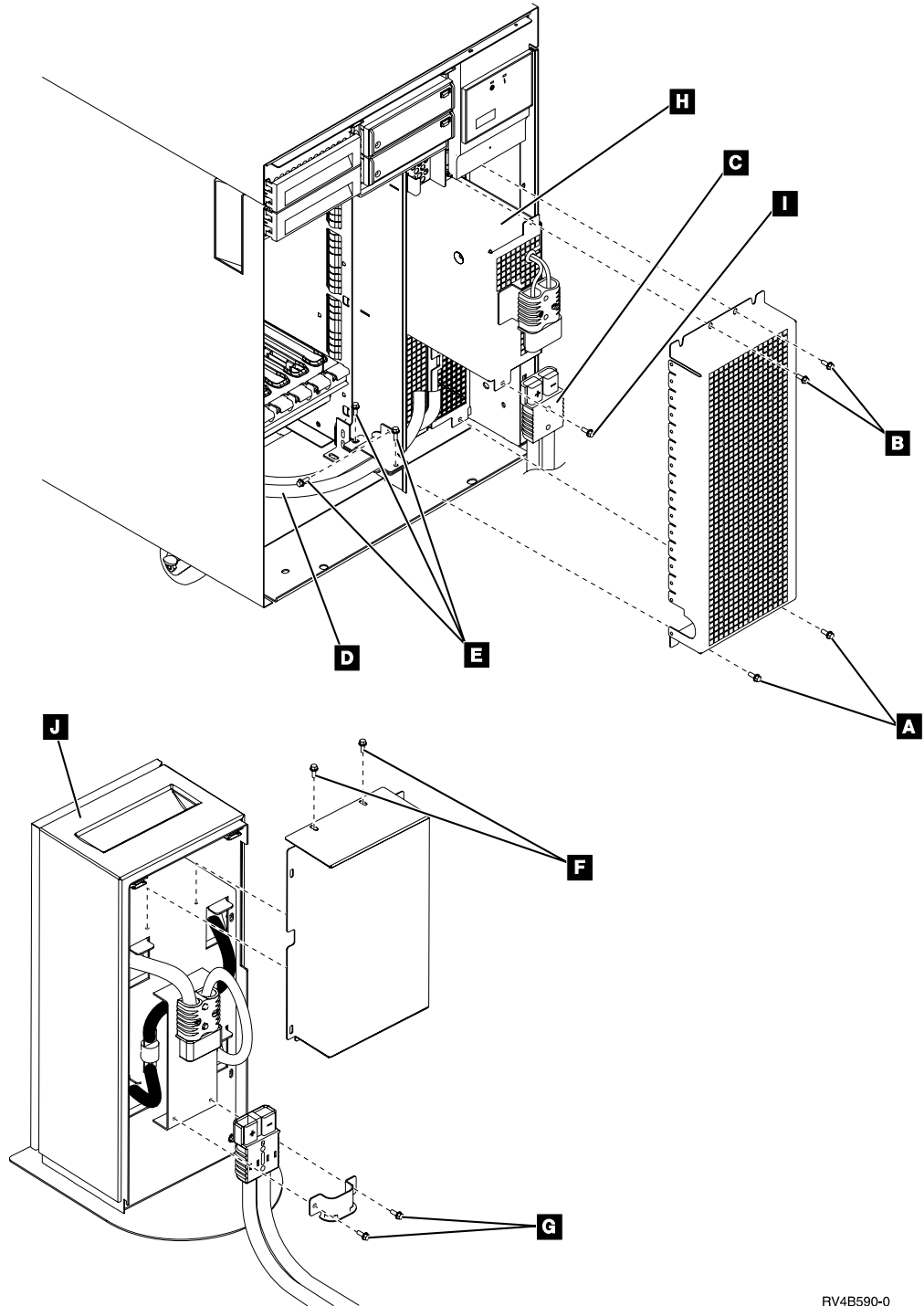
11. Install the parts of the external battery power unit by doing the following:
 - a. Connect the cable to the battery and install the rear cover.
 - b. Connect the cable to the charger.
 - c. Install the charger into the frame.
 - d. Reverse the remainder of the removal procedure.

Note: The external battery power unit charger assembly must be removed and installed with the battery cable attached to reset the battery error.

After exchanging an item, go to "Verifying the Repair" on page 778.

This ends the procedure.

FC 9251/507x/508x Removal and Installation



RV4B590-0

Cards

Attention: All cards are sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1019).

CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
2. Disconnect the power cords.
3. Remove the front or rear cover (see “Covers” on page 853).
4. Loosen the screws **A** on the card retaining bar.
5. Label and disconnect any cables attached to the card you are going to remove.
6. If you are working with card type 2620, 2628, or 65x2, read the following:

CAUTION:

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

7. If you are working with card type 2664 read the following:

DANGER

Use caution when installing or modifying telephone lines. Disconnect the lines at the network interface before working with telephone wires that are not insulated. Never install telephone jacks that are not waterproof in wet locations. Do not install or modify telephone lines or use a telephone (other than a cordless type) during an electrical storm. Do not use a telephone to report a gas leak in the area of the leak. (RSFTD213)

8. If you are working with card type 2620 or 2628, read the following:

Attention: Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 757 before disconnecting or removing the cryptographic I/O processor.

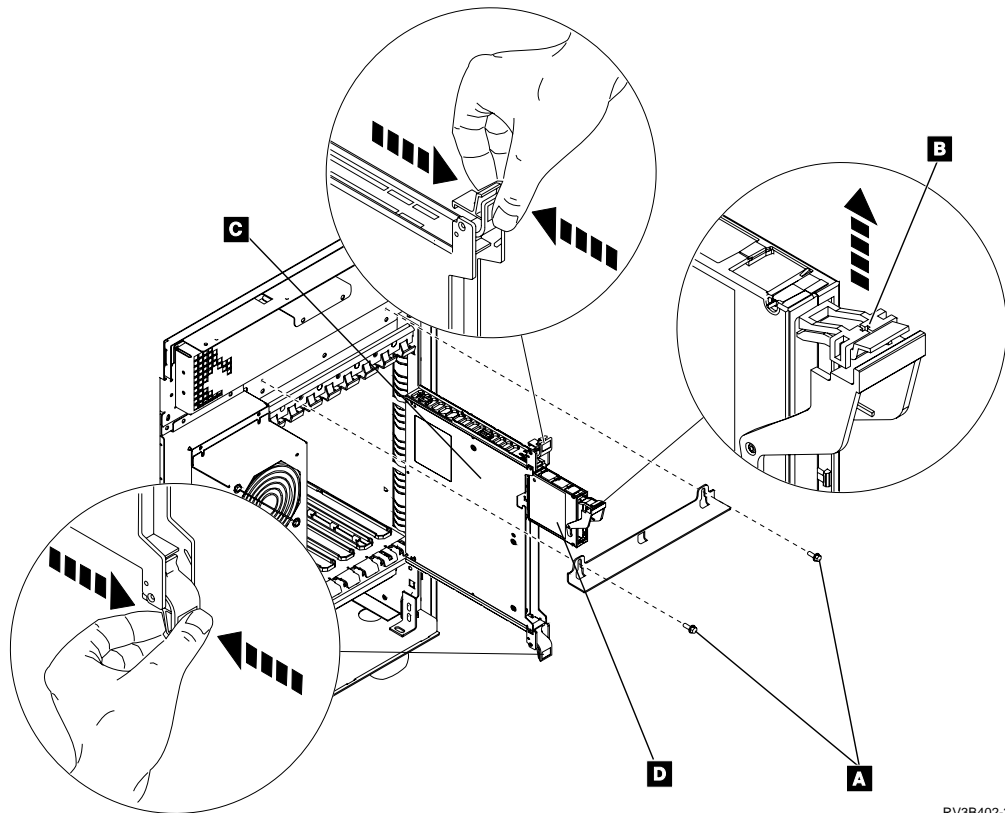
9. If you are working with card type 2624, read the following:

If a retainer **B** is installed on the adapter card in adapter card position A and you need to remove this plug to exchange the adapter card, ensure that you reinstall the retainer.

10. If you are removing a full-size card **C** from the slot, do the following:
 - a. Press the two latch surfaces together to release each latch.
 - b. Pull on both latches at the same time to remove the card from the slot.
11. If you are removing an adapter card **D** from a full-size card, do the following:
 - a. Remove any cables or wrap plugs from the adapter cards.
 - b. Press the two latch surfaces together to release the latch.
 - c. Rotate the latch downward.
 - d. Pull on the latch to remove the adapter card from the full-size card.
12. Install the card by reversing the removal procedure. Ensure that the cables are installed in the same place they were located originally.
Return to the procedure that sent you here.
After exchanging an item, go to “Verifying the Repair” on page 778.

FC 9251/507x/508x Removal and Installation

This ends the procedure.



RV3B402-3

Cards–Cache, Type 4700 and 6503

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

CAUTION:

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

Parts Catalog References

- None

Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 761)
2. Disconnect the power cord from the system unit.
3. Remove the front or rear covers (see “Covers” on page 853).
4. Loosen the screws on the card retaining bar.
5. Remove the adapter card from the full-size card by doing the following:

- a. Press the two latch surfaces together to release the latch.
- b. Rotate the latch downward.
- c. Pull on the latch to remove the adapter card from the full-size card.

This ends the procedure.

Card Enclosure

Procedure

1. Are you repairing a FC 9251 I/O tower?

No Yes

↓

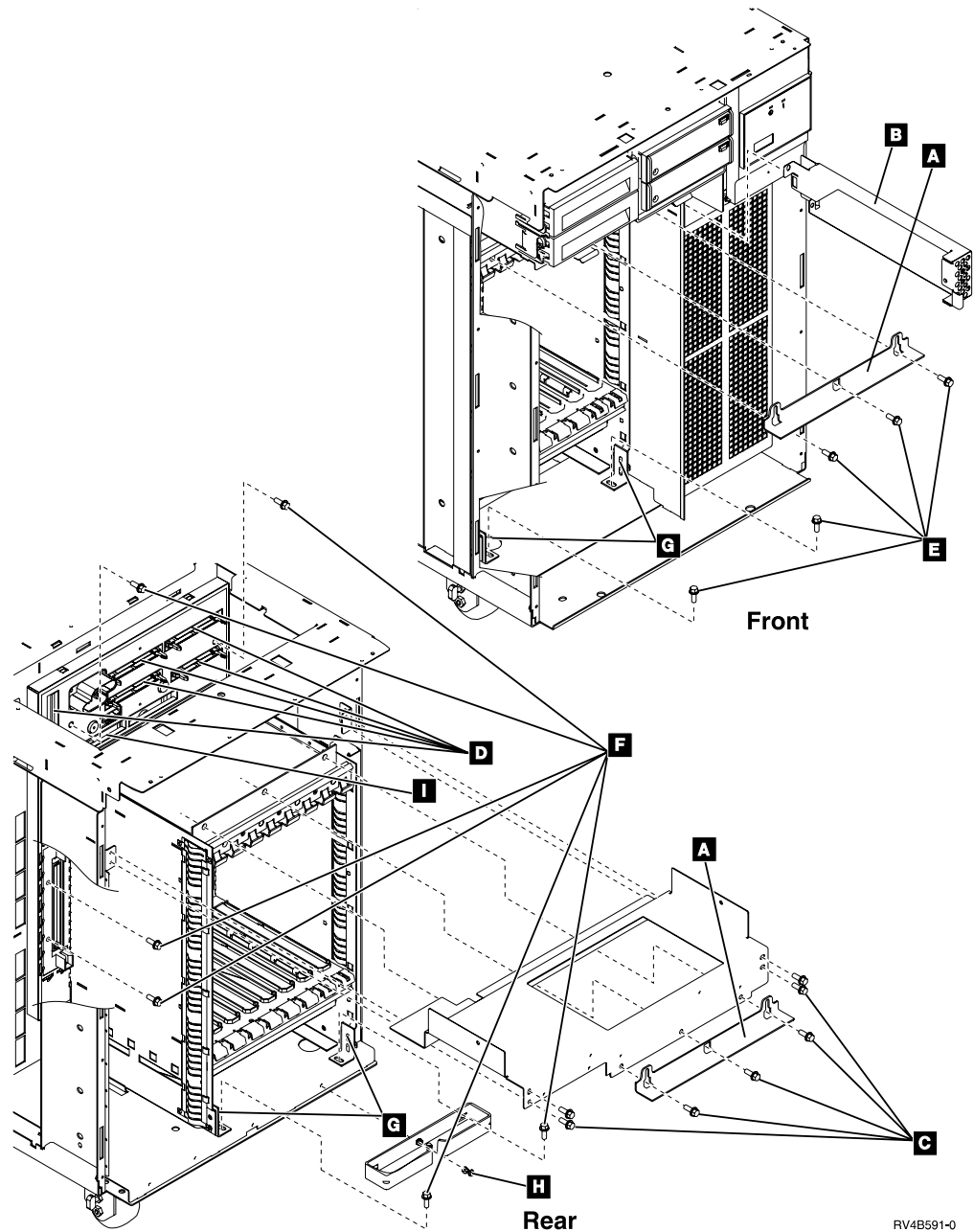
Attention: Read “Important Continuously Powered Main Storage (CPM) Information” on page 757.

Perform “SPCN-PIP5” on page 623, return here, and continue with the next step of this procedure.

2. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
3. Disconnect the power cord.
4. Remove the front and rear covers (see “Covers” on page 853).
5. Because safety labels may be applied to the card retaining bars **A**, it is important to install the card retaining bars in the same location from which they were removed.
Label or write down the location of the card retaining bars.
6. Remove the card retaining bars.
7. **Attention:** Failure to reinstall the cards in the same slot in which they were located originally may cause data loss.
Label or write down each cable, card, and slot where the card is located.
8. Disconnect all cables that are connected to the cards and remove all of the cards in the card enclosure (see “Cards” on page 848).
9. Remove any internal disk units and disk unit enclosures from the card enclosure (see “Disk Unit (Dedicated)” on page 858).
10. Remove the ac module (see “AC Module and AMD” on page 841).
11. Remove the removable media enclosures (see “Removable Media Enclosure” on page 873).
12. Remove the terminating plug **B**.
13. Remove the AMD (see “AMD” on page 842).
14. Remove the screws **C** holding the AMD mounting assembly to the frame and remove the AMD mounting assembly.
15. Remove the tape terminating plug **I** from the rear of the card enclosure.
16. Disconnect the cables **D** connected to the card enclosure. If storage expansion unit cables are present, ensure that they are pushed out of the way.
17. Remove the screws **F** holding the rear of the card enclosure to the frame.
18. Remove the screw **H** holding the cable bracket to the frame and remove the cable bracket.
19. Remove the screws **E** holding the front of the card enclosure to the frame.
20. Remove screws **G** and remove the angle brackets. Slide the card enclosure out of the rear of the system.

FC 9251/507x/508x Removal and Installation

21. Install the card enclosure by reversing the removal procedure. Ensure that the cards are installed the same slots in which they were located originally. After exchanging an item, go to "Verifying the Repair" on page 778.
This ends the procedure.



Control Panel

Attention: The control panel is sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1019).

Procedure

1. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
2. Disconnect the power cord.

3. Remove the front cover (see “Covers”).
4. Remove the screws.
5. Pull the control panel from the frame.
6. Disconnect the control panel cable from the control panel.
7. Remove the control panel circuit board from the bezel assembly by doing the following:
 - a. Remove the screw.
 - b. Press the latches to release the circuit card.

This ends the procedure.

Covers

Procedure

1. Remove the front cover by doing the following:
 - a. Hold the edges of the cover near the top.
 - b. Pull until the cover comes off the frame.
2. Remove the rear cover by doing the following:
 - a. Hold the cover near the top.
 - b. Lift up on the cover and pull until the cover comes off the frame.

Note: If you do not have disk units in the rear of the storage expansion unit that is on top of the expansion tower, you must also remove the 4 screws that hold the rear plate to the frame.

3. Remove the top cover by doing the following:
 - a. Remove the storage expansion unit front and rear covers.
 - b. Remove the screws and open the storage expansion unit cover **A**.
 - c. **Attention:** Failure to reinstall the disk units in the same slot in which they were originally located may cause data loss.
Label or write down each disk unit and the slot where it is located.
 - d. Remove all of the disk units and disk unit fillers in the storage expansion unit (see “Disk Unit (Dedicated)” on page 858).
 - e. Remove the screws **B**.
 - f. Lift the top cover up and off of the frame.

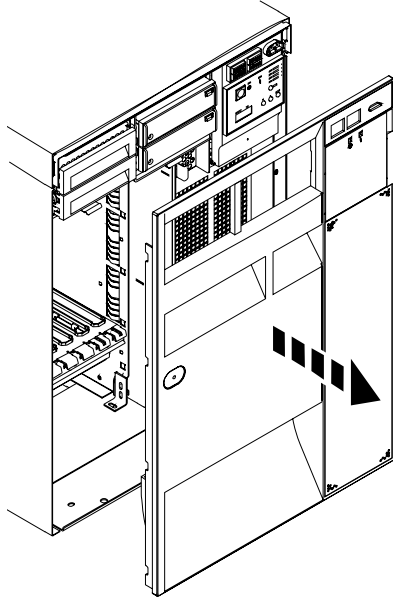
CAUTION:

Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)

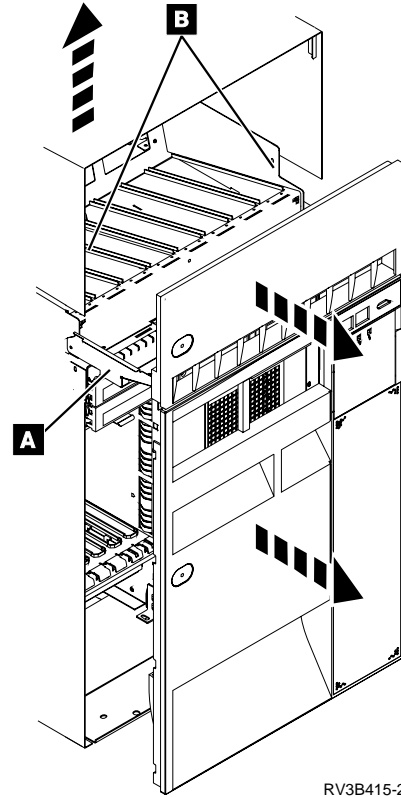
4. Install the covers by reversing the removal procedure.
After exchanging an item, go to “Verifying the Repair” on page 778.
This ends the procedure.

Front View

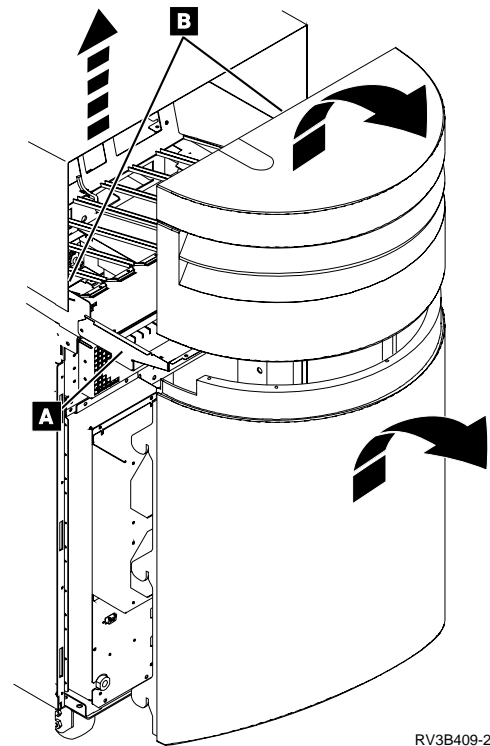
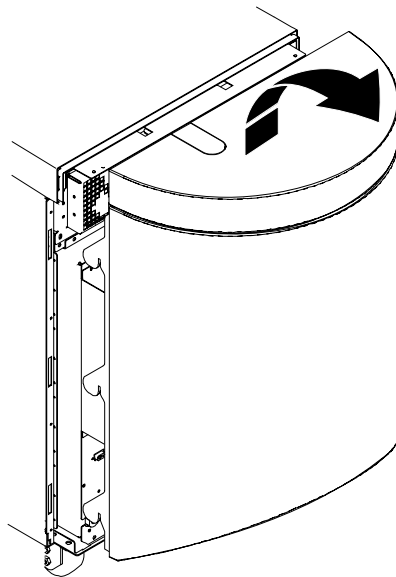
FC 9251/507x/508x Removal and Installation



Back View



RV3B415-2



RV3B409-2

Disk Unit (Concurrent)

Attention: The disk unit is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

Attention: Work carefully with the disk unit. Excessive movement may damage the disk unit.

Procedure

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that owns the disk unit. (See “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 787.)

1. Are you here to remove a disk unit using concurrent maintenance?

Yes **No**

↓ Go to “Removable Media (Concurrent)” on page 870.

This ends the procedure.

2. Data may need to be saved before exchanging a disk unit.

Did you come here from “Start Disk Service Here” on page 879?

Yes **No**

↓ Go to “Start Disk Service Here” on page 879.

3. Do not power off the system.

4. Remove the front or rear cover (see “Covers” on page 853).

5. Are you removing a disk unit in a storage expansion unit **C** or in a rear disk unit enclosure **E**?

Yes **No**

↓ Go to step 7 on page 856 of this procedure.

6. You are removing a disk unit in a storage expansion unit **C** or in a rear disk unit enclosure **E**. Do the following:

- a. Remove the screws.

- b. Open the storage expansion unit cover.

- c. Select System Service Tools (SST).

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.

- d. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).

- e. Select the *Hardware Service Manager* option on the Start a Service Tool display.

- f. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to remove a disk unit. Light **A** will be off and light **B** will be on for about 8 seconds. Three 8-second periods will occur about 15 seconds apart. See “Disk Unit Concurrent Maintenance” in the *AS/400 Service Functions* book for more information.

FC 9251/507x/508x Removal and Installation

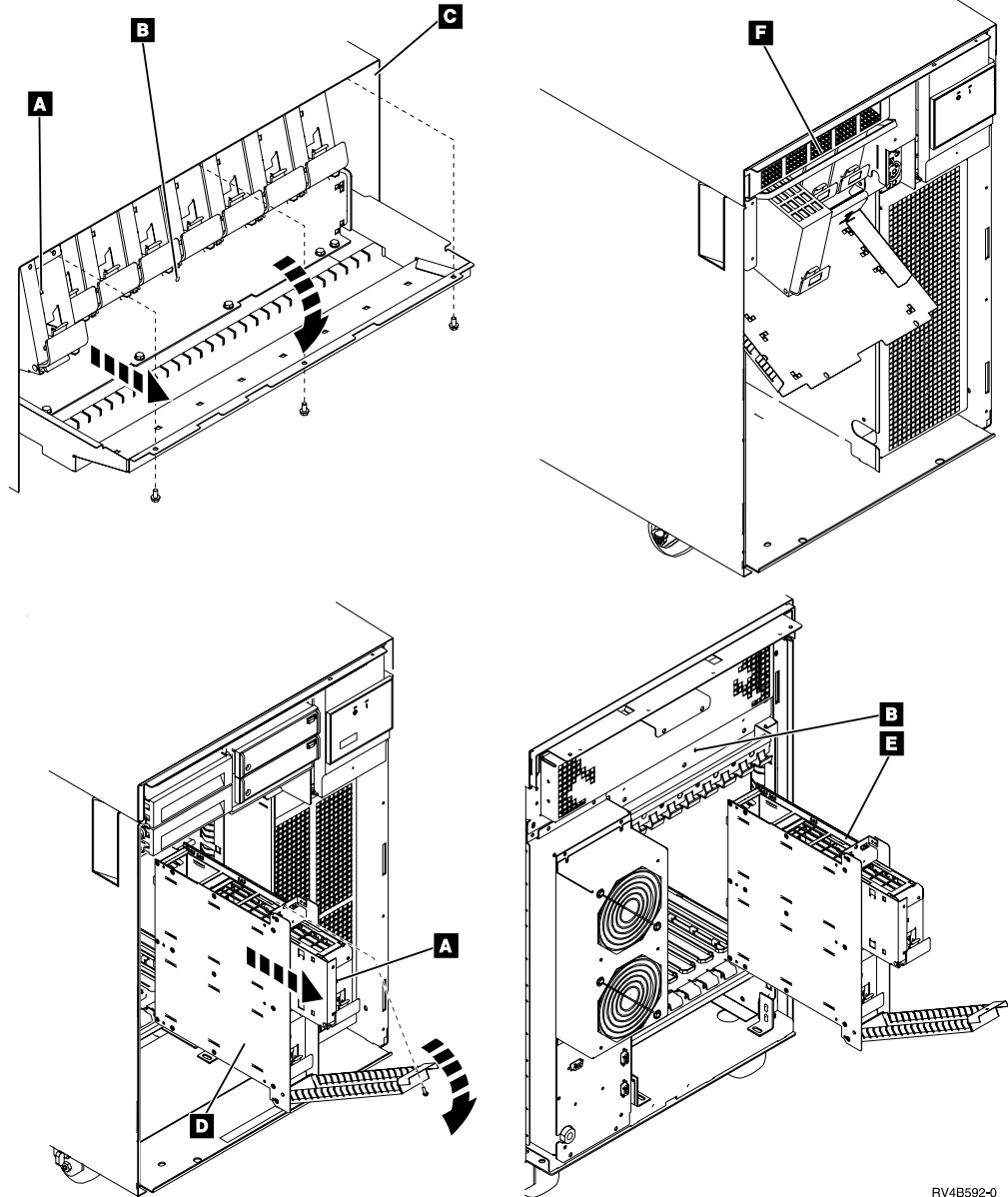
- g. **Attention:** If you remove the disk unit when light **A** is on or light **B** is off, data may be lost and the disk unit and the storage expansion unit may be damaged.

When the light **A** is off and light **B** is on, press the two latch surfaces together, pull the latch completely down, and pull the tray out a little bit. After another 15 seconds (long enough for the drive to stop spinning), remove the disk unit from the system.

Go to step 8 on page 857 of this procedure.

- 7. You are removing a disk unit in a disk unit enclosure **D** or in an upper disk unit enclosure **F**. Do the following:
 - a. Remove the screw from the disk unit enclosure cover.
 - b. Pull the disk unit enclosure cover down as shown.
 - c. Pivot the retainer bar out of the way.
 - d. Select System Service Tools (SST).
If you cannot get to SST, select DST (see "Accessing Dedicated Service Tools" in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.
 - e. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).
 - f. Select the *Hardware Service Manager* option on the Start a Service Tool display.
 - g. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to remove a disk unit. Light **A** will be off and 1xxx 02xx will be shown in the Function/Data display on the control panel for about 8 seconds. Three 8-second periods will occur about 15 seconds apart. See "Disk Unit Concurrent Maintenance" in the *AS/400 Service Functions* book for more information.
 - h. Continue with step 7i of this procedure.



RV4B592-0

- i. **Attention:** If you remove the disk unit when light **A** is on or 1xxx 02xx is not shown in the Function/Data display on the control panel, data may be lost and the disk unit and the disk unit enclosure may be damaged.
- When the light **A** is off and 1xxx 02xx is shown in the Function/Data display on the control panel, press the two latch surfaces together, pull the latch completely down, and pull the tray out a little bit. After another 15 seconds (long enough for the drive to stop spinning), remove the disk unit from the system.
8. To remove the disk drive and logic card from the tray, go to “Disk Unit – Removal from Tray” on page 860.
 9. Are you installing a disk unit in a storage expansion unit **C** or in a rear disk unit enclosure **E** ?

Yes	No
↓	Go to step 11 on page 858 of this procedure.

FC 9251/507x/508x Removal and Installation

10. You are installing a disk unit in a storage expansion unit **C** or in a rear disk unit enclosure **E**. Do the following:
 - a. Select System Service Tools (SST).

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.
 - b. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).
 - c. Select the *Hardware Service Manager* option on the Start a Service Tool display.
 - d. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to install a disk unit. Light **B** will be on for about 8 seconds. Three 8-second periods will occur about 15 seconds apart.
 - e. **Attention:** If you install the disk unit when light **B** is off, data may be lost.

When the light **B** is on, install and latch the disk unit.
 - f. Close the storage expansion unit cover.
 - g. Install the screws.

Return to the procedure that sent you here.

This ends the procedure.

11. You are installing a disk unit in a disk unit enclosure **D** or in an upper disk unit enclosure **F**. Do the following:
 - a. Select System Service Tools (SST).

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.
 - b. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).
 - c. Select the *Hardware Service Manager* option on the Start a Service Tool display.
 - d. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to install a disk unit. 1xxx 01xx will be shown in the Function/Data display on the control panel for about 8 seconds. Three 8-second periods will occur about 15 seconds apart.
 - e. **Attention:** If you install the disk unit when 1xxx 01xx is not shown in the Function/Data display on the control panel, data may be lost.

When 1xxx 01xx is shown in the Function/Data display on the control panel, install and latch the disk unit.
 - f. Close the disk unit enclosure cover.
 - g. Install the screw in the disk unit enclosure cover.

Go to the procedure that sent you here and continue.

This ends the procedure.

Disk Unit (Dedicated)

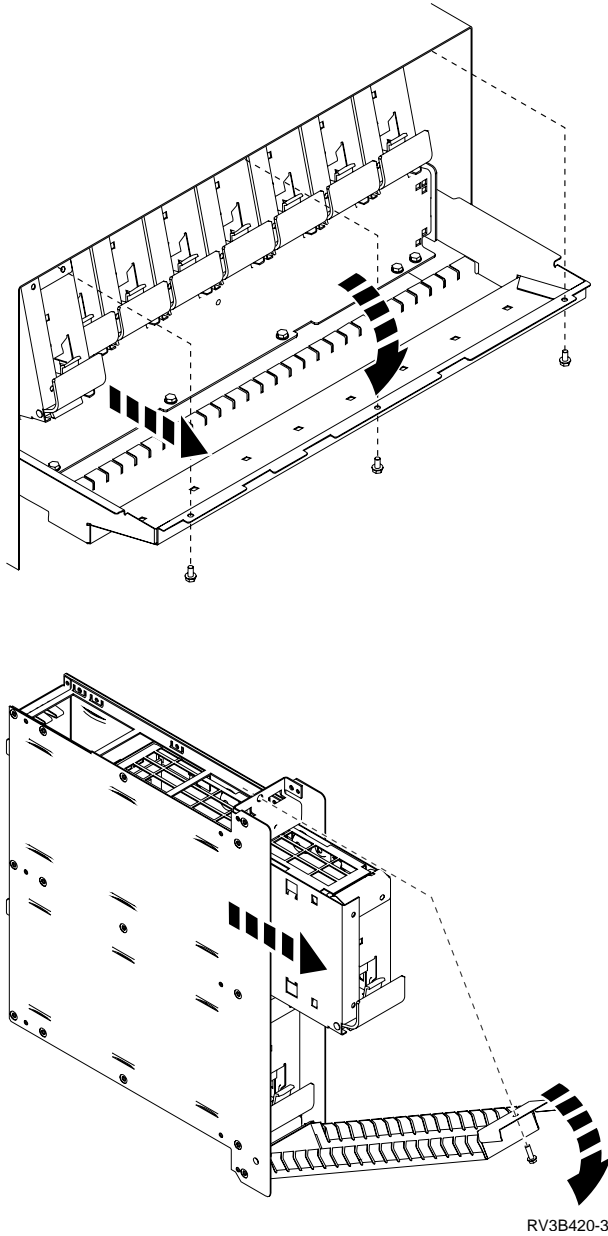
Attention: The disk unit is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

Attention: Work carefully with the disk unit. Excessive movement may damage the disk unit.

Procedure

1. Before exchanging a disk drive, you must attempt to save customer data. If you did not come to this procedure from Chapter 7. Recovery Procedures, go to “Start Disk Service Here” on page 879.
2. Power off the system unit or the expansion tower where the disk unit is located. (See “Powering Off and Powering On the System or Expansion Tower” on page 761.)
3. Disconnect the power cord.
4. Remove the cover (see “Covers” on page 853).
5. If the disk unit you are working with is in a storage expansion unit, do the following:
 - a. Remove the screws.
 - b. Pull the cover down as shown.Go to step 8 of this procedure.
6. If the disk unit you are working with is in an upper disk unit enclosure, do the following:
 - a. Remove the screws.
 - b. Pull the cover down as shown.
 - c. Pivot the retainer bar out of the way.Go to step 8 of this procedure.
7. If the disk unit you are working with is in a disk unit enclosure or in a rear disk unit enclosure, do the following:
 - a. Remove the screw from the disk unit enclosure cover.
 - b. Pull the disk unit enclosure cover down as shown.
8. Press the two latch surfaces together, pull the latch down, and remove the disk unit.
9. To remove the disk drive and logic card from the tray, go to “Disk Unit – Removal from Tray” on page 860.
10. Install the disk unit by reversing the removal procedure.
This ends the procedure.

FC 9251/507x/508x Removal and Installation



Disk Unit – Removal from Tray

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

CAUTION:

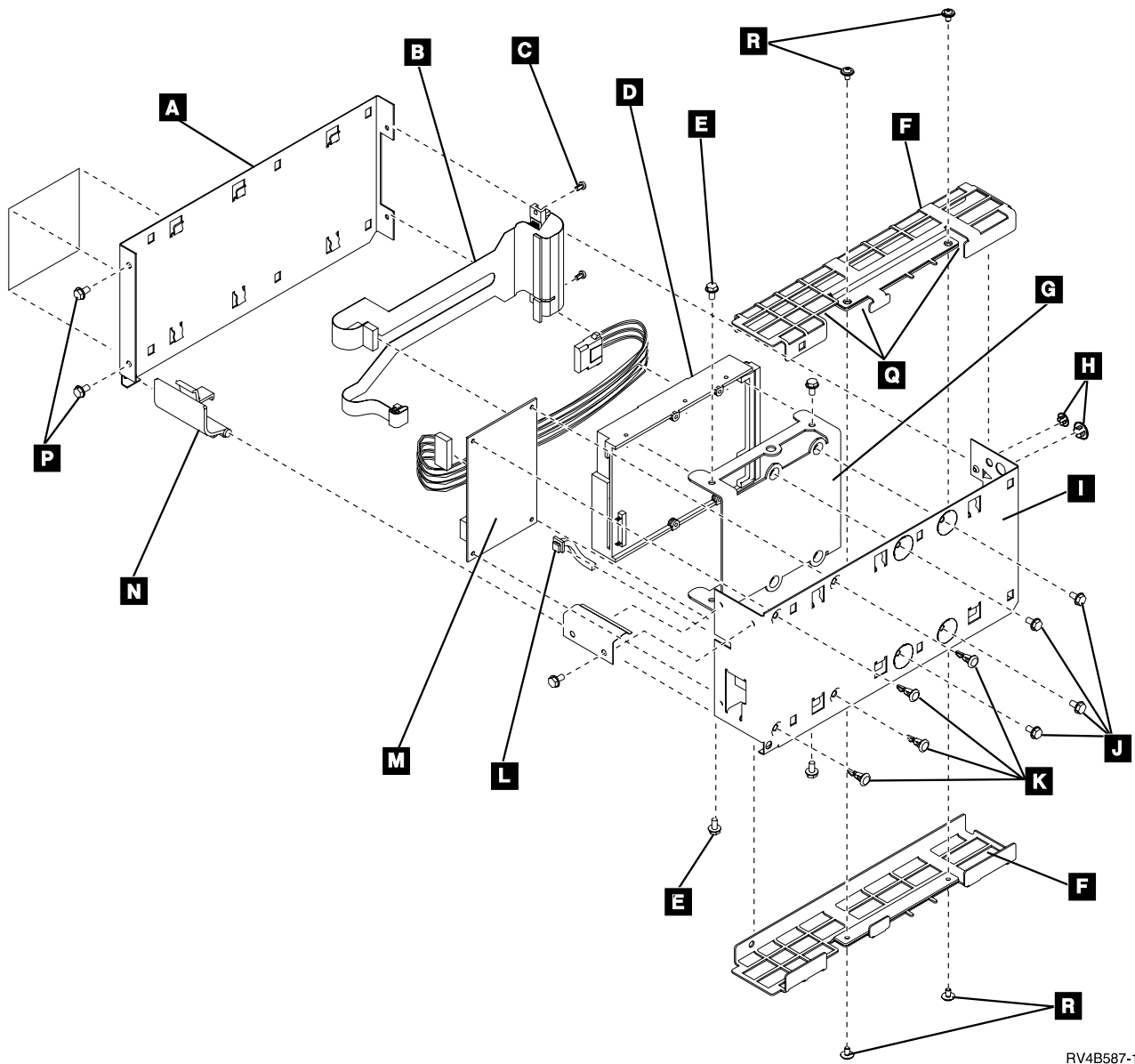
This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

Procedure

1. If necessary, remove the disk unit from the system or expansion unit. (See the disk unit procedure in “Chapter 6. Removal and Installation Procedures” on page 793.)

FC 9251/507x/508x Removal and Installation

2. Orient the disk tray with the blue handle towards you and to the left. The tray should be lying horizontally with the shield covers (grids) on each side.
3. Refer to Figure 81 for the following steps.



RV4B587-1

Figure 81. Disk unit holder assembly

4. Loosen the screws **C** on the connector.
5. Loosen the screws **P** on the blue handle end. These screws will be removed in a later step.
6. If the tray has two screws on each of the grid sides **R**, remove them.
7. Remove the grid covers by doing the following:
 - a. Insert the tip of a screwdriver at points **Q**.
 - b. Rotate the screwdriver to push the cover away from the sides.
 - c. Repeat this for the other grid.
8. Remove the screws **P** on the blue handle end.

FC 9251/507x/508x Removal and Installation

9. Remove the disk tray side cover and blue handle. Note the position of the handle before removing. Leave the connector on the casing.
10. To remove the disk unit from the open tray assembly, do the following:

Note: The disk unit and flex cable may not be exactly the same type as shown in Figure 81 on page 861.

- a. Disconnect the power and address cables from the power card.
- b. Disconnect the power and signal cables from the disk unit.
- c. While supporting the disk unit, remove the 4 screws that secure the disk unit to the holder.
- d. Lift the disk unit from the case.
- e. Some disk units have a bracket installed on them. Refer to Figure 81 on page 861. Remove screws **H** and remove bracket **G**.
- f. To exchange the disk unit logic card, use the instructions included with the new disk unit logic card FRU.

This ends the procedure.

To install disk units into the casing:

- Refer to Figure 81 on page 861 for the following steps.
- Assemble the disk unit into the tray by reversing the steps in the “Disk Unit – Removal from Tray” on page 860 procedure.
- **Important:** Tighten and torque the screws in the following sequence (see Figure 81 on page 861).
 - **A**
 - **B**
 - **C**
 - **D**
- **Do not over tighten!**

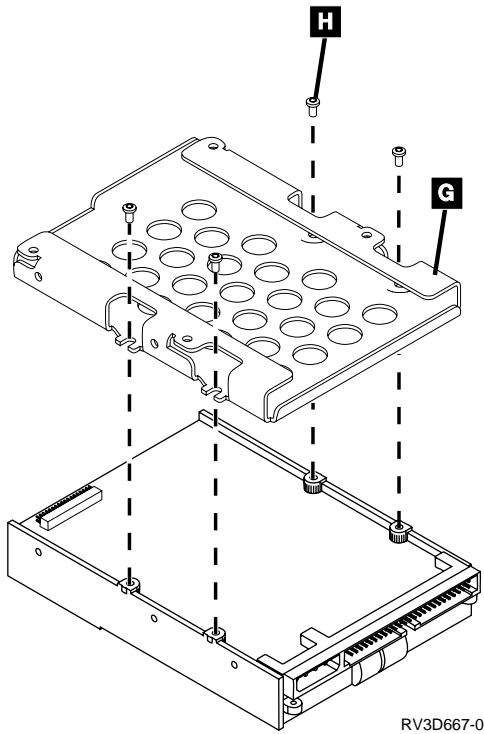


Figure 82. Disk unit case assembly

This ends the procedure.

File Server IOP - Type 6506

Attention: The memory module is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1019).

1. Remove the file server IOP card from the system (see “Cards” on page 848).
2. Place the card assembly on a flat surface with the latches next to the work surface.
3. Release the four clips **A** from the rail assemblies. It may be necessary to use a screwdriver to release the clips.
4. Rotate the top and bottom rail assemblies away from the card as shown. Remove the rails by lifting the cover at the hinge points.
5. Remove the clips **A**.

Note: When the clips are installed, the rails must be fully seated against the covers.

6. Remove the three cover screws **B** and the cover. Do not remove the two screws that attach the cover to the end cover.
7. Remove the crossover connector **C** by doing the following:
 - a. Turn the screw counterclockwise until the crossover connector separates from the processor card **D** and the adapter card **E**.
 - b. Remove the crossover connector.

Attention: When the crossover connector is installed, the corner notch **L** must be located as shown or the card may be damaged.

8. Remove the three screws **F**.

FC 9251/507x/508x Removal and Installation

9. Remove the three standoff retainers **G**.
10. Remove the adapter card **E**.
11. Remove the crossover connector bracket **N**.

Note: The connector bracket must be installed in the same direction as shown.

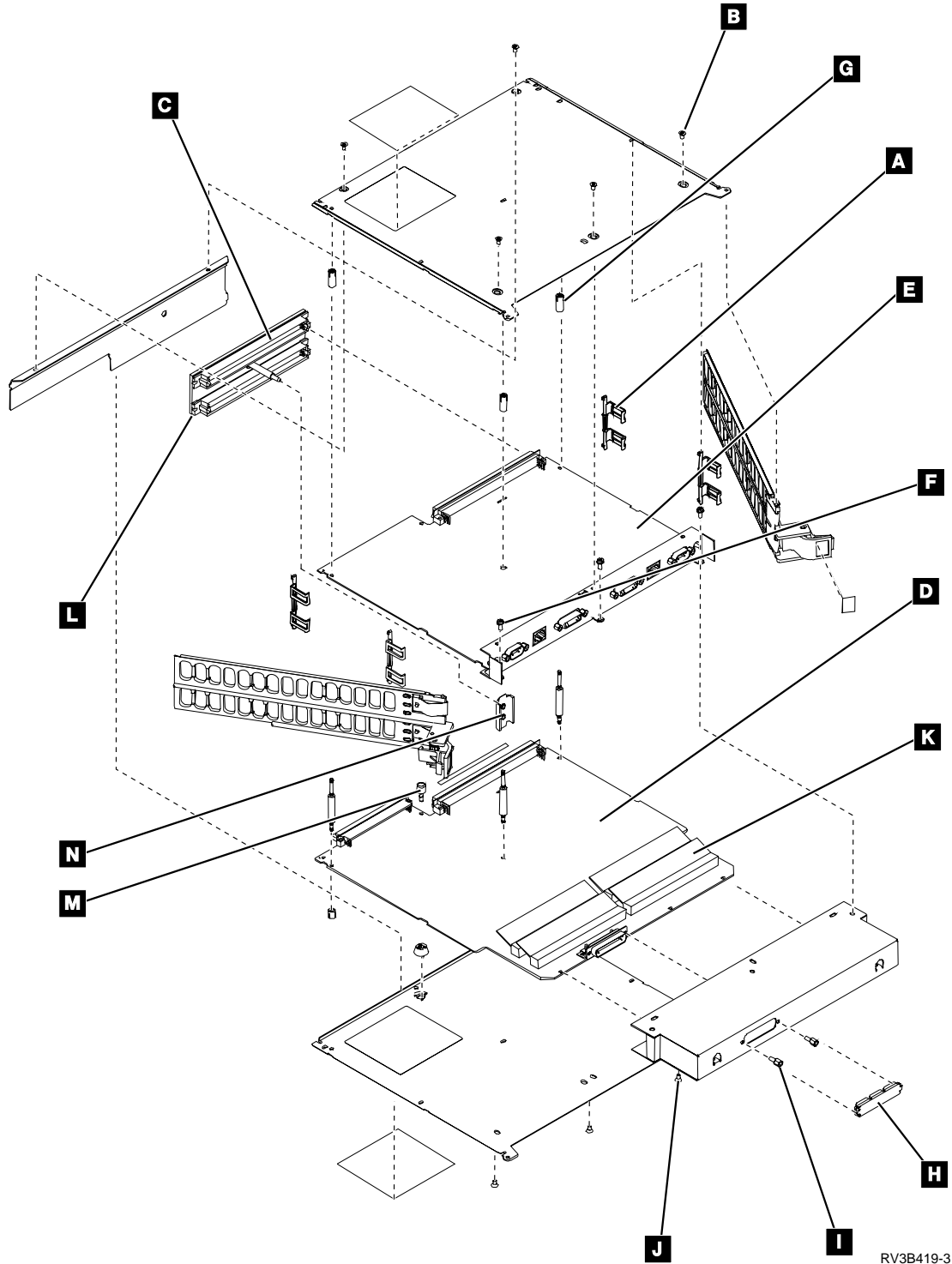
12. Rotate and release **M**.
13. To remove the cover from the I/O processor card, do the following:
 - a. Remove the test port cover **H**.
 - b. Remove the test port connector standoffs **I**.
 - c. Remove the two screws **J** through the access holes in the cover.
14. Slide the I/O processor card out from the cover.

Note: If exchanging the I/O processor card, move the standoffs to new card.

15. To remove the memory module card **K** from the processor card, do the following:
 - a. Push outward on the latches located at the end of the card.
 - b. Pull the card from the card socket.

Note: The memory module card location is marked next to each card socket on the processor card.

16. Install the parts of the file server IOP by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 778.
This ends the procedure.



Integrated Netfinity Server for AS/400 - Type 6616

Attention: The memory module is sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1019).

1. Remove the integrated PC server card from the system (see "Cards" on page 848). It is a double wide card.

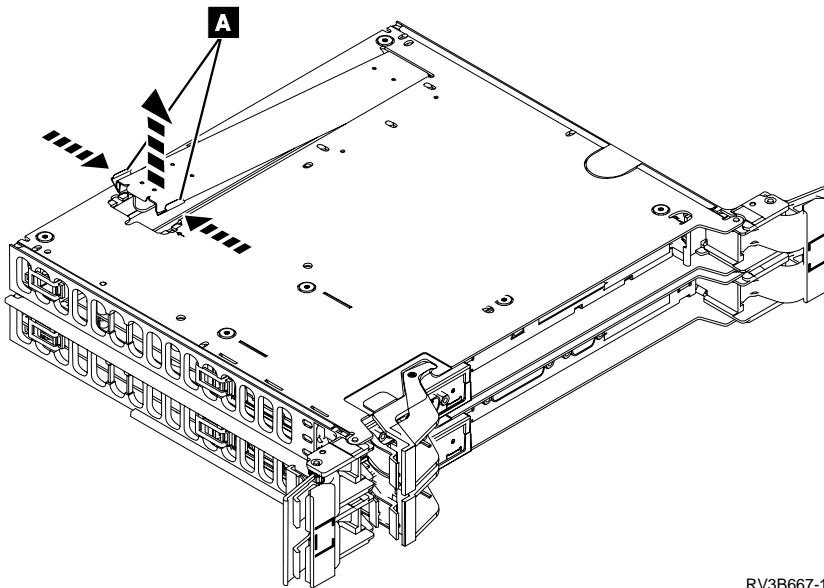
FC 9251/507x/508x Removal and Installation

2. Place the card assembly on a flat surface with the door facing up.
3. Release the tabs **A** at one end of the door by pressing inward with a screwdriver or similar object.
4. Remove the door.
5. Remove the memory module(s) by opening the clips on each side and lifting it out.
6. If the failing item was the integrated PC server card, install the memory module(s) you removed on the new integrated PC server card and install the card by reversing the removal procedure.

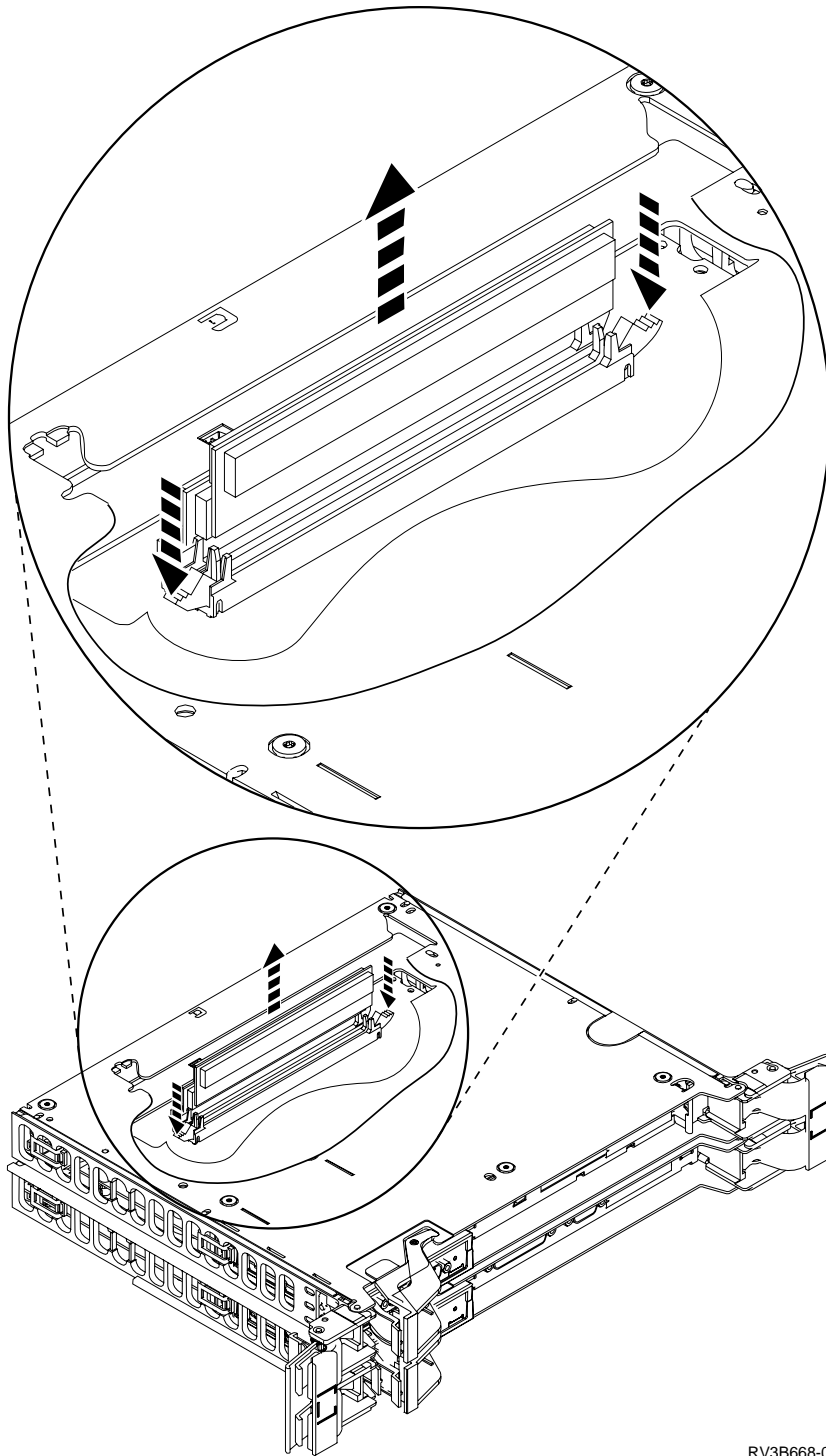
If the failing item was the memory module, install a new memory module on the integrated PC server card and install the card by reversing the removal procedure.

After exchanging an item, go to Verifying the Repair in "Chapter 5. Locations, Addresses, and Service Reference Information" on page 693.

This ends the procedure.



RV3B667-1



RV3B668-0

Integrated Netfinity Server for AS/400 (Type 6617)

Attention: All cards are sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1019).

Refer to "Assembly 22: File Server Book Assembly Type 6617" on page 982 when you perform this procedure.

FC 9251/507x/508x Removal and Installation

Procedure

1. Remove the Integrated Netfinity Server (triple wide) card from the system (see “Cards” on page 848).
2. Is the failing item the 6617 Integrated Netfinity Server card?
No **Yes**
↓ Go to step 9.
3. Is the failing item one of the memory modules inside the 6617 Integrated Netfinity Server card?
No **Yes**
↓ Go to step 14.
4. To replace one of the I/O adapter cards inside the 6617 Integrated Netfinity Server card, remove the 3 screws from the top of the metal plates on the 6617 Integrated Netfinity Server card.
5. Open the top of the Integrated Netfinity Server card by lifting up on the end opposite the edge connector.
6. Remove the mounting screw from the failing I/O adapter card. See the information for “Assembly 22: File Server Book Assembly Type 6617” on page 982.
7. Pull up on the I/O adapter card and remove it from the Integrated Netfinity Server card.
8. Install the card by reversing the removal procedure.
This ends the procedure.
9. To replace the Integrated Netfinity Server card, place the card assembly on a flat surface with the right side of the card (as viewed from the back when the card is installed) facing up.
10. Remove the 12 screws holding the metal plate on.
11. Pull up on the memory module card and remove it from the Integrated Netfinity Server card.
12. Install the memory module card you removed in the new Integrated Netfinity Server card.
13. Install the card by reversing the removal procedure.
This ends the procedure.
14. To replace a memory module, place the card assembly on a flat surface with the right side of the card (as viewed from the back when the card is installed) facing up.
15. Remove the 12 screws from the metal plate.
16. Pull up on the memory module card and remove the module card from the Integrated Netfinity Server card.
17. Remove the failing memory module from the memory module card by releasing the tabs on the end of the memory module and pulling the memory module out. See the information for “Assembly 22: File Server Book Assembly Type 6617” on page 982.
18. Install the memory module card into the new Integrated Netfinity Server card. For location information see “6617” on page 729.
19. Install the card by reversing the removal procedure.
This ends the procedure.

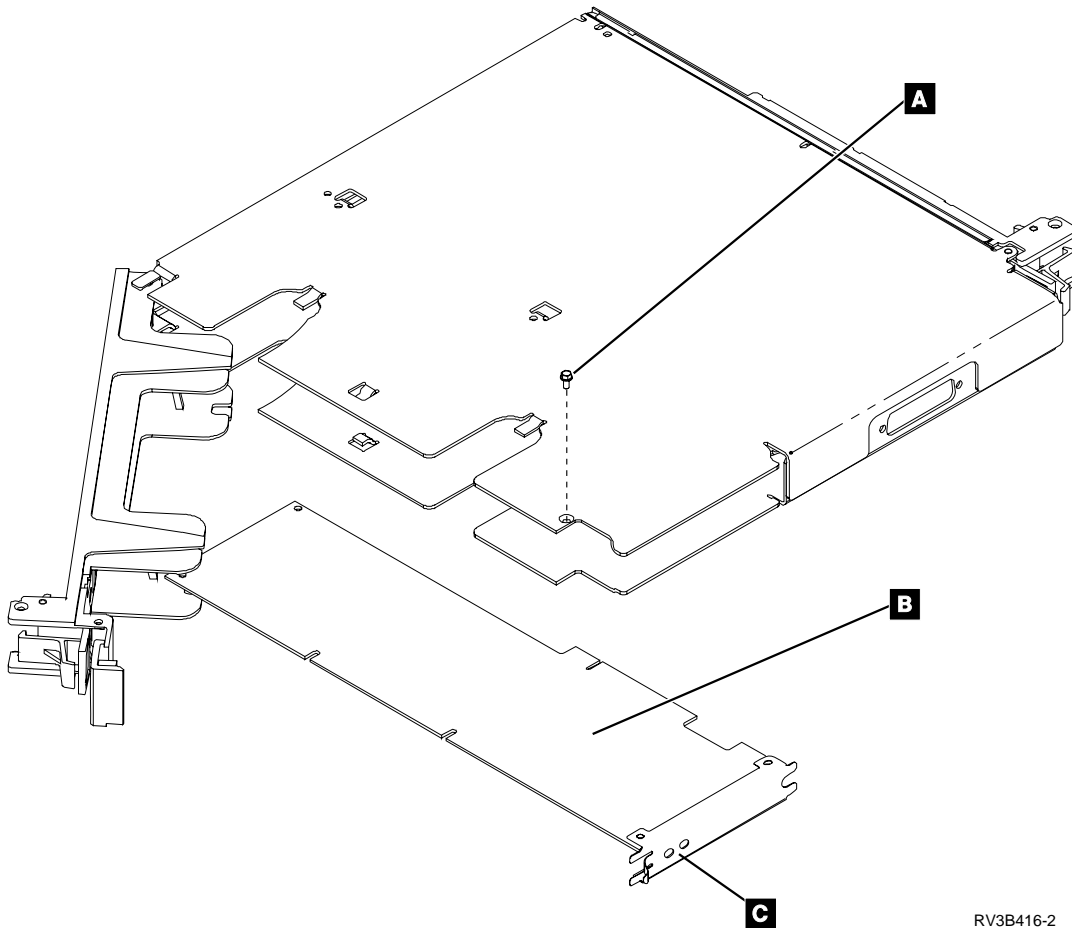
Micro Channel Adapter for a Wireless LAN IOA or IOP

Attention: The micro channel adapter is sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1019).

1. Remove the cables **C**.
2. Remove the micro channel adapter assembly from the system (see "Cards" on page 848).
3. Remove the screw **A**.
4. Rotate the bottom rail away from the assembly as shown.
5. Remove the micro channel adapter **B**.
6. Install the micro channel adapter assembly by reversing the removal procedure.

After exchanging an item, go to Verifying the Repair in "Chapter 5. Locations, Addresses, and Service Reference Information" on page 693.

This ends the procedure.



RV3B416-2

Power Supply

Procedure

1. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 761).
2. Disconnect the power cord.
3. Remove the front cover (see "Covers" on page 853).

FC 9251/507x/508x Removal and Installation

4. Loosen the screws **A**.
5. Remove the screws **B**.
6. Pull out and lift to remove the screen.
7. **DANGER**

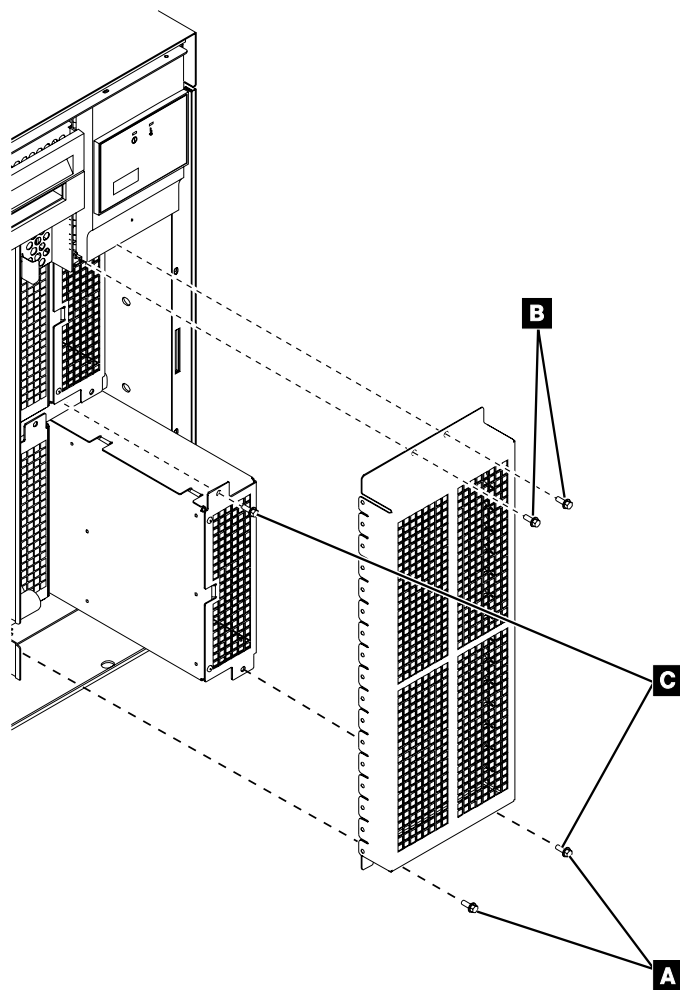
Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)

Remove the screws **C** to remove the power supply from the frame.

8. Install the power supply by reversing the removal procedure. Note the proper orientation of the power supply notch as shown.

After exchanging an item, go to "Verifying the Repair" on page 778.

This ends the procedure.



RV4B593-0

Removable Media (Concurrent)

Attention: The removable media unit is sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1019).

Procedure

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 781, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that owns the removable media. (See “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 787.)

1. Is the unit you are working with attached to a type 2624 Magnetic Storage I/O Processor?

No Yes

↓ Concurrent repair is not given support. Go to “Removable Media (Dedicated)” on page 872.

This ends the procedure.

2. Is the unit you are working with attached to a Model 600 or a Model S10 system?

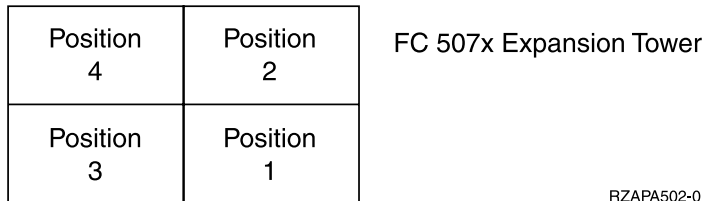
No Yes

↓ Concurrent repair is not given support. Go to “Removable Media (Dedicated)” on page 872.

This ends the procedure.

3. Before exchanging a removable media unit, you must verify that the unit is not in use.

4. Use the figure to determine the location of the internal removable media unit. Record this location for later use.



RZAPA502-0

Figure 83. Internal removable media locations

5. Do not power off the system.
6. Remove media (if any) from the device. If the eject button on an optical device is failing and will not open, follow these steps:
 - a. Locate the manual eject hole. The manual eject hole is a small round hole on the face of the unit located next to the eject button.
 - b. Insert a metal rod that is approximately 1.2mm in diameter and at least 35 mm in length (1/16 x 13/8 inches) into the manual eject hole, and push firmly. A straightened paper clip works well.
 - c. The tray will eject out 1/4 to 1/2 inch. Continue by pulling the tray out by hand until the optical media can be removed.
7. Remove the front cover (see “Covers” on page 853).
8. If you are removing a removable media unit, do the following:
 - a. Select System Service Tools (SST).

FC 9251/507x/508x Removal and Installation

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.

- b. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).
- c. Select the *Hardware Service Manager* option on the Start a Service Tool display.
- d. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to remove a device. 1xxx 02xx will appear in the Function/Data display on the control panel for about 8 seconds. Three 8-second periods will occur about 15 seconds apart.
- e. **Attention:** If you remove the removable media unit when 1xxx 02xx is not shown in the Function/Data display on the control panel, data may be lost and the unit may be damaged.

When 1xxx 02xx appears in the Function/Data display on the control panel, remove the removable media unit by pulling the handle down or up and out.

9. If you are installing a removable media unit, do the following:

- a. Select System Service Tools (SST).

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.

- b. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).
- c. Select the *Hardware Service Manager* option on the Start a Service Tool display.
- d. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to install a device. 1xxx 01xx will be shown in the Function/Data display on the control panel for about 8 seconds. Three 8-second periods will occur about 15 seconds apart.
- e. **Attention:** If you install the removable media unit when 1xxx 01xx is not shown in the Function/Data display on the control panel, data may be lost.
When 1xxx 01xx is shown in the Function/Data display on the control panel, install and latch the removable media unit.
- f. Install the front cover (see “Covers” on page 853).

10. Return to the procedure that sent you here.

After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.

Removable Media (Dedicated)

Procedure

Note: It may be possible to exchange the tape or optical unit without powering off the system (see “Removable Media (Concurrent)” on page 870).

1. Remove media (if any) from the device. If the eject button on an optical device is failing and will not open, follow these steps:
 - a. Locate the manual eject hole. The manual eject hole is a small round hole on the face of the unit located next to the eject button.

FC 9251/507x/508x Removal and Installation

- b. Insert a metal rod that is approximately 1.2mm in diameter and at least 35 mm in length (1/16 x 13/8 inches) into the manual eject hole, and push firmly. A straightened paper clip works well.
 - c. The tray will eject out 1/4 to 1/2 inch. Continue by pulling the tray out by hand until the optical media can be removed.
2. Is the unit you are working with attached to a type 2624 Magnetic Storage I/O Processor?

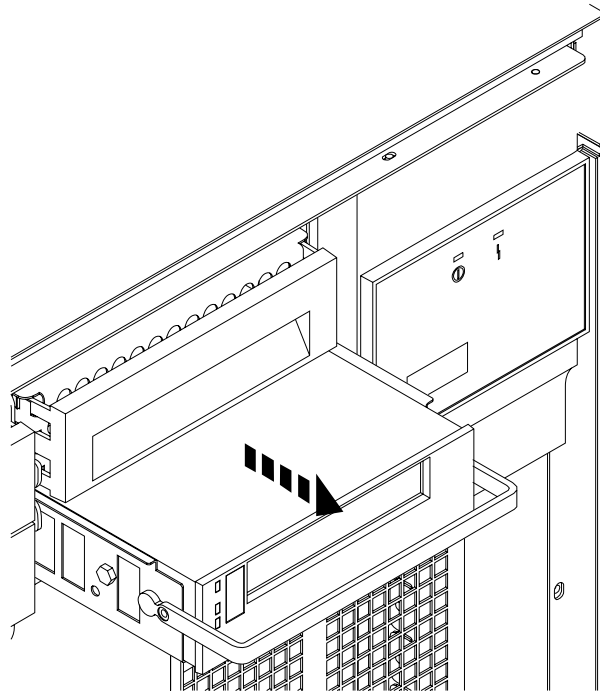
Yes No

- ↓ Concurrent repair is possible. Go to “Removable Media (Concurrent)” on page 870.

This ends the procedure.

3. Power off the system unit or the expansion tower where the removable media is located. (See “Powering Off and Powering On the System or Expansion Tower” on page 761.)
4. Disconnect the power cord.
5. Remove the front cover (see “Covers” on page 853).
6. Remove the unit by pulling the handle down or up and then out.
7. Install the removable media unit by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.



RV4B594-0

Removable Media Enclosure

Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
2. Disconnect the power cord.

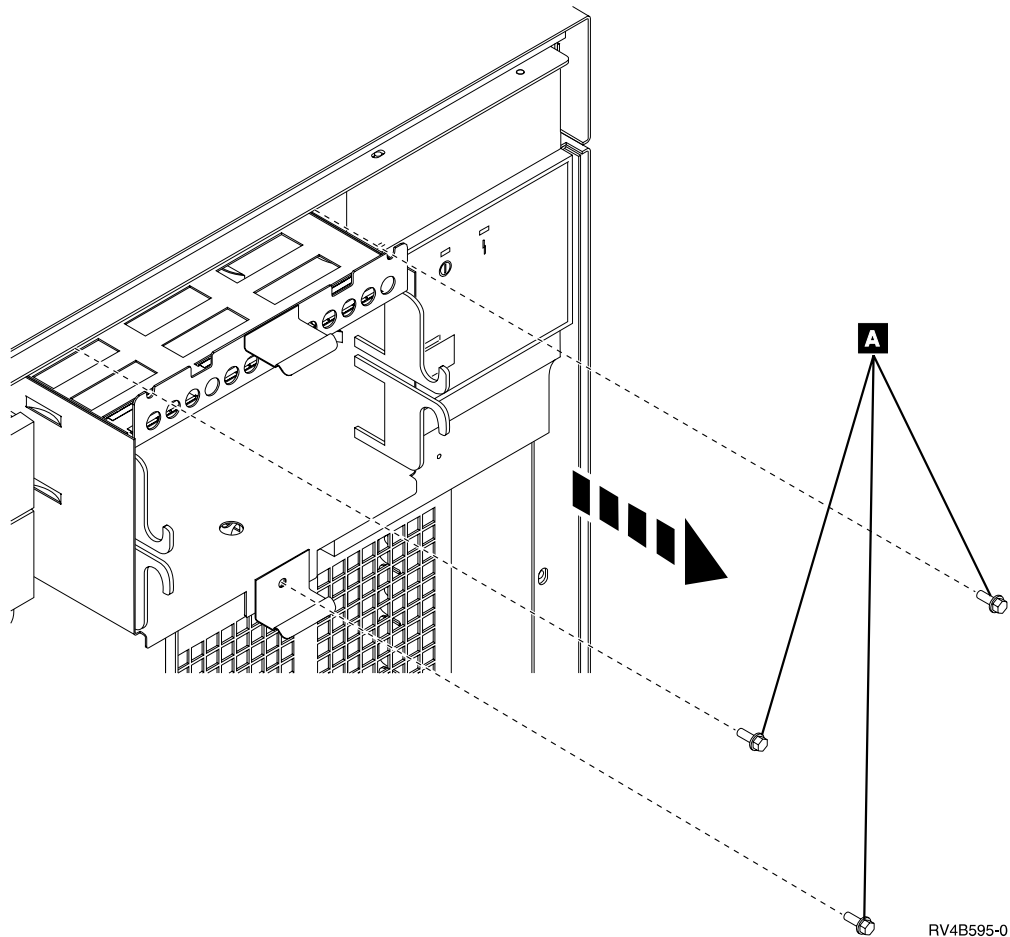
FC 9251/507x/508x Removal and Installation

3. Remove the front cover (see “Covers” on page 853).
4. Remove the removable media devices (see “Removable Media (Dedicated)” on page 872).
5. Remove the screws **A** to remove the removable media enclosures.

Note: If there is a bracket on the rear of the removable media enclosure, remove it and install the bracket on the removable media enclosure you are installing.

6. Install the removable media enclosure by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.



SCSI Redrive Card–9251 Base I/O Tower

Procedure

1. Remove rear AMD. Refer to “AMD” on page 842 and then return here.
2. Refer to page 970. Remove the terminator retaining bracket.
3. Remove the SCSI terminator.

This ends the procedure.

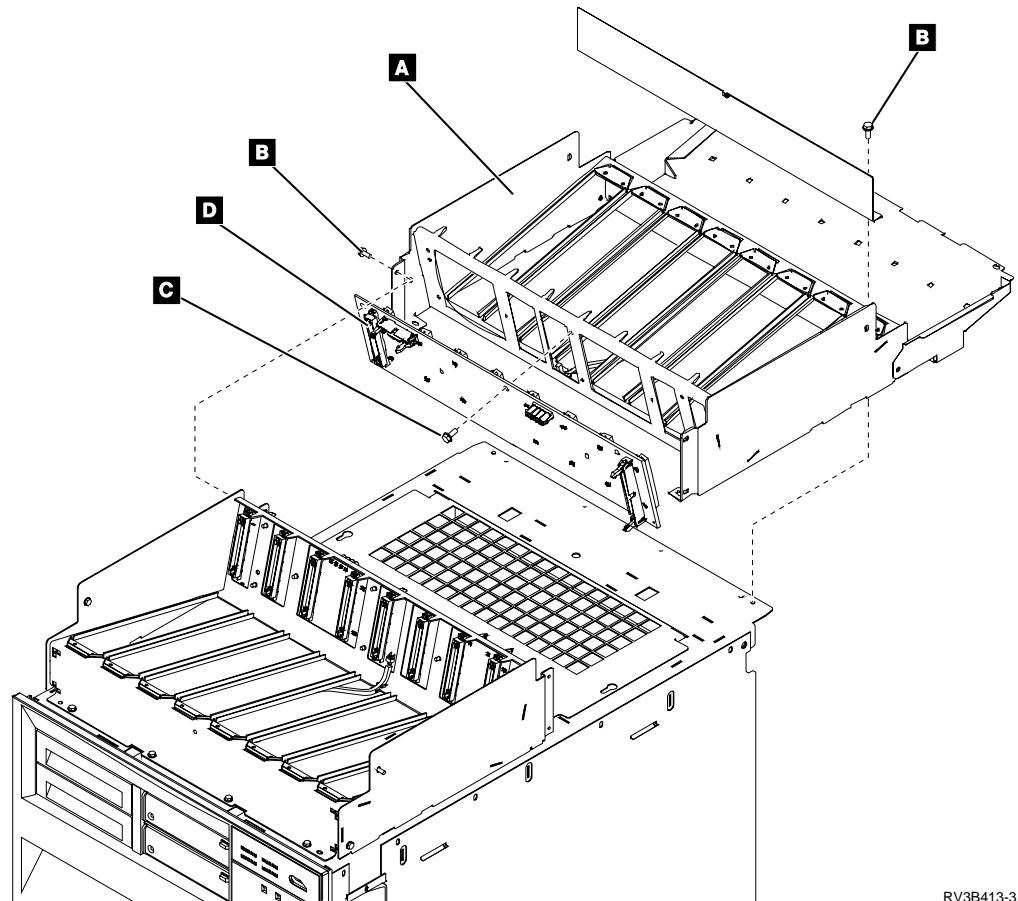
Storage Expansion Unit Backplane

Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
2. Disconnect the power cord.
3. Remove the front, rear, and top covers (see “Covers” on page 853).
4. If there are front and back rail assemblies, remove the back rail assembly **A** by doing the following:
 - a. Remove the screws **B**.
 - b. Disconnect the cables attached to the backplane.
 - c. Remove the rail assembly.
5. Remove the screws **C** holding the backplane to the rail assembly.
6. If a terminating plug is attached to the backplane (at location **D**), remove it and install it on the new backplane.
7. Assemble the parts of the storage expansion unit backplane by reversing the removal procedure.

After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.



RV3B413-3

SPCN Optical Adapter

Attention: When removing, installing, or holding an optical cable:

- Do not hold the cable with pliers or similar tools.
- Do not bend the cable to less than a 30 cm (12-inch) radius.
- Do not coil the cable to less than a 16 cm (6.3-inch) diameter.
- Do not attach a rope, string, or wire to the cable connectors.

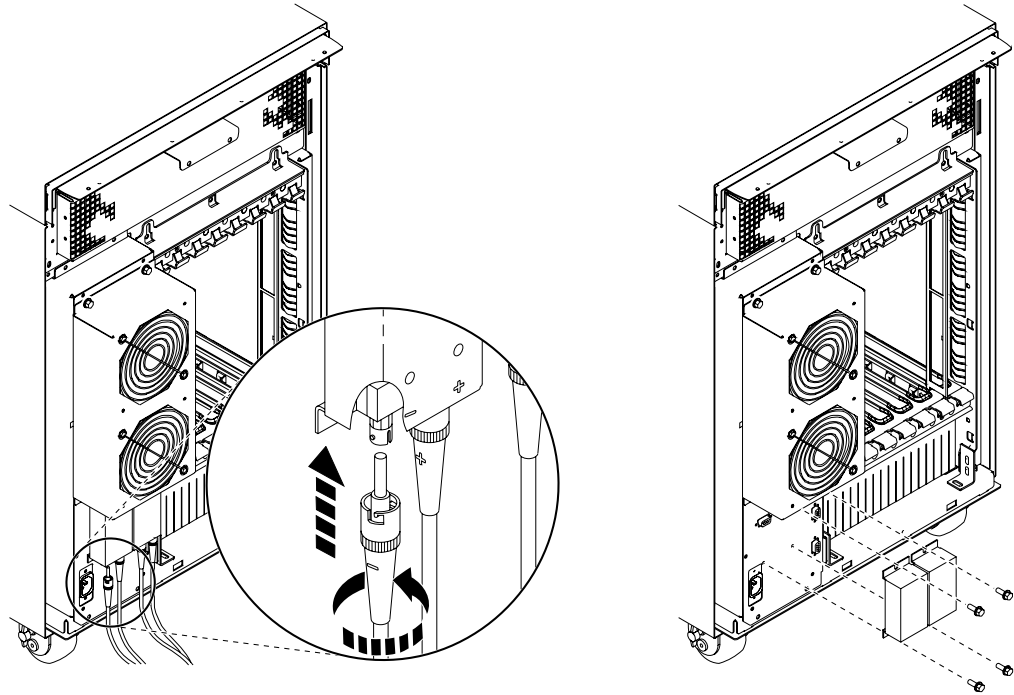
Use care to prevent the optical cable ends from becoming dirty.

Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 761).
2. Disconnect the power cord.
3. Remove the rear cover (see “Covers” on page 853).
4. Ensure that the SPCN optical cable ends and the SPCN optical adapter terminals are labeled with + and – to ensure that:
 - the + cable end attaches to the + terminal and
 - the – cable end attaches to the – terminal.
5. Disconnect the SPCN optical cable.
6. Remove the mounting screws.
7. Install the SPCN optical adapter by reversing the removal procedure.
Ensure that the SPCN optical cable ends and the SPCN optical adapter terminals are labeled with + and – to ensure that:
 - the + cable end attaches to the + terminal and
 - the – cable end attaches to the – terminal.

After exchanging an item, go to “Verifying the Repair” on page 778.

This ends the procedure.



RV3B418-1

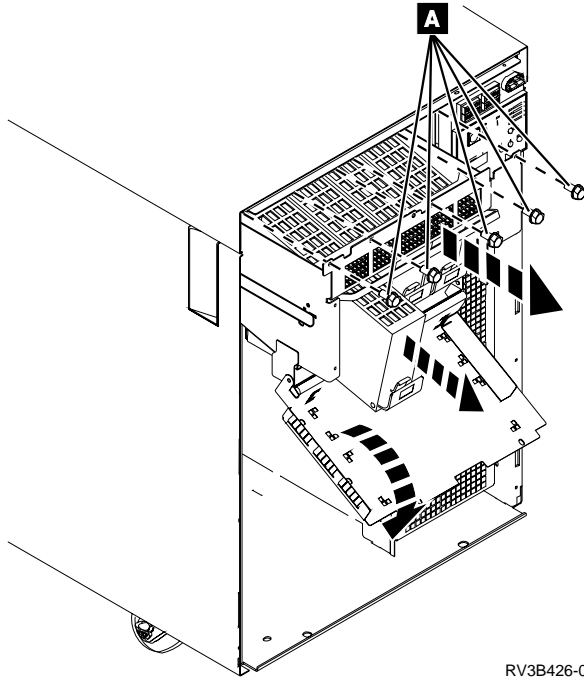
Upper Disk Unit Enclosure Backplane

Procedure

1. Power off the system (see "Powering Off the System" on page 761).
2. Disconnect the power cord.
3. Remove the front cover (see "Covers" on page 853).
4. Remove the screws and pivot the shield down.
5. Remove the disk units in the upper disk unit enclosure (see "Disk Unit (Dedicated)" on page 858).
6. Remove the screws **A**.
7. Pull the upper disk unit enclosure out.
8. Assemble the parts of the upper disk unit enclosure backplane by reversing the removal procedure.

After exchanging an item, go to "Verifying the Repair" on page 778.

This ends the procedure.



RV3B426-0

Chapter 7. Recovery Procedures

Disk Service Support	879	Resuming Mirrored Protection.	889
Start Disk Service Here	879	Disk Unit Data Save and Initialize	889
Determining Storage Protection Status	880	Disk Unit Initialize and Disk to Disk Copy	898
Exchanging a Disk Unit with Device Parity Protection	881	DST Procedures	906
Exchanging a Disk Unit with Mirrored Protection	883	Recover Remote Loadsource	906
		Copy the Contents of LIC Log.	907

Disk Service Support

This section contains the procedures and information to recover from disk unit failures with a minimum loss of customer data.

The procedures in this section do not give support to rack-mounted disk units such as an IBM 9337. For disk service support on rack-mounted disk units, use the *FC 504x Problem Analysis and Repair and Parts* information.

Start all service actions at “Start Disk Service Here” and follow the steps in the procedures to determine the following:

- The storage protection method that is used by the customer
- When and how to save customer data
- When to exchange a failing disk unit
- How to restore saved data
- How to resume storage protection

Start Disk Service Here

Before exchanging a disk unit, you must attempt to save customer data.

This procedure directs you to the correct recovery procedure to use when attempting to save customer data.

1. Is the disk unit a type 673x?

No **Yes**

↓ Type 673x is a read cache which does **NOT** contain data that needs to be saved. Exchange the read cache using the disk unit procedure in “Chapter 6. Removal and Installation Procedures” on page 793.

Note: If you can get to a Dedicated Service Tools (DST) or System Service Tools (SST) screen use the concurrent maintenance procedure.

This ends the procedure.

2. Do you know if your system has storage protection for the failing disk unit?

Yes **No**

↓ Perform “Determining Storage Protection Status” on page 880. Then return here and continue with the next step of this procedure.

3. Does your system have mirrored protection for the failing disk unit?

No **Yes**

Recovery Procedures

↓ Go to “Exchanging a Disk Unit with Mirrored Protection” on page 883.

This ends the procedure.

4. Does your system have device parity protection for the failing disk unit?

No Yes

↓ Go to “Exchanging a Disk Unit with Device Parity Protection” on page 881.

This ends the procedure.

5. Are you exchanging one of the following disk unit FRUs?

- Disk unit tray or holder

No Yes

↓ Exchange the failing FRU (see “Chapter 6. Removal and Installation Procedures” on page 793).

This ends the procedure.

6. You are exchanging the disk unit.

To save the data by copying to tape:

- Go to “Disk Unit Data Save and Initialize” on page 889.

To save the data by copying to another disk:

- Go to “Disk Unit Initialize and Disk to Disk Copy” on page 898.

This ends the procedure.

Determining Storage Protection Status

The customer should know if the system has storage protection configured on it. They should also have kept a printout of the storage protection configuration in the binder for the *Basic System Operation, Administration, and Problem Handling* information. If the customer does, not know if the system has storage protection configured on it, **and** the system does not IPL to dedicated service tool (DST). Contact your next level of support. Otherwise, perform the following procedure.

1. Select the *Work with disk units* option on the System Service Tools (SST) display. If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.

Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.

2. Select the *Display disk configuration* option on the Work with Disk Units display.
3. Select the *Display disk configuration status* option on the Work with Disk Configuration display.

A list of each auxiliary storage pool (ASP) displays, showing the disk units that are members of the ASP. The *Status* column shows one of the following protection statuses for the ASP:

Unprotected

Mirrored

- Disk units in an ASP with a protection status of *Mirrored* are configured for mirrored protection.

If the failing disk unit has mirrored protection, write down the status of the failing disk unit and its mirrored pair. You will need this information later in one of the recovery procedures.

- An ASP that has a status of *Unprotected* may contain disk units that are data parity protected. Look in the *Status* column of the *Display disk configuration status* display. The status column shows one of the following protection status:
 - DPY/Active
 - DPY/Failed
 - DPY/HDW Failure
 - DPY/Degraded
 - DPY/Power Loss
 - DPY/Not Ready
 - DPY/Unknown

A unit with one of these statuses has data parity protection, only if all other units in the array are operational.

A unit with any other status does not have data parity protection. For example, a unit that does not have data parity protection may have a status of:

- DPY/Rebuild
- DPY/Unprotected

Examples:

- Suppose one unit has a status of DPY/Failed while all other units have a status of DPY/Unprotected. In this case, only the unit with the DPY/Failed status is protected. Servicing the failed unit will not result in data loss. Removing any of the unprotected units could result in data loss.
- If all units have a status of DPY/Active or DPY/Degraded, all units are protected. In this case, exchanging any unit will not result in data loss.

For more information about the meaning of a status for any unit, use the Help key as indicated on the display.

Return to the procedure that sent you here.

This ends the procedure.

Exchanging a Disk Unit with Device Parity Protection

1. Does the failing unit have data parity protection that allows service without possible data loss (see “Determining Storage Protection Status” on page 880)?

Yes **No**

↓ Customer data may be lost if serviced. Ask your next level of support for assistance.

This ends the procedure.

2. Record the disk unit location for later use. If you do not already have the disk unit location information, use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 740. Use the address to find the location. See “System Unit Locations and Addresses” on page 695.

Recovery Procedures

Exchange the failing disk unit (see “Chapter 6. Removal and Installation Procedures” on page 793). When finished, continue with the next step of this procedure.

Note: If the concurrent procedure fails, go to step 5 of this procedure.

3. Perform the following:
 - a. Select System Service Tools (SST).
If you cannot get to SST, select dedicated service tool (DST) (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.

- b. Select the *Work with disk units* option on the Service Tools display.
 - c. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
 - d. Select the *Rebuild disk unit data* option.

Does a disk unit with the S/N of the failing unit appear as a unit that can be rebuilt?

Yes **No**

↓ It can take up to 5 minutes for the input-output processor (IOP) to report the device to the system. Keep trying the *Rebuild Disk Unit Data* option until the device is available. If the “Rebuild Disk Unit Data Failed” screen continues to appear even after 5 minutes, try a different disk unit or ask your next level of support for assistance.

4. Perform the following:
 - a. Select the disk unit that has the same S/N as that of the failing unit.
 - b. Rebuild the disk unit data. When the new disk unit is rebuilt, the display shows that the status is complete (this may take 30 minutes or longer).

Note: Once the rebuild has started, it is not necessary to wait to verify the array rebuild completes successfully.

- c. Return to the procedure that sent you here.

This ends the procedure.

5. Exchange the failing disk unit (see “Chapter 6. Removal and Installation Procedures” on page 793). When finished, continue with the next step of this procedure.
6. Perform the following:
 - a. Ask the customer to stop all active applications on the system and power the system off with the *Power Down System (PWRDWN SYS)* command.
 - b. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
 - c. Select the *Work with disk units* option.
 - d. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
 - e. Select the *Rebuild disk unit data* option.
 - f. Select the disk unit on the display that was installed in place of the failing disk unit.
 - g. Rebuild the disk unit data. When the new disk unit is rebuilt, the display shows that the status is complete (this may take 30 minutes or longer).
 - h. Press the Enter key after verifying that the status is complete.

7. Perform the following:
 - a. Return to the Use Dedicated Service Tools (DST) display.
 - b. Select the *Perform an IPL* option to complete the IPL.
8. Return to the procedure that sent you here.

This ends the procedure.

Exchanging a Disk Unit with Mirrored Protection

1. Display the disk unit status by performing the following:
 - a. Select system service tools (SST).

If you cannot get to SST, select dedicated service tools (DST) (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

Note: If the customer is running applications on the system, do not power off the system or IPL the system to get to DST.

If you cannot get to SST or DST, and the system fails during the IPL to DST, the load source disk unit attached to the MFIOF may be in a failed state. The system requires that the load source disk unit which is read during an IPL to DST must be attached to the MFIOF. SRCB1xx4504 is displayed during the IPL to DST if a functional load source disk unit is not attached to the MFIOF.

Systems that have remote load source mirror protection can be recovered by using the steps in “Recover Remote Loadsource” on page 906 .

If you do know if this system has remote load source mirror protection, contact your next level of support.

- b. Select the *Work with disk units* option on the Service Tools display.
- c. Select the *Display disk configuration* option.
- d. Select the *Display disk configuration status* option.

Does the failing disk unit have a status of “Suspended”?

No Yes

↓ Go to step 17 of this procedure.

2. Does the disk unit that is mirrored to the failing disk unit have a status of “Suspended”?

Yes No

↓ Go to step 14 of this procedure.

3. Is the failing disk unit the loadsource (disk unit 1)?

Yes No

↓ Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWN SYS)* command.

To save the data by copying to tape:

- Go to “Disk Unit Data Save and Initialize” on page 889.

To save the data by copying to another disk:

- Go to “Disk Unit Initialize and Disk to Disk Copy” on page 898.

Recovery Procedures

4. Is the failing loadsource disk unit attached to the MFIOP?

No **Yes**

↓ Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWNSYS)* command.

To save the data by copying to tape:

- Go to “Disk Unit Data Save and Initialize” on page 889.

To save the data by copying to another disk:

- Go to “Disk Unit Initialize and Disk to Disk Copy” on page 898.

5. Display the level of protection for the loadsource disk unit.

Does the loadsource disk unit have a mirror protection level of either?

- Remote Bus
- Remote input-output processor (IOP)

Yes **No**

↓ Ask your next level of support for assistance.

This ends the procedure.

6. You are at this step because the remote loadsource is failing and the loadsource that is attached to the MFIOP has a state of Suspended.

Perform the following to attempt to repair the loadsource that is attached to the MFIOP. Doing this procedure reduces the duration of the repair time.

- a. Record the location of the loadsource disk unit that is attached to the MFIOP.
- b. Exchange the loadsource disk unit using concurrent maintenance (see “Chapter 6. Removal and Installation Procedures” on page 793).

Was the disk unit exchanged successfully using the concurrent maintenance procedure?

No **Yes**

↓ Go to step 9 of this procedure.

7. The following criteria was met which is why you are here:

- The concurrent repair of the loadsource disk unit that is attached to the MFIOP did not succeed.
- The system has remote mirrored loadsource protection.

Ask the customer to stop all applications that are running on the system and power the system off with the *Power Down System (PWRDWNSYS)* command.

Was the loadsource disk unit (that is attached to the MFIOP) exchanged using the dedicated maintenance procedures?

No **Yes**

↓ Go to “Recover Remote Loadsource” on page 906.

This ends the procedure.

8. Exchange the failing loadsource disk unit that is attached to the MFIOP by using the dedicated maintenance procedures (see “Chapter 6. Removal and Installation Procedures” on page 793).

After exchanging the disk unit, go to “Recover Remote Loadsource” on page 906.

This ends the procedure.

9. Did you exchange the disk unit?

Yes No

↓ You exchanged one of the following FRUs:

- Disk drive logic card
- Disk unit tray or holder

If mirrored protection does not start automatically, go to “Resuming Mirrored Protection” on page 889.

This ends the procedure.

10. Perform the following:

- a. Select System Service Tools (SST).

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.

- b. Select the *Work with disk units* option.
 c. Select the *Display disk configuration* option.
 d. Select the *Display non-configured units* option.

Does the disk unit you just exchanged appear as a non-configured unit on the display?

Yes No

↓ It can take up to 5 minutes for the IOP to report the device to the system. Wait a few minutes. Then, press F5 to refresh the display. When the disk unit you just exchanged appears as a non-configured unit on the display, continue with the next step of this procedure.

11. Format and initialize the disk unit by doing the following:

- a. Select the *Work with disk units* option on the Service Tools display.
 b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
 c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
 d. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.
 e. On the display, select the disk unit you just installed.
 f. Initialize and format the disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).

12. Perform the following:

- a. Return to the Work with Disk Unit Recovery display.
 b. Select the *Replace configured unit* option on the Work with Disk Unit Recovery display.
 c. Select the configured disk unit to exchange, on the Select Configured Unit to Replace display.
 d. Select the replacement disk unit on the Select Replacement Unit display.

13. Return to the procedure that sent you here.

This ends the procedure.

Recovery Procedures

14. Is the disk unit that is mirrored to the failing disk unit, missing?

Note: If a disk unit is missing, a note at the bottom of the display with an asterisk (*) indicates the unit missing from the configuration.

Yes **No**

↓ Go to step 16 of this procedure.

15. **Ensure that the customer is not running any jobs before continuing with this step of the procedure.**

Power off the system.

Go to "LIC-PIP11" on page 517 and use cause code 0002.

If you cannot determine why the unit is missing, contact your next level of support.

If you correct the missing disk unit problem, go to "Start Disk Service Here" on page 879 to locate and perform the correct recovery procedure.

This ends the procedure.

16. Does the disk unit that is mirrored to the failing disk unit have a status of "Active"?

No **Yes**

↓ Suspend mirrored protection on the failing disk unit by performing the following:

- a. Return to the *Work with disk units* menu.
- b. Select the *Work with disk unit recovery* option.
- c. Select the *Suspend mirrored protection* option.
- d. Follow the instructions on the display to suspend mirrored protection on the failing disk unit.

17. Record the disk unit location for later use.

Exchange the failing disk unit (see "Chapter 6. Removal and Installation Procedures" on page 793). When finished, continue with the next step of this procedure.

Note: If the concurrent procedure fails, go to step 23 of this procedure.

18. Did you exchange the disk unit?

Yes **No**

↓ You exchanged one of the following FRUs:

- Disk drive logic card
- Disk unit tray or holder

If mirrored protection does not start automatically, go to "Resuming Mirrored Protection" on page 889.

This ends the procedure.

19. Perform the following:

- a. Select System Service Tools (SST).

If you cannot get to SST, select DST (see "Accessing Dedicated Service Tools" in the *AS/400 Service Functions*).

Note: Do not IPL the system to get to DST.

- b. Select the *Work with disk units* option.

- c. Select the *Display disk configuration* option.
- d. Select the *Display non-configured units* option.

Does the disk unit you just exchanged appear as a non-configured unit on the display?

Yes No

↓ It can take up to 5 minutes for the IOP to report the device to the system. Wait a few minutes. Then, press F5 to refresh the display. When the disk unit you just exchanged appears as a non-configured unit on the display, continue with the next step of this procedure.

20. Format and initialize the disk unit by doing the following:
 - a. Select the *Work with disk units* option on the Service Tools display.
 - b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
 - c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
 - d. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.
 - e. On the display, select the disk unit you just installed.
 - f. Initialize and format the disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).
21. Perform the following:
 - a. Return to the Work with Disk Unit Recovery display.
 - b. Select the *Replace configured unit* option on the Work with Disk Unit Recovery display.
 - c. Select the configured disk unit that you are exchanging on the Select Configured Unit to Replace display.
 - d. Select the replacement disk unit on the Select Replacement Unit display.
22. Return to the procedure that sent you here.

This ends the procedure.

23. You are at this step because the disk unit-concurrent repair procedures did not work.

Is the failing disk unit the loadsource (disk unit 1)?

Yes No

↓ Go to step 28 of this procedure.

24. Is the failing loadsource disk unit attached to the MFIOP?

Yes No

↓ Go to step 28 of this procedure.

25. Is the disk unit that is mirrored to the failing disk unit, attached to the MFIOP?

No Yes

↓ Go to step 28 of this procedure.

26. You are at this step because the system failure meets the following two conditions:

- A disk unit that is attached to the MFIOP is failing.

Recovery Procedures

- The disk unit that is mirrored to the failing disk unit **is not** attached to the MFIOP.

Display the level of protection for the loadsource disk unit.

Does the loadsource disk unit have a mirror protection level of either?

- Remote Bus
- Remote IOP

Yes **No**

↓ Ask your next level of support for assistance.

This ends the procedure.

27. You are at this step because **all** of the following are true:

- The loadsource disk unit that is attached to the MFIOP is failing.
- Concurrent maintenance procedures did not work.
- Remote loadsource protection started.

Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWN SYS)* command.

Go to “Recover Remote Loadsource” on page 906.

This ends the procedure.

28. Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWN SYS)* command.

Exchange the failing disk unit (see “Chapter 6. Removal and Installation Procedures” on page 793). When finished, continue with the next step of this procedure.

29. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Did you exchange the disk unit?

Yes **No**

↓ You exchanged one of the following FRUs:

- Disk drive logic card
- Disk unit tray or holder

Go to “Resuming Mirrored Protection” on page 889.

This ends the procedure.

30. Format and initialize the disk unit by doing the following:

- a. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
- b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
- c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
- d. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.
- e. On the display, select the disk unit you just installed.

- f. Initialize and format the disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).
31. Perform the following:
 - a. Return to the Work with Disk Unit Recovery display.
 - b. Select the *Replace configured unit* option on the Work with Disk Unit Recovery display.
 - c. Select the configured disk unit to exchange on the Select Configured Unit to Replace display.
 - d. Select the replacement disk unit on the Select Replacement Unit display.
32. Perform the following:
 - a. Return to the Use Dedicated Service Tools (DST) display.
 - b. Select the *Perform an IPL* option to complete the IPL. The system copies data to the new disk unit during the IPL.
33. Return to the procedure that sent you here.

This ends the procedure.

Resuming Mirrored Protection

Use this procedure to resume mirrored protection on suspended disk units.

1. Select the *Work with disk units* option on the System Service Tools (system service tool (SST)) display or on the Use Dedicated Service Tools (DST) display.
2. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
3. Select the *Resume mirrored protection* option on the Work with Disk Unit Recovery display.
4. On the Resume Mirrored Protection display, select the disk unit that you just replaced. It has a status of suspended.
5. Are you in SST?

No	Yes
↓	The disk unit that you selected will become active when the system is operational.

This ends the procedure.

6. Perform the following:
 - a. Return to the Use Dedicated Service Tools (DST) display.
 - b. Perform an IPL.

Note: The disk unit you selected becomes active during the IPL.

This ends the procedure.

Disk Unit Data Save and Initialize

Note: To complete this procedure, you may need the latest set of Save System (SAVSYS) or SAVSTG tapes that were made before the problem occurred. You will also need three blank tapes.

1. Are you exchanging a disk unit because a disk unit failure caused system operations to stop completely?

Yes	No
------------	-----------

Recovery Procedures

- ↓ You may be able to use the Remove Units from Configuration function of DST. This function allows you to move all data from the disk unit you want to exchange, to the other disk units in the same auxiliary storage pool (ASP).

Go to step 21 of this procedure.

2. Perform an IPL to dedicated service tool (DST) (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does the Use Dedicated Service Tools (DST) display appear?

Yes No

- ↓ If any messages regarding missing disk units appear, ignore the message and go to step 3 of this procedure.

Repeat this step.

If the same system reference code (SRC) occurs again, the customer data is not recoverable. Go to step 5 of this procedure.

If a different SRC occurs, use it to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

This ends the procedure.

3. From the Use Dedicated Service Tools (DST) display, perform the following to save the customer data from the failing disk unit:

- a. Select the *Work with disk units* option.
- b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
- c. Select the *Save disk unit data* option on the Work with Disk Unit Recovery display.
- d. Select the disk unit that you want the data saved from on the Select Disk Unit Data to Save display.

Record the ASP of the disk unit you are saving.

If the disk unit is missing, you cannot save the customer data to tape at this time. Go to step 5 of this procedure.

- e. Install a tape in the tape unit.
- f. The Specify Volume Identifier prompt appears. Enter the volume identifier for the tape. Write down the tape volume identifier here _____. You will use the tape volume identifier later in this procedure.
- g. The Select Tape Unit prompt appears.

Select the tape unit that you loaded with a tape.

Note: If the tape volume identifier you entered does not match the tape volume identifier on the tape you loaded, the Device Intervention Required prompt appears. The message “Wrong volume loaded” appears at the bottom of the display. Select the Format option and press the Enter key to continue the save operation.

The Function Status display shows the percent of disk data saved.

- h. If the tape is full, the Device Intervention display appears. The message “Load next volume” appears at the bottom of the display.
 - 1) Insert the next tape into the tape unit.
 - 2) Select the option to retry and press the Enter key to continue the save operation.

- i. Continue saving the disk unit data until the status of the save is complete.

Customer data is not recoverable if one of the following occurs:

- The copy operation does not complete.
- There is a large number of unreadable pages to copy from the disk unit.

Continue with the next step of this procedure.

4. Does the display show that the status of the save is complete?

No **Yes**

↓ Perform the following:

- a. Power off the system.
- b. Exchange the failing disk unit (see “Chapter 6. Removal and Installation Procedures” on page 793).
- c. Go to step 8 of this procedure.

5. Have you already exchanged the disk drive logic card?

Yes **No**

↓ Perform the following to attempt to save the customer’s data :

- a. Power off the system.
- b. Remove the disk unit (see “Chapter 6. Removal and Installation Procedures” on page 793).
- c. Exchange the failing disk drive logic card (see the instructions that come with the card). If you do not know the part number of the disk drive logic card, see “Disk Unit Type, Model, and Part Number List” on page 370. Locate the type and level of the disk drive to find the part number of the disk drive logic card.
- d. Go to step 2 of this procedure.

6. Have you already exchanged the storage IOA?

Yes **No**

↓ Perform the following:

- a. Power off the system.
- b. Exchange the storage IOA. If the storage IOA is integrated into the IOP, replace the IOP (see “Chapter 6. Removal and Installation Procedures” on page 793). If you do not know the part number, see “Type, Model, and Part Number List” on page 362.
- c. Perform an IPL to dedicated service tools (DST) (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If the same SRC occurs, go to step 7 of this procedure. If a different SRC occurs, use it to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59). If no SRC occurs, then the problem was solved by exchanging the IOA.

This ends the procedure.

7. Perform the following:

- a. Power off the system.
- b. Exchange the failing disk unit (see “Chapter 6. Removal and Installation Procedures” on page 793).

8. Did you just exchange disk unit 1 in the system unit?

No **Yes**

↓ Go to step 12 of this procedure.

Recovery Procedures

9. Format and initialize the new disk unit by doing the following:
 - a. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
If any messages regarding missing disk units appear, ignore the message.
 - b. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
 - c. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.
 - d. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
 - e. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.
 - f. Select the disk unit on the display to initialize and format.
 - g. Press the F10 key on the confirmation display.
 - h. The system format and initializes the new disk unit. The display shows when the status is complete (this may take 30 minutes or longer).
10. Is most of the customer data recoverable (see step 3 of this procedure)?

Yes No

↓ Go to step 19 of this procedure.

11. Restore the customer data from the tape to the new disk unit by doing the following:
 - a. Return to the Work With Disk Unit Recovery display.
 - b. Select the *Restore disk unit data* option from the Work with Disk Unit Recovery display.
 - c. Enter the tape volume identifier. This is the volume identifier that you entered during the save procedure.
 - d. Install the first tape that the data was saved to in the tape unit.
 - e. Select the tape unit that you want the data restored from on the Select Tape Unit display.
 - f. Select the disk unit that you want the data restored to on the Restore Disk Unit Data display.
 - g. Press F10 to confirm the restore.
The Function Status display shows the percent of customer data restored. The system will IPL to the *Use Dedicated Service Tools (DST)* display when the restore has completed.

Note: Any damaged objects that were restored must be loaded again by the customer (have the customer see the *Backup and Recovery* information).

The system is ready for the next IPL.

This ends the procedure.

12. Is the customer data recoverable (see step 3 of this procedure)?

Yes No

↓ Go to step 16 of this procedure.

13. Perform an IPL from removable media and select the option to install Licensed Internal Code and restore disk unit data. (See “Installing Licensed

Internal Code" in the *AS/400 Service Functions* information, which performs an IPL and installs the Licensed Internal Code.)

14. Did you get a Disk Configuration Error Report with a "Unit has incorrect logical partition configuration" warning?

No **Yes**

↓ You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:

- a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.
- b. Enter the password 22222222.

Note: If this password is not valid, ask the customer for the correct password.

- c. Select the Work with system partitions option on the Use Dedicated Service Tools (DST) display.
- d. Select the Recover configuration data option on the Work with System Partitions display.
- e. Select the Recover primary partition configuration data on the Recover Configuration Data display.
- f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL.

Continue with the next step of this procedure.

15. Restore the customer data from the tape to the new disk unit by doing the following:

- a. Enter the *Use Dedicated Service Tools (DST)* option from the IPL or Install the System display.
- b. Enter the password 22222222.

Note: If this password is not valid, ask the customer for the correct password.

- c. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
- d. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.
- e. Select the *Restore disk unit data* option on the Work with Disk Unit Recovery display.
- f. Enter the tape volume identifier. This is the volume identifier that you entered during the save procedure.
- g. Install the first tape that the data was saved to in the tape unit.
- h. Select the tape unit that you want the data restored from on the Select Tape Unit display.
- i. Select the disk unit that you want the data restored to on the Restore Disk Unit Data display.
- j. Press F10 to confirm the restore.

The Function Status display shows the percent of customer data restored.

Recovery Procedures

Note: When the load-source disk is restored, the system automatically performs an IPL to the Use Dedicated Service Tools (DST) display. This occurs after the restore operation completes.

When all customer data from the tape to the disk restores successfully, the display shows that the status of the restore operation is complete.

- k. Press the Enter key to complete the restore operation.
- l. Power off the system.

Note: Any damaged objects that were restored must be loaded again by the customer (have the customer see the *Backup and Recovery* information).

The system is ready for the next IPL.

This ends the procedure.

16. Perform an IPL from removable media and select the option to install Licensed Internal Code and recover configuration. (See "Installing Licensed Internal Code" in the *AS/400 Service Functions* information, which performs an IPL and installs the Licensed Internal Code.)
17. Did you get a Disk Configuration Error Report with a "Unit has incorrect logical partition configuration" warning?

No **Yes**

↓ You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:

- a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.
- b. Enter the password 22222222.

Note: If this password is not valid, ask the customer for the correct password.

- c. Select the Work with system partitions option on the Use Dedicated Service Tools (DST) display.
- d. Select the Recover configuration data option on the Work with System Partitions display.
- e. Select the Recover primary partition configuration data on the Recover Configuration Data display.
- f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL.

Continue with the next step of this procedure.

18. The system ASP will be cleared because customer data was not recoverable. Recover the configuration to disk unit 1 in the system unit by doing the following:
 - a. Enter the *Use Dedicated Service Tools (DST)* option from the IPL or Install the System display.
 - b. Enter the password 22222222.

Note: If this password is not valid, ask the customer for the correct password.

- c. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
- d. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.
- e. Select the *Recover configuration* option on the Work with Disk Unit Recovery display. This option assembles the system configuration information on disk unit 1 in the system unit.

Notes:

- 1) A warning message appears stating that recovering the configuration destroys all system data.
 - 2) If you have a system with only one disk unit, a message may appear stating that your request to recover the configuration was not successful. The recover configuration function cannot be performed on a system with only one disk unit. Continue with the next step of this procedure.
- f. Go to step 20 of this procedure.
19. Because the disk data was not recoverable, clear the auxiliary storage pool (ASP) to which the disk unit is assigned by doing the following:
- a. Return to the Work with Disk Units display.
 - b. Select the *Work with disk configuration* option.
 - c. Select the *Work with ASP configuration* option.
 - d. Select the *Delete ASP data* option.
 - e. Enter the *Delete* option for the ASP you recorded in step 3 of this procedure.
 - f. Confirm the Delete ASP Data.
 - g. Return to the Work with Disk Units display.
 - h. Select the *Work with disk unit recovery* option.
 - i. Select the *Replace configured unit* option.
 - j. Select the configured disk unit to exchange on the Select Configured Unit to Replace display.
 - k. Select the replacement disk unit on the Select Replacement Unit display.
 - l. Press the Enter key to confirm the replace operation (this operation takes 10 to 15 minutes to complete).

Attention: The auxiliary storage pool to which the disk unit is assigned is erased. The customer must restore the data to the auxiliary storage pool (have the customer see the *Backup and Recovery* information).

20. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:
- If the disk unit you exchanged is in ASP 1, have the customer see the *Backup and Recovery* information. The customer must restore the operating system (OS/400 Licensed Program) and all customer data.
 - If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the *Backup and Recovery* information.

This ends the procedure.

21. The remaining steps of this procedure require a dedicated system. Have the customer do a normal power-off procedure of the system.

Recovery Procedures

22. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Is the IPL or Install the System display shown, or is DST available?

Yes **No**

↓ Go to step 2 of this procedure.

23. Select the *Use dedicated service tools (DST)* option on the display or use a function key. You need the customer password to get to the Use Dedicated Service Tools (DST) display.

24. Perform the following:

- a. On the Use Dedicated Service Tools (DST) display, select the *Work with disk units* option.
- b. Select the *Work with disk configuration* option.
- c. Select the *Display disk configuration* option.
- d. Select the *Display disk configuration status* option.
- e. Record the ASP, unit, serial number, type, and resource name of the disk unit.
- f. On the Display Disk Configuration Status display, ensure the following:
 - The disk unit is not the load-source disk unit (disk unit 1).
 - No disk units are missing from the configuration.

Note: An asterisk (*) next to the unit number indicates a missing unit.

- The status field of the disk unit to be removed shows *Configured*.

Are all these conditions true?

Yes **No**

↓ You cannot use the Remove Units from Configuration function.

Go to step 2 of this procedure.

25. Perform the following:

- a. Return to the Display Disk Configuration display.
- b. Select the *Display disk configuration capacity* option.

Does the % *Used* field for the disk unit to be removed show an asterisk (*)?

No **Yes**

↓ You cannot use the Remove Units from Configuration function.

Go to step 2 of this procedure.

26. Return to the Work with Disk Units display.

27. Perform the following:

- a. On the Work with Disk Units display, select the *Work with disk unit recovery* option.
- b. Select the *Disk unit problem recovery procedures* option.
- c. Select the *Analyze disk unit surface* option.
- d. Select the disk unit to analyze.
- e. Press F10 to analyze the disk unit surface.
- f. Wait until the Analyze function is complete.

Note: This takes several minutes.

Is the number of pages with errors zero?

Yes No

↓ You cannot use the Remove Units from Configuration function.
Go to step 2 of this procedure.

28. Return to the Work with Disk Units display.

29. Perform the following:

- a. On the Work with Disk Units display, select the *Work with disk configuration* option.
- b. Select the *Work with ASP configuration* option.
- c. Select the *Remove units from configuration* option.
- d. Select the disk unit to be removed.

Note: If the disk unit does not display, go to step 2 of this procedure.

- e. If the Confirm Continuation display appears, press the Enter key to continue. Wait for the next display.
- f. If there is enough storage in the ASP, the Confirm Remove Disk Units display appears. If there is not enough storage, an error message display appears.

Does any error message display appear?

No Yes

↓ Go to step 2 of this procedure.

30. Press the Enter key to verify the Remove Disk Units function.

The Remove Disk Units function takes several minutes. When it is complete, a message appears stating whether it was successful.

Was the Remove Disk Units function successful?

Yes No

↓ Go to step 2 of this procedure.

31. On the Work with ASP Configuration display, select the *Display disk configuration capacity* option.

32. Press F11 twice to display non-configured units.

Is the unit you removed shown as a non-configured unit?

Yes No

↓ Go to step 2 of this procedure.

33. Do you want to exchange the disk unit now?

Note: You can exchange the disk unit at a later time because the disk unit is removed from the configuration.

Yes No

↓ **This ends the procedure.**

34. Perform the following:

- a. Power off the system.
- b. Exchange the failing disk unit (see "Chapter 6. Removal and Installation Procedures" on page 793).

35. Format and initialize the new disk unit by doing the following:

- a. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

Recovery Procedures

- b. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
 - c. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.
 - d. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
 - e. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.
 - f. Select the disk unit on the display to initialize and format.
 - g. Press the F10 key on the confirmation display.
 - h. The system initializes and formats the new disk unit. The display shows when the status is complete (this may take 30 minutes or longer).
36. In this step, you use the ASP, unit, serial number, type, and resource name information you recorded in step 24 of this procedure.
Perform the following:
- a. Return to the Work with Disk Units display.
 - b. On the Work with Disk Units display, select the *Work with disk configuration* option.
 - c. Select the *Work with ASP configuration* option.
 - d. Select the *Add units to ASPs* option.
 - e. Specify the ASP from which the disk units were removed.
 - f. Select the unit to add to the ASP.
 - g. When the Confirm Add Units display appears, press the Enter key to continue. Wait for the next display.
37. The Add Disk Units function takes several minutes. When it is complete, a message appears stating whether it was successful.
Was the Add Disk Units function successful?
- No Yes**
- ↓ On the Work with ASP Configuration display, select the *Display disk configuration capacity* option. The unit you added should be shown in the correct ASP.
- This ends the procedure.**
38. Do you have more FRUs to exchange?
- No Yes**
- ↓ Go to step 34 of this procedure.
39. Ask your next level of support for assistance.
This ends the procedure.

Disk Unit Initialize and Disk to Disk Copy

1. Perform an IPL to dedicated service tool (DST) (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
Does the Use Dedicated Service Tools (DST) display appear?
- Yes No**
- ↓ Repeat this step.
- If the same system reference code (SRC) occurs again, the customer data is not recoverable. Go to step 16 on page 901.

If a different SRC occurs, use it to correct the problem.

This ends the procedure.

2. Is this a single disk unit system?

No Yes

↓ Perform "Disk Unit Data Save and Initialize" on page 889.

This ends the procedure.

3. Is the failing disk unit the load-source disk unit?

Note: Disk unit 1 contains the load-source disk unit.

Yes No

↓ Go to step 24 of this procedure.

4. Find another disk unit on the system that is the same type and model as the load-source disk unit.

5. Perform the following to install the new disk drive into a disk unit on the system:

- a. Power off the system.
- b. Slide the disk unit you found in step 4 of this procedure out of the system (see "Chapter 6. Removal and Installation Procedures" on page 793).
- c. Remove the disk drive from the disk unit. Be very careful with the disk enclosure. You will install it again in the disk unit when the service actions to the failing load-source disk unit are complete.
- d. Install the new disk drive in the disk unit.

6. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

Does the Use Dedicated Service Tools (DST) display appear?

Yes No

↓ Repeat step 1 of this procedure.

7. From the Use Dedicated Service Tools (DST) display, perform the following to format and initialize the disk drive you installed in step 5 of this procedure:

- a. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
- b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
- c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
- d. Select the *Initialize and format disk unit* option on the Problem Recovery Procedures display.
- e. Select the non-configured unit you installed in step 5 of this procedure as the unit to work with.
- f. Verify the initialization and formatting by pressing F10. The initialization and formatting may take 30 minutes or longer to complete.
- g. Return to the Work with Disk Unit Recovery display.

8. Perform the following to copy data from the load-source disk unit to the disk drive you installed in step 4 of this procedure:

- a. Select the *Copy disk unit data* option on the Work with Disk Unit Recovery display.
- b. Select the load-source disk unit (disk unit 1) as the unit to copy.

Recovery Procedures

- c. Select the non-configured unit you installed in step 5 of this procedure as the unit to copy to.
- d. The console displays the percent of the data copied. If the number of unreadable pages displays, write down the number of unreadable pages here.

- e. Wait until the status of the copy is *Complete*. Customer data is not recoverable if one of the following occurs:
 - The copy operation does not complete.
 - There is a large number of unreadable pages to copy from the disk unit.

Continue with the next step of this procedure.

9. Does the copy operation complete?
No **Yes**
↓ Go to step 11 of this procedure.
10. Have you already exchanged the disk drive logic card?
Yes **No**
↓ Perform the following to attempt to save the customer's data:
 - a. Power off the system.
 - b. Remove the disk unit (see "Chapter 6. Removal and Installation Procedures" on page 793).
 - c. Exchange the failing disk drive logic card (see the instructions that come with the card). If you do not know the part number of the disk drive logic card, see "Disk Unit Type, Model, and Part Number List" on page 370. Locate the type and level of the disk drive to find the part number of the disk drive logic card.
 - d. Go to step 1 of this procedure.
11. Perform the following to remove the failing load-source disk drive from the load-source disk unit on the system:
 - a. Power off the system.
 - b. Find the load-source disk unit. Slide the disk unit out of the system (see "Chapter 6. Removal and Installation Procedures" on page 793).
 - c. Remove the load-source disk drive from the disk unit.
12. Perform the following to move the new disk drive into the load-source disk unit:
 - a. Slide the disk unit you found in step 4 of this procedure out of the system (see "Chapter 6. Removal and Installation Procedures" on page 793).
 - b. Remove the new disk drive from the disk unit. Be very careful with the disk drive. It contains the load-source data.
 - c. Install the new disk drive into the disk unit that used to contain the load-source disk drive.
 - d. Slide the disk unit into the system.
13. Perform the following to install the disk drive you removed in step 5 of this procedure to make a place for the new disk enclosure:
 - a. Install the disk drive you removed in step 5 of this procedure into the disk unit.

- b. Slide the disk unit into the system.
14. Were any pages unreadable during the copy operation?
- No Yes**
- ↓ Go to step 22 of this procedure.
15. The system is ready for the next IPL.
- This ends the procedure.**
16. Have you already exchanged the disk drive logic card?
- Yes No**
- ↓ Perform the following to attempt to save the customer's data:
 - a. Power off the system.
 - b. Remove the disk unit (see "Chapter 6. Removal and Installation Procedures" on page 793).
 - c. Exchange the failing disk drive logic card (see the instructions that come with the card). If you do not know the part number of the disk drive logic card, see "Disk Unit Type, Model, and Part Number List" on page 370. Locate the type and level of the disk drive to find the part number of the disk drive logic card.
 - d. Go to step 1 of this procedure.
17. Perform the following to remove the failing load-source disk drive from the load-source disk unit on the system:
- a. Power off the system.
 - b. Find the load-source disk unit. Slide the disk unit out of the system (see "Chapter 6. Removal and Installation Procedures" on page 793).
 - c. Remove the load-source disk drive from the disk unit.
 - d. Install the new disk drive in the disk unit.
 - e. Slide the disk unit into the system.
18. Perform an IPL from removable media and select the option to install Licensed Internal Code and recover the configuration. (See "Installing Licensed Internal Code" in the *AS/400 Service Functions* information, which performs an IPL and installs the Licensed Internal Code.)
19. Did you get a Disk Configuration Error Report with a "Unit has incorrect logical partition configuration" warning?
- No Yes**
- ↓ You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure.
- Perform the following:
- a. Enter the *Use Dedicated Service Tools (DST)* option from the IPL or Install the System display.
 - b. Enter the password 22222222.
- Note:** If this password is not valid, ask the customer for the correct password.
- c. Select the *Work with system partitions* option on the Use Dedicated Service Tools (DST) display.
 - d. Select the *Recover configuration data* option on the Work with System Partitions display.

Recovery Procedures

- e. Select the *Recover primary partition configuration data* option on the Recover Configuration Data display.
- f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter.
- g. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL.
Continue with the next step of this procedure.

20.

The system ASP will be cleared because customer data was not recoverable. Recover the configuration to disk unit 1 in the system unit by doing the following:

- a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.
- b. Enter the password 22222222.

Note: If this password is not valid, ask the customer for the correct password.

- c. Select the Work with disk units option on the Use Dedicated Service Tools (DST) display.
- d. Select the Work with disk unit recovery option on the Work with Disk Unit display.
- e. Select the Recover configuration option on the Work with Disk Unit Recovery display. This option assembles the system configuration information on disk unit 1 in the system unit.

Notes:

- a. A warning message appears stating that recovering the configuration destroys all system data.
- b. If you have a system with only one disk unit, a message may appear stating that your request to recover the configuration was not successful. The recover configuration function cannot be performed on a system with only one disk unit.

Continue with the next step of this procedure.

21. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:
 - If the disk unit you exchanged is in ASP 1, have the customer see the Backup and Recovery information. You must restore the operating system (OS/400 Licensed Program) and all customer data.
 - If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the Backup and Recovery information.

This ends the procedure.

22. Perform an IPL from removable media and restore the Licensed Internal Code (see "Restoring Licensed Internal Code" in the *AS/400 Service Functions* information). This information shows you how to perform an IPL and restore the Licensed Internal Code.

Note: Some objects may be damaged. The customer may have to load the damaged objects again (see the *Backup and Recovery* information).

This ends the procedure.

23. Is the failing unit missing from the configuration?

No **Yes**

↓ Go to step 36 of this procedure.

24. Find another disk unit on the system, other than the load-source disk unit, that has the same type and model as the failing disk unit.

Note: If the load-source disk unit is the only other disk unit on the system with the same type and model as the failing disk unit, you must use “Disk Unit Data Save and Initialize” on page 889.

25. Perform the following to install a new disk drive into a disk unit on the system:

- a. Power off the system.
- b. Slide the disk unit you found in step 24 of this procedure out of the system (see “Chapter 6. Removal and Installation Procedures” on page 793).
- c. Remove the disk drive from the disk unit. Be very careful with the disk drive. You will install it again in the disk unit when the repair actions to the failing disk unit are complete.
- d. Install the new disk drive in the disk unit.
- e. Slide the disk unit into the system.

26. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does the Use Dedicated Service Tools (DST) display appear?

Yes **No**

↓ Repeat step 1 of this procedure.

27. From the Use Dedicated Service Tools (DST) display, perform the following to format and initialize the disk drive you installed in step 25 of this procedure:

- a. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
- b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
- c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
- d. Select the *Initialize and format disk unit* option on the Problem Recovery Procedures display.
- e. Select the non-configured disk unit you installed in step 25 of this procedure as the unit to work with.
- f. Verify the initialization and formatting by pressing F10. The initialization and formatting may take 30 minutes or longer to complete.
- g. Return to the Work with Disk Unit Recovery display.

28. Perform the following to copy data from the failing disk drive to the disk drive you installed in step 25 of this procedure:

- a. Select the *Copy disk unit data* option on the Work with Disk Unit Recovery display.
- b. Select the failing unit as the unit to copy.
- c. Select the non-configured unit you installed in step 25 of this procedure as the unit to copy to.

Recovery Procedures

- d. The console displays the percent of the data copied. If the number of unreadable pages displays, write down the number of unreadable pages here.

- e. Wait until the status of the copy is *Complete*. Customer data is not recoverable if one of the following occurs:
- The copy operation does not complete.
 - There is a large number of unreadable pages to copy from the disk unit.

Continue with the next step of this procedure.

29. Does the copy operation complete?

No **Yes**

↓ Go to step 31 of this procedure.

30. Have you already exchanged the disk drive logic card?

Yes **No**

↓ Perform the following to attempt to save the customer's data:

- a. Power off the system.
 - b. Remove the disk unit (see "Chapter 6. Removal and Installation Procedures" on page 793).
 - c. Exchange the failing disk drive logic card (see the instructions that come with the card). If you do not know the part number of the disk drive logic card, see "Disk Unit Type, Model, and Part Number List" on page 370. Locate the type and level of the disk drive to find the part number of the disk drive logic card.
 - d. Go to step 1 of this procedure.
31. Perform the following to remove the failing disk drive from the disk unit on the system:
- a. Power off the system.
 - b. Find the failing disk unit. Slide the disk unit out of the system.
 - c. Remove the disk drive from the failing disk unit (see "Chapter 6. Removal and Installation Procedures" on page 793).
32. Perform the following to move the new disk drive into the disk unit that held the failing disk drive:
- a. Remove the new disk drive from the disk unit you found in step 24 of this procedure. Be very careful with the disk enclosure. It contains the disk unit data.
 - b. Install the new disk drive into the disk unit that contained the failing disk drive. You removed the failing disk drive in step 31 of this procedure.
 - c. Slide the disk unit into the system.
33. Perform the following to install the disk drive that you removed to make a place for the new disk drive:
- a. Install the disk drive you removed in step 25 of this procedure into the disk unit.
 - b. Slide the disk unit into the system.
34. Were any pages unreadable during the copy operation?

No Yes

- ↓ Some objects may be damaged. The customer may have to load the damaged objects again. Have the customer see the *Backup and Recovery* information.

This ends the procedure.

35. The system is ready for the next IPL.

This ends the procedure.

36. Are there multiple failing disk units under the same IOA or IOP?

No Yes

- ↓ Perform the following:
 - a. Power off the system.
 - b. Exchange the storage IOA. If the storage IOA is integrated into the IOP, replace the IOP (see “Chapter 6. Removal and Installation Procedures” on page 793). If you do not know the part number, see “Type, Model, and Part Number List” on page 362.
 - c. Go to step 1 of this procedure.

37. Have you already exchanged the disk drive logic card?

Yes No

- ↓ Perform the following to attempt to save the customer’s data:
 - a. Power off the system.
 - b. Remove the disk unit (see “Chapter 6. Removal and Installation Procedures” on page 793).
 - c. Exchange the failing disk drive logic card (see the instructions that come with the card). If you do not know the part number of the disk drive logic card, see “Disk Unit Type, Model, and Part Number List” on page 370. Locate the type and level of the disk drive to find the part number of the disk drive logic card.
 - d. Go to step 1 of this procedure.

38. Because the disk data was not recoverable, clear the auxiliary storage pool (ASP) to which the disk unit is assigned by doing the following:

- a. Return to the Work with Disk Units display.
- b. Select the Work with disk configuration option.
- c. Select the Work with ASP configuration option.
- d. Select the Delete ASP data option.
- e. Enter the Delete option for the ASP you recorded in step 3 on page 899 of this procedure.
- f. Confirm the Delete ASP Data.
- g. Return to the Work with Disk Units display.
- h. Select the Work with disk unit recovery option.
- i. Select the Replace configured unit option.
- j. Select the configured disk unit to exchange on the Select Configured Unit to Replace display.
- k. Select the replacement disk unit on the Select Replacement Unit display.
- l. Press the Enter key to confirm the replace operation (this operation takes 10 to 15 minutes to complete).

Recovery Procedures

Attention: The auxiliary storage pool to which the disk unit is assigned is erased. The customer must restore the data to the auxiliary storage pool (have the customer see the Backup and Recovery information).

39. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:
 - If the disk unit you exchanged is in ASP 1, have the customer see the Backup and Recovery information. You must restore the operating system (OS/400 Licensed Program) and all customer data.
 - If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the Backup and Recovery information.

This ends the procedure.

DST Procedures

Recover Remote Loadsource

1. Have you exchanged the loadsource disk unit that is attached to the MFIOP?

Yes No

↓ Exchange the failing disk unit (see "Chapter 6. Removal and Installation Procedures" on page 793).

2. Perform an alternate IPL to dedicated service tool (DST) (Type D IPL) (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

The Install Licensed Internal Code display appears on the system console.

3. Select the *Install Licensed Internal Code* option (see "Install Licensed Internal Code Utility" in the *AS/400 Service Functions* information).

When the install is complete, the system automatically performs an IPL from disk. The Disk Configuration Attention Report displays. Press F3 to exit to Dedicated Service Tools (DST). **Do not select F10 from the Disk Configuration Attention Report display when you are performing this Recover Remote Loadsource procedure.**

Note: At this time, the loadsource disk is the only configured disk unit in the system. The following steps ensure that the destruction of customer data and programs will not occur.

4. Did you get a Disk Configuration Error Report with a "Unit has incorrect logical partition configuration" warning?

No Yes

↓ You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:

- a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.
- b. Enter the password 22222222.

Note: If this password is not valid, ask the customer for the correct password.

- c. Select the Work with system partitions option on the Use Dedicated Service Tools (DST) display.
- d. Select the Recover configuration data option on the Work with System Partitions display.

- e. Select the Recover primary partition configuration data on the Recover Configuration Data display.
- f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter.
- g. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL. The Disk Configuration Attention Report displays. Press F3 to exit to Dedicated Service Tools (DST). Do not select F10 from the Disk Configuration Attention Report display when you are performing this Recover Remote Loadsource procedure.

Note: At this time, the loadsource disk is the only configured disk unit in the system. The following steps ensure that the destruction of customer data and programs will not occur.

Continue with the next step of this procedure.

5. Select the *Start the Dedicated Service Tools* option.
6. Sign on to DST.

Use 22222222 as both the user ID and password. If the customer has changed the ID or password, ask the customer for the correct values.

7. Select the *Work with disk units* option.
8. Select the *Work with disk unit recovery* option.
9. Select the *Recover Mirrored Loadsource* option.

This function, checks the disk units that are attached to the system. If remote mirroring became enabled and a mirror protected, loadsource disk unit is located, a confirmation display appears. If a mirror protected, loadsource disk unit is not located, an error display appears.

10. After the confirmation display appears, press F10 to confirm the selection and begin the recover function.

While the Recover Remote Loadsource function is running, SRC C6xx 4205 (xx represents the percentage of recovery completed) displays on the system control panel.

When the Recover Remote Loadsource function completes. The system automatically performs an IPL from disk to the IPL or Install the System display. All of the system data, user data, and user ASPs are now available to the system.

This ends the procedure.

Copy the Contents of LIC Log

Attention: The file does not close until you select the *End Licensed Internal Code* option. If you remove the tape or diskette before selecting this option, do not use the information that is on the tape or diskette.

1. Select the *Start a Service Tool* option on the Use Dedicated Service Tools (DST) display.
2. Select the *Licensed Internal Code log* option.
3. Select either:
 - Dump entries to tape from the LIC log
 - Dump entries to diskette from the LIC log
4. Perform the following:

Recovery Procedures

- a. At the bottom of the Dump entries to tape (or diskette) from LIC log display, type a 3 (Dump entry header and complete entry).
- b. Press the Enter key.
5. The system will prompt you through the remainder of the displays that are used in this procedure.

When the copy of the LIC log contents finishes, a message appears indicating that the dump (copy) completed.

- a. Press the Enter key.
- b. Select the *End Licensed Internal Code* option.

Note: Remember that the file does not close until you select the *End Licensed Internal Code* option.

This ends the procedure.

Chapter 8. Parts Listing

How To Use This Parts Listing	909	Assembly 12: All Models Control Panel Assembly	946
Assemblies Models 640, 730 and S30	910	Assemblies - FC 9251 Base I/O and Expansion	
Assembly 1: Models 640, 730 and S30 Covers.	912	Towers	948
Assembly 2: Model 640, 730 and S30 Final		Assembly 13: Cover Assemblies for FC 5065 and	
Assembly - Front	916	FC 5066 Expansion Towers	950
Assembly 3: Model 640, 730 and S30 Final		Assembly 14: Final Assemblies for FC 5065	
Assembly - Rear	922	expansion tower	954
Assembly 4: Models 640, 730 and S30 CEC		Assembly 15: Cover Assemblies - 9251 Base I/O,	
Cage/Backplane Assembly	926	507x & 508x Expansion Units	966
Assembly 5: Models 640, 730 and S30 SPD/DASD		Assembly 16: Final Assembly - 9251 Base I/O, 507x	
Cage Assembly.	928	& 508x Expansion Towers	968
Assembly 6: Models 640, 730, and S30 Storage		Assembly 17: Storage Expansion Unit Assembly	972
Expansion Unit (FC 5055)	930	Assembly 18: 9251 and 507x, 508x Expansion	
Assemblies Models 650, 740, S40, and SB1.	931	Tower(s) Control Panel	974
Assembly 7: Models 650, 740, S40, and SB1 Covers	932	Assembly 19: Disk Unit Assemblies	976
Assembly 8: Models 650, 740, S40, and SB1 Final		Assembly 20: File Server Book Assembly Type 6506	978
Assembly - Front	934	Assembly 21: File Server Book Assembly Type 6616	980
Assembly 9: Models 650, 740, S40, and SB1 Final		Assembly 22: File Server Book Assembly Type 6617	982
Assembly - Rear	938	Assembly 23: Internal Cable Assemblies	984
Assembly 10: Models 650, 740, S40, and SB1 Front		Assembly 24: External Cable Assemblies	986
Cage/Backplane Assembly	942	Assembly 25: Miscellaneous	990
Assemblies Common to All Models	943	Power Cord Part Numbers and Receptacle	
Assembly 11: All Models Power Subframe		Descriptions.	992
Assembly.	944		

How To Use This Parts Listing

- **SIMILAR ASSEMBLIES:** If two assemblies contain a majority of identical parts, they are broken down on the same list. Common parts are shown by one index number. Parts peculiar to one or the other of the assemblies are listed separately and identified by description.
- **AR:** (As Required) in the *Units* column indicates that the quantity is not the same for all machines.
- **NP:** (Non-Procurable) in the *Units* column indicates that the part is non-procurable and that the individual parts or the next higher assembly should be ordered.
- **NR:** (Not Recommended) in the *Units* column indicates that the part is procurable but not recommended for field replacement and that the next higher assembly should be ordered.
- **R:** (Restricted) in the *Units* column indicates that the part has a restricted availability.
- **INDENTURE:** The indenture is marked by a series of dots preceding the parts description. The indenture indicates the relationship of a part to the next higher assembly. For example:

Indenture
Relationship of Parts

(No dot)
MAIN ASSEMBLY

(One dot)
• Detail parts of a main assembly

(One dot)
• Sub assembly of the main assembly

(Two dot)
• • Detail part of a one-dot sub assembly

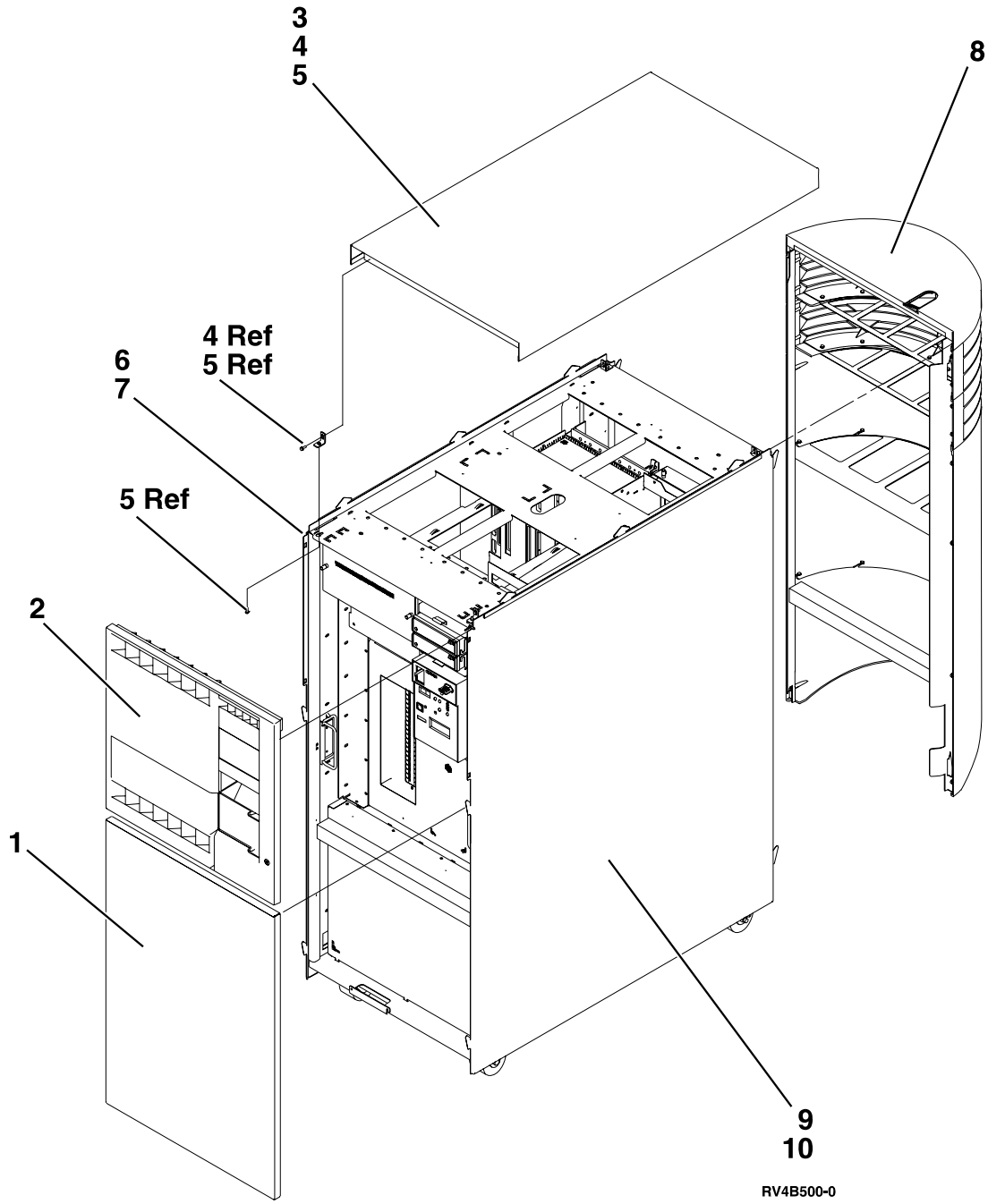
(Two dot)
• • Sub assembly of a one-dot sub assembly

(Three dot)
• • • Detail part of a two-dot sub assembly

Asm-Index	Part Number	Units	Description
3-	2512667	1 1	Cover Asm, Rear, Red Cover Asm, Rear, White For next higher asm, see assembly 1-2
-1	5373637	1	• Seal, Top
-2	5356429	2	• Clip, Retaining
-3	1847630	1	• Finger Stock Asm
-4	1847602	NR	• • Channel, Finger Stock
-5	5373639	AR	• Seal, Bottom
-6	5356429	2	• Clip, Retaining
-7		NP	• Cover, Rear, Without Paint
-8	0416629	R	• Screw, Panel

Assemblies Models 640, 730 and S30

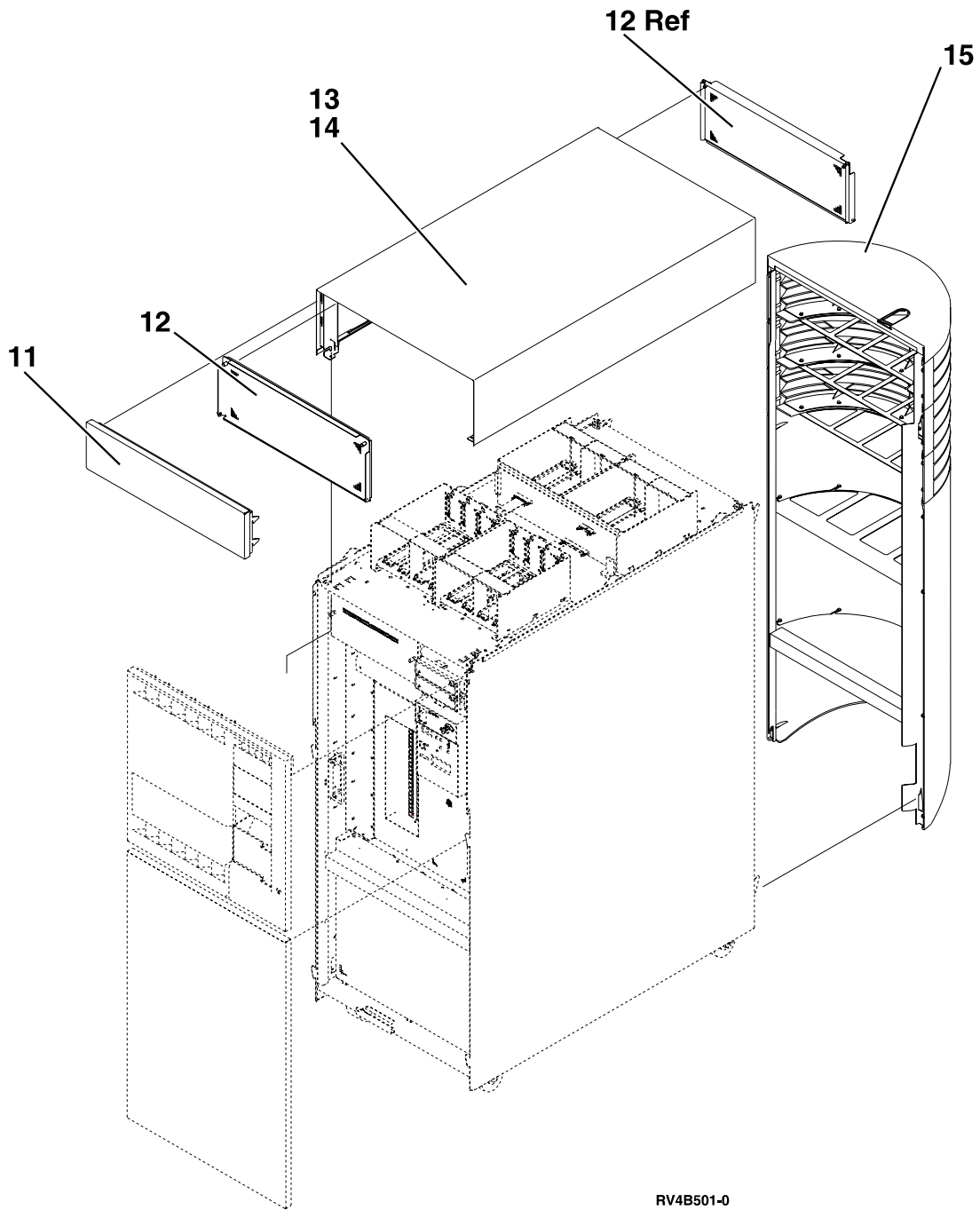
Assembly 1: Models 640, 730 and S30 Covers



Assembly 1: (continued)

Asm- Index	Part Number	Units	Description
1-1	21H7209	1	• Cover, Front Lower
-2	21H7217	1	• Cover, Front Upper (model 640)
-2	90H6582	1	• Cover, Front Upper (model S30)
-2	97H7767	1	• Cover, Front Upper (model 730)
-3	21H7210	1	• Cover, Top
-4	21H7220	4	• Bracket, Cover Mount
-5	1621811	8	• Screw, M4 (10mm)
-6	21H7213	1	• Cover, Left Side
-7	1621811	12	• Screw, M4 (10mm)
-8	21H7569	1	• Cover, Rear (model 640)
-8	90H6295	1	• Cover, Rear (models 730, S30)
-9	21H7212	1	• Cover, Right Side
-10	1621811	12	• Screw, M4 (10mm)

Assembly 1: (continued)

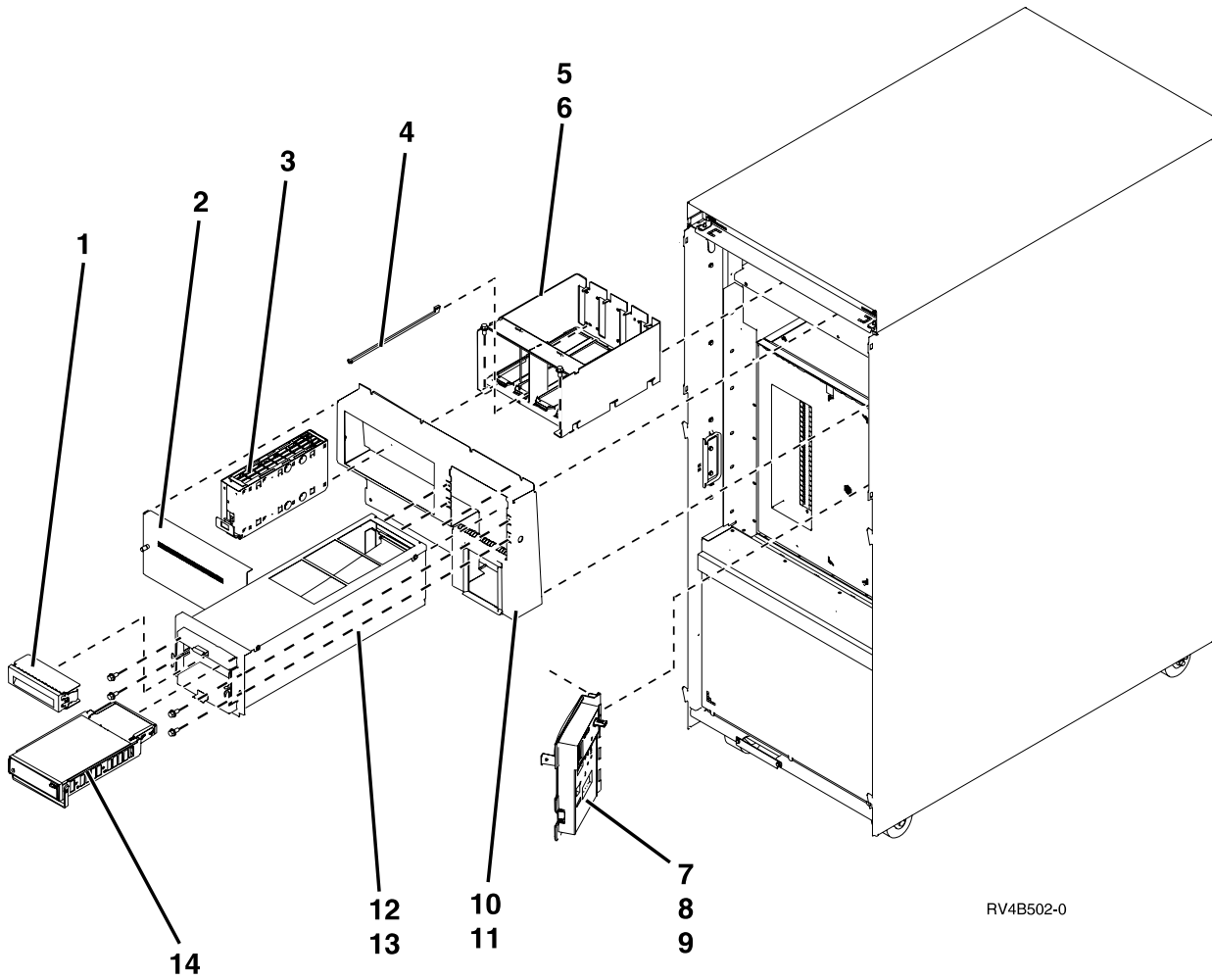


RV4B501-0

Assembly 1: (continued)

Asm- Index	Part Number	Units	Description
1-11	21H7208	1	• Cover, Upper Front (FC 5055)
-12	21H7523	1	• EMC access plate
-13	21H7211	1	• Cover, Top (FC 5055 Only)
-14	1621811	4	• Screw, M4 (10mm)
-15	21H7572	1	• Cover, Rear (model 640 with FC 5055)
-15	90H6304	1	• Cover, Rear (models 730, S30 with FC 5055)

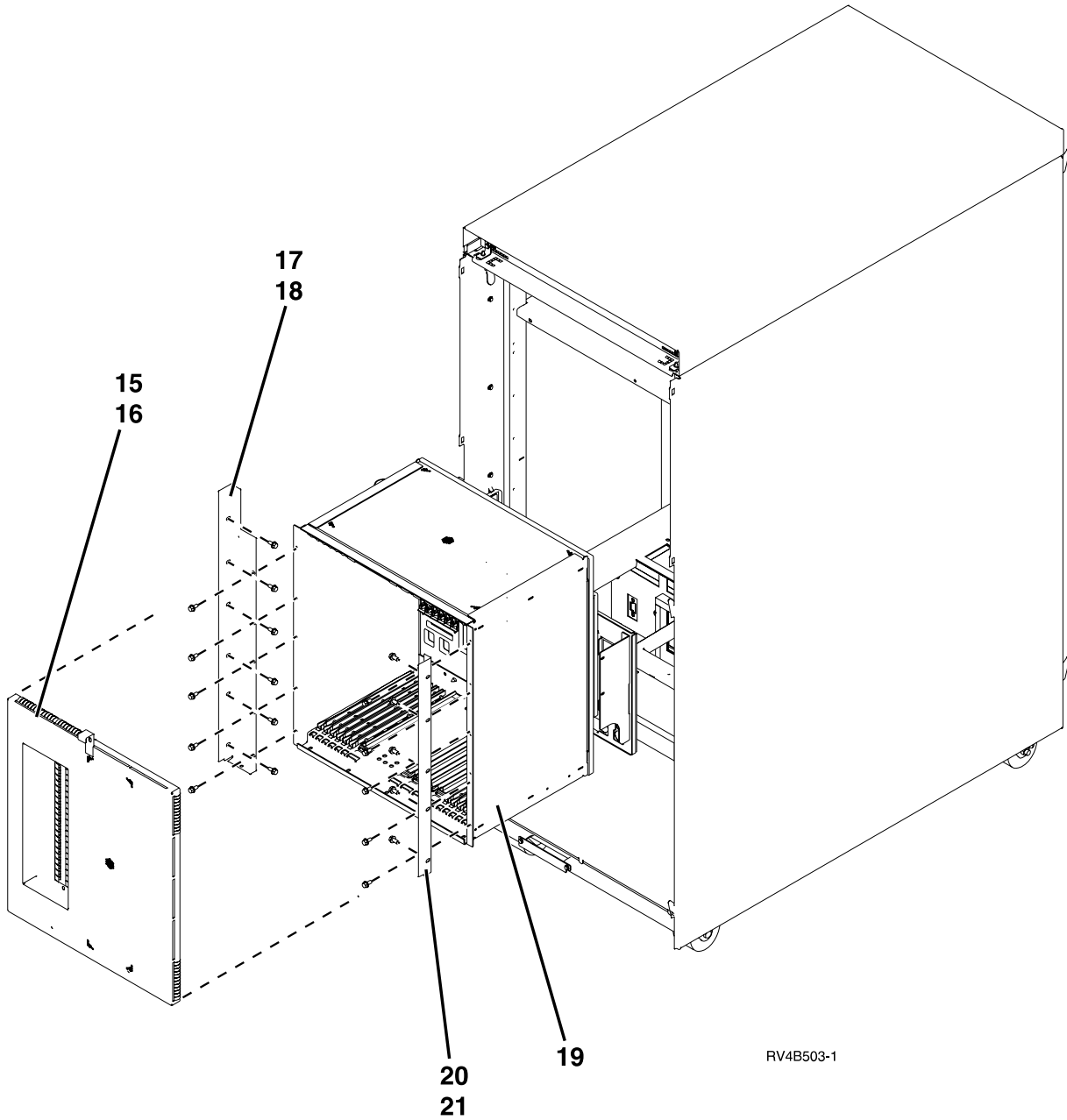
Assembly 2: Model 640, 730 and S30 Final Assembly - Front



Assembly 2: (continued)

Asm- Index	Part Number	Units	Description
2-1	NONUM	AR	• Filler Asm
-2	21H7515	1	• EMC access plate, Load Source DASD
-3	NONUM	AR	• Disk Unit Asm (see "Disk Unit Type, Model, and Part Number List" on page 370)
-3	46G3529	AR	• Disk Unit Filler Asm
-4	21H7480	1	• Light Pipe
-5	21H7308	1	• L/S Disk UnitCage
-6	1621811	2	• Screw, M4 (10mm)
-7	NONUM	1	• Control Panel Asm (see "Assembly 12: All Models Control Panel Assembly" on page 946)
-8	1621811	2	• Screw, M4 (10mm)
-9	21H7340	1	• Control Panel Overlay (see "Assembly 12: All Models Control Panel Assembly" on page 946)
-10	21H7476	1	• Top Front EMC access plate
-11	1621811	8	• Screw, M4 (10mm)
-12	21H7303	1	• Removeable Media Shelf/Cable Asm
-13	1621811	4	• Screw, M4 (10mm)
-14	NONUM	AR	• Optical Storage Unit (see "Type, Model, and Part Number List" on page 362)
-14	NONUM	AR	• Tape (see "Type, Model, and Part Number List" on page 362)

Assembly 2: (continued)

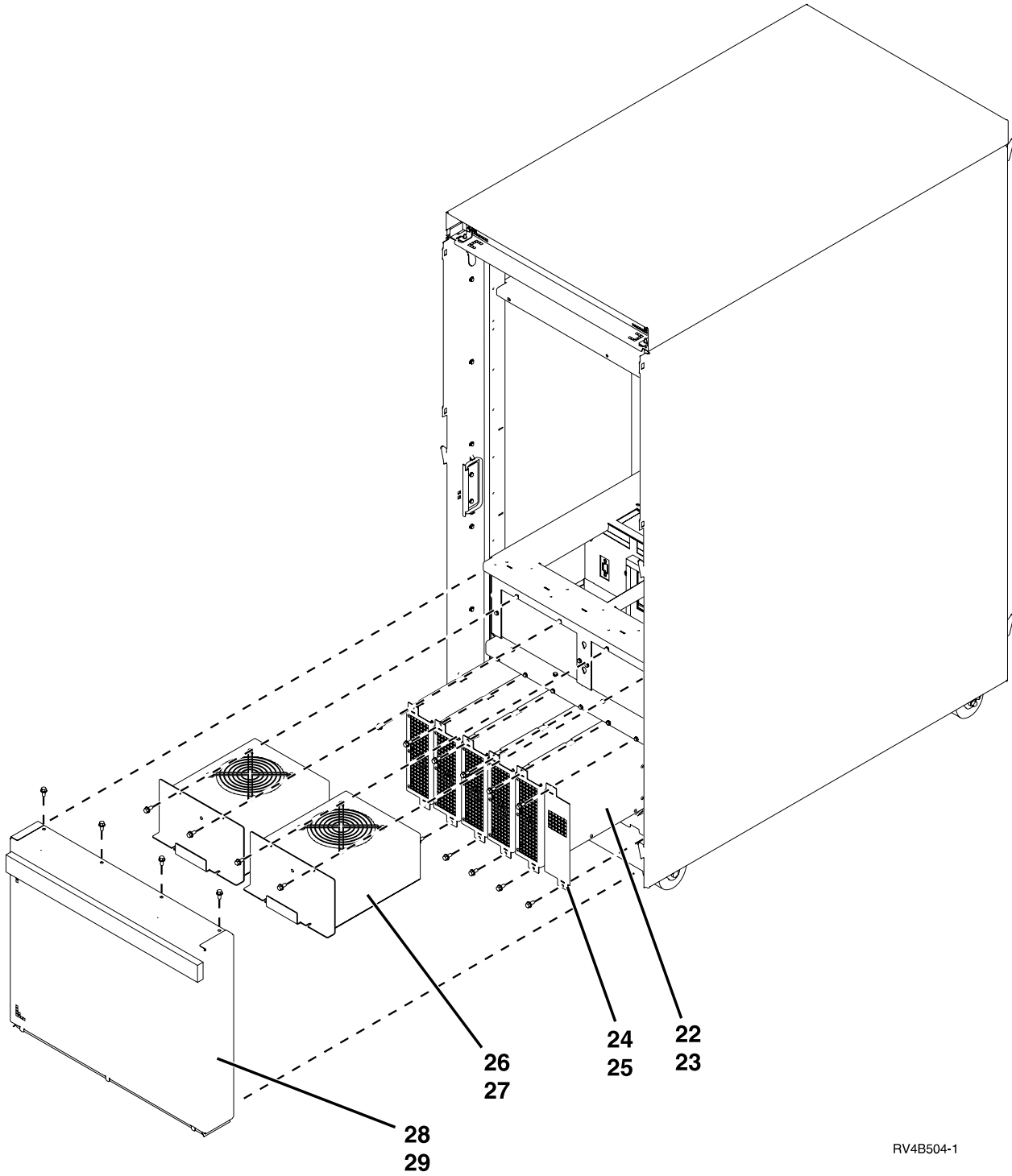


RV4B503-1

Assembly 2: (continued)

Asm- Index	Part Number	Units	Description
2-15	21H7495	1	• EMC access plate, Front Cage
-16	1621811	10	• Screw, M4 (10mm)
-17	21H7502	1	• Bracket, Cage - Left
-18	1621811	11	• Screw, M4 (10mm)
-19	NONUM	1	• CEC Cage/Backplane ASM (see "Assembly 4: Models 640, 730 and S30 CEC Cage/Backplane Assembly" on page 926)
-20	21H7501	1	• Bracket, Cage - Right
-21	1621811	10	• Screw, M4 (10mm)

Assembly 2: (continued)

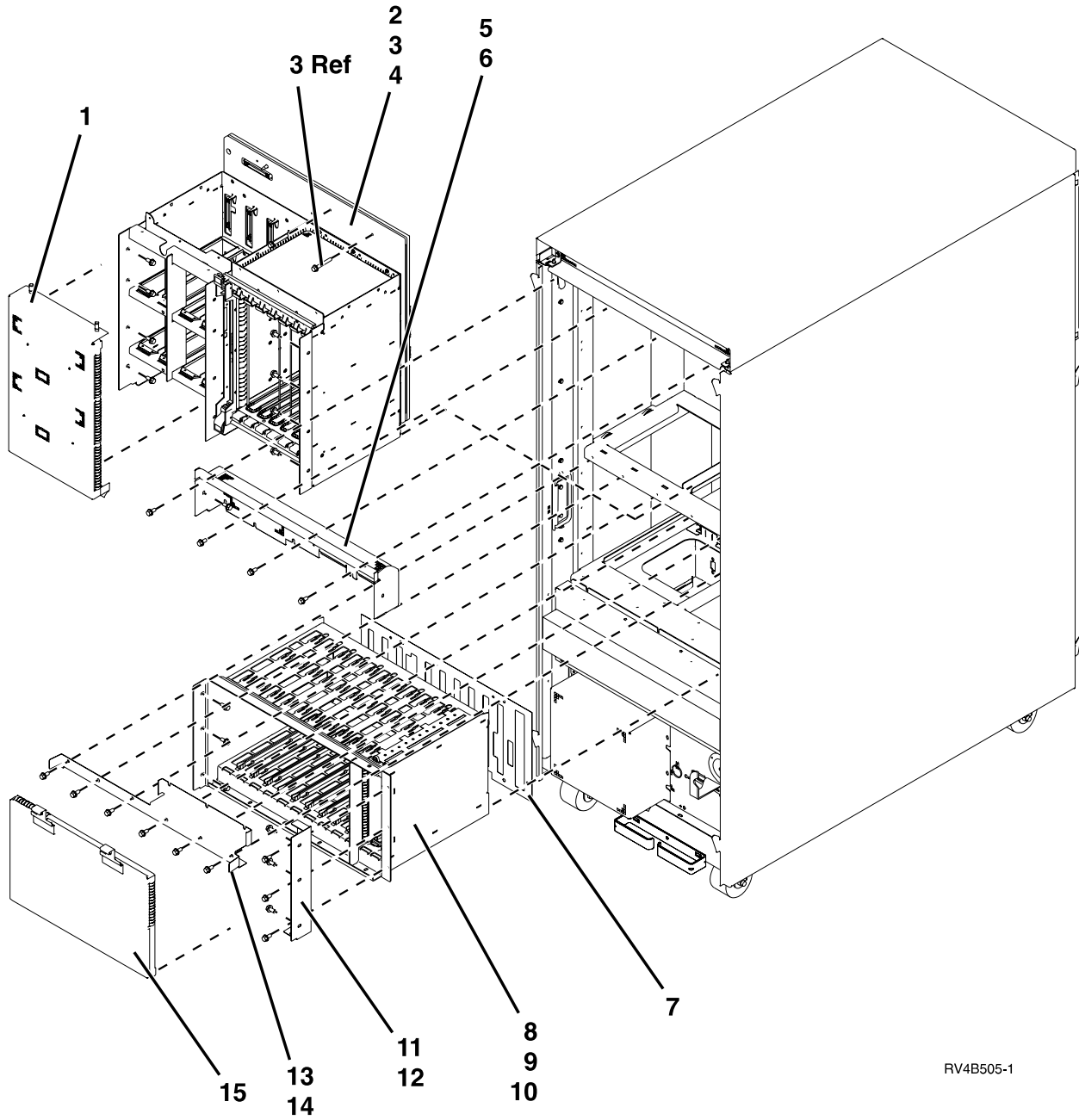


RV4B504-1

Assembly 2: (continued)

Asm- Index	Part Number	Units	Description
2-22	21H7030	6	• Bulk Power
-23	1621811	8	• Screw, M4 (10mm)
-24	86G7684	2	• Filler
-25	1621811	4	• Screw, M4 (10mm)
-26	21H6959	2	• AMD Asm (AMD 1 and AMD 2)
-27	1621811	4	• Screw, M4 (10mm)
-28	21H7516	1	• EMC access plate, Bulk Power
-29	1621811	10	• Screw, M4 (10mm)

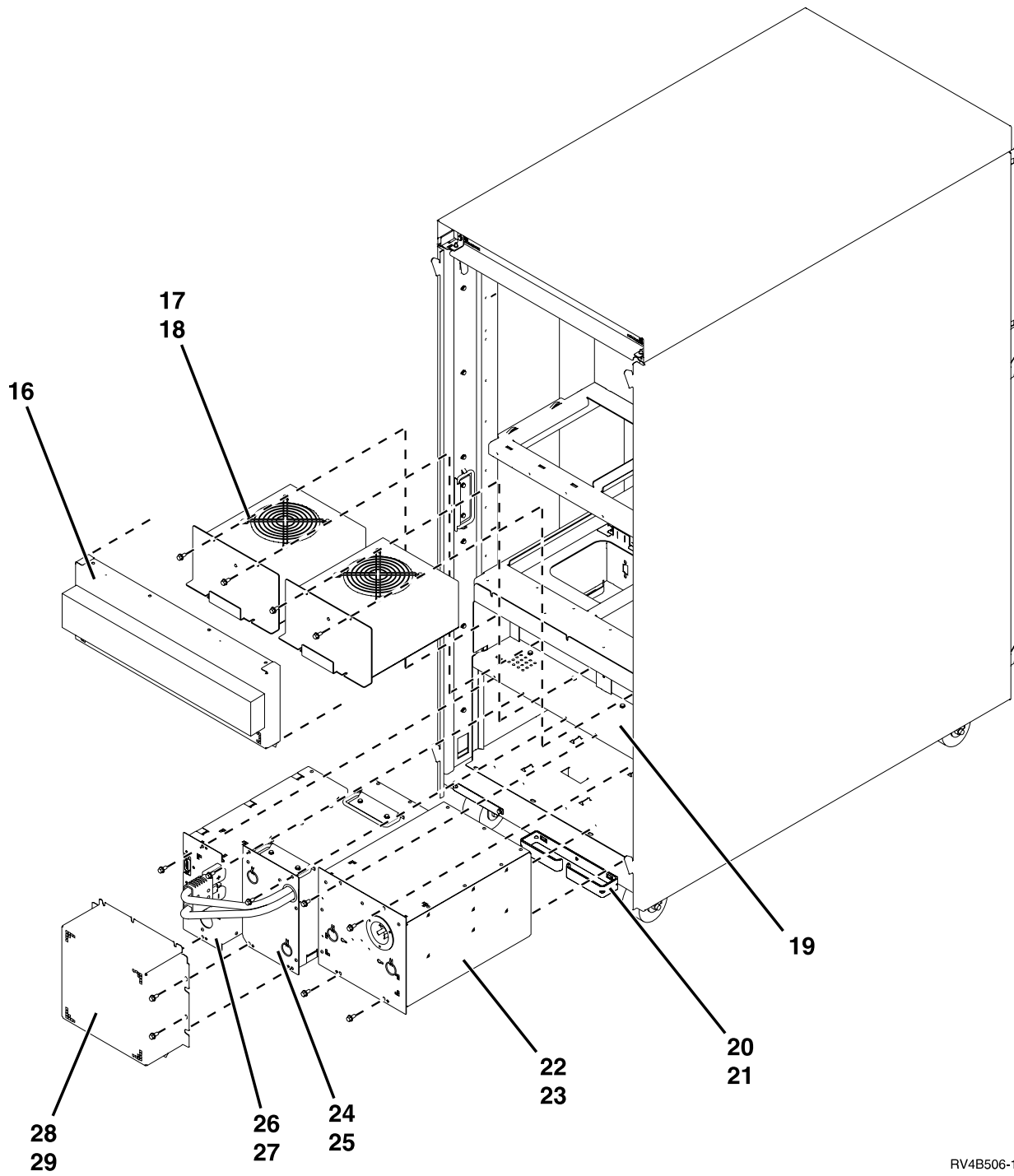
Assembly 3: Model 640, 730 and S30 Final Assembly - Rear



Assembly 3: (continued)

Asm- Index	Part Number	Units	Description
3-1	21H7477	1	• EMC access plate, DASD
-2	NONUM	1	• SPD/DASD Cage Asm (see "Assembly 5: Models 640, 730 and S30 SPD/DASD Cage Assembly" on page 928)
-3	1621817	2	• Screw
-4	1621811	8	• Screw, M4 (10mm)
-5	21H7478	1	• Filler
-6	16G1812	8	• Screw, M4 (8mm)
-7	21H7550	1	• Insulator
-8	21H7402	1	• CEC/REG Cage Asm
-9	1621814	5	• Screw
-10	1621811	7	• Screw, M4 (10mm)
-11	21H7599	1	• Bracket, Right (Cage Retaining)
-12	1621811	6	• Screw, M4 (10mm)
-13	21H7600	1	• Bracket, Top (Cage Retaining)
-14	1621811	6	• Screw, M4 (10mm)
-15	21H7605	1	• EMC access plate, CEC Regulator

Assembly 3: (continued)

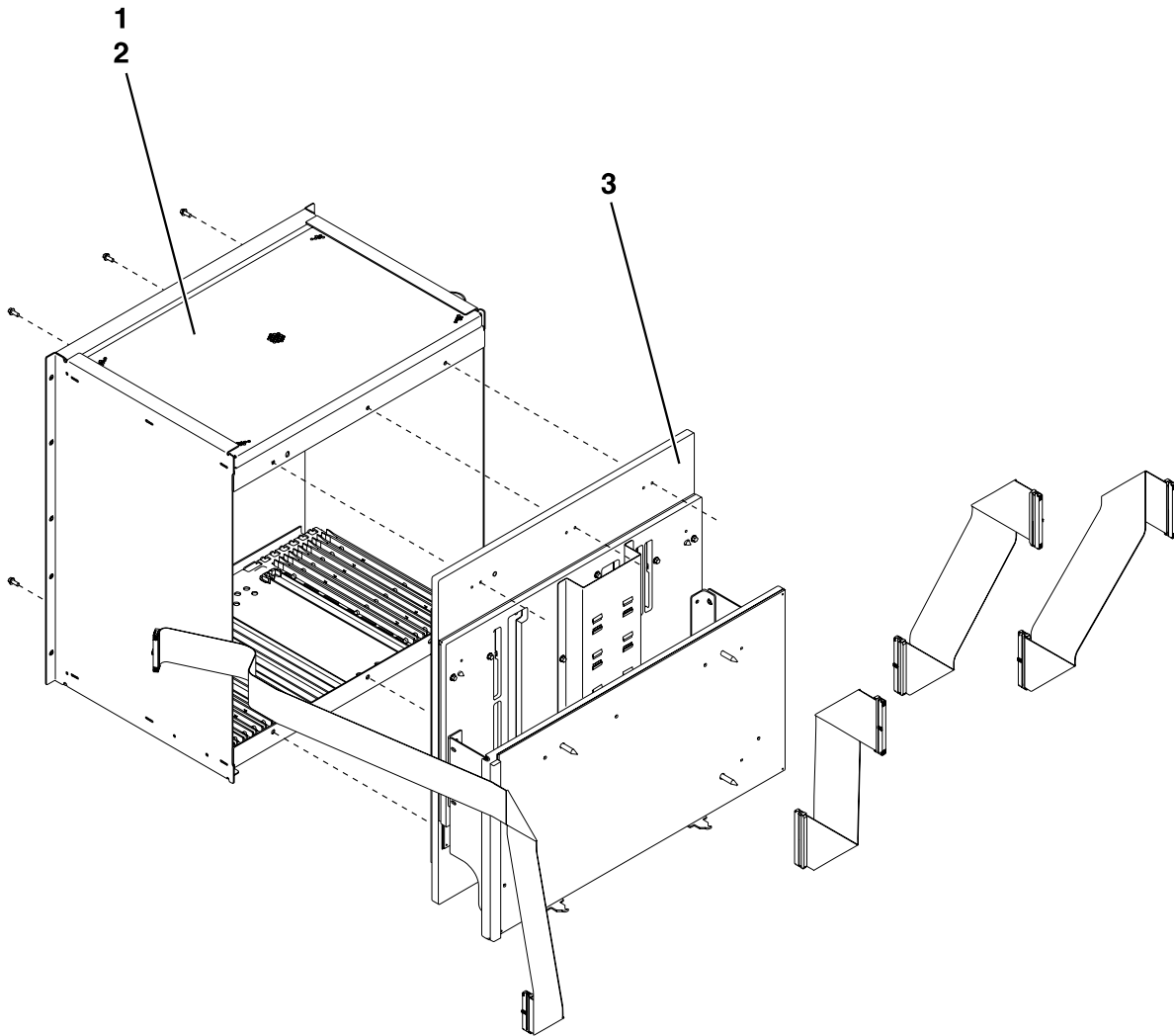


RV4B506-1

Assembly 3: (continued)

Asm- Index	Part Number	Units	Description
3-16	21H7517	1	• EMC access plate, Rear AMD (AMD 3 and AMD4)
-17	21H6959	2	• AMD Asm
-18	1621811	4	• Screw, M4 (10mm)
-19	NONUM	1	• Power Subframe assembly (see "Assembly 11: All Models Power Subframe Assembly" on page 944)
-20	46G3666	1	• Bracket, Cable
-21	1621811	1	• Screw, M4 (10mm)
-22	21H7000	1	• AC Box Asm — Don 1 Phase
-22	21H7261	1	• AC Box Asm — WT 1 Phase
-22	21H7264	1	• AC Box Asm — WT 2 Phase
-23	1621811	4	• Screw, M4 (10mm)
-24	21H7080	1	• Battery Box Asm
-25	1621811	4	• Screw
-26	21H7060	1	• Battery Charger Asm
-27	1621811	2	• Screw, M4 (10mm)
-28	21H7518	1	• EMC access plate, Battery Backup
-29	1621811	6	• Screw, M4 (10mm)

Assembly 4: Models 640, 730 and S30 CEC Cage/Backplane Assembly

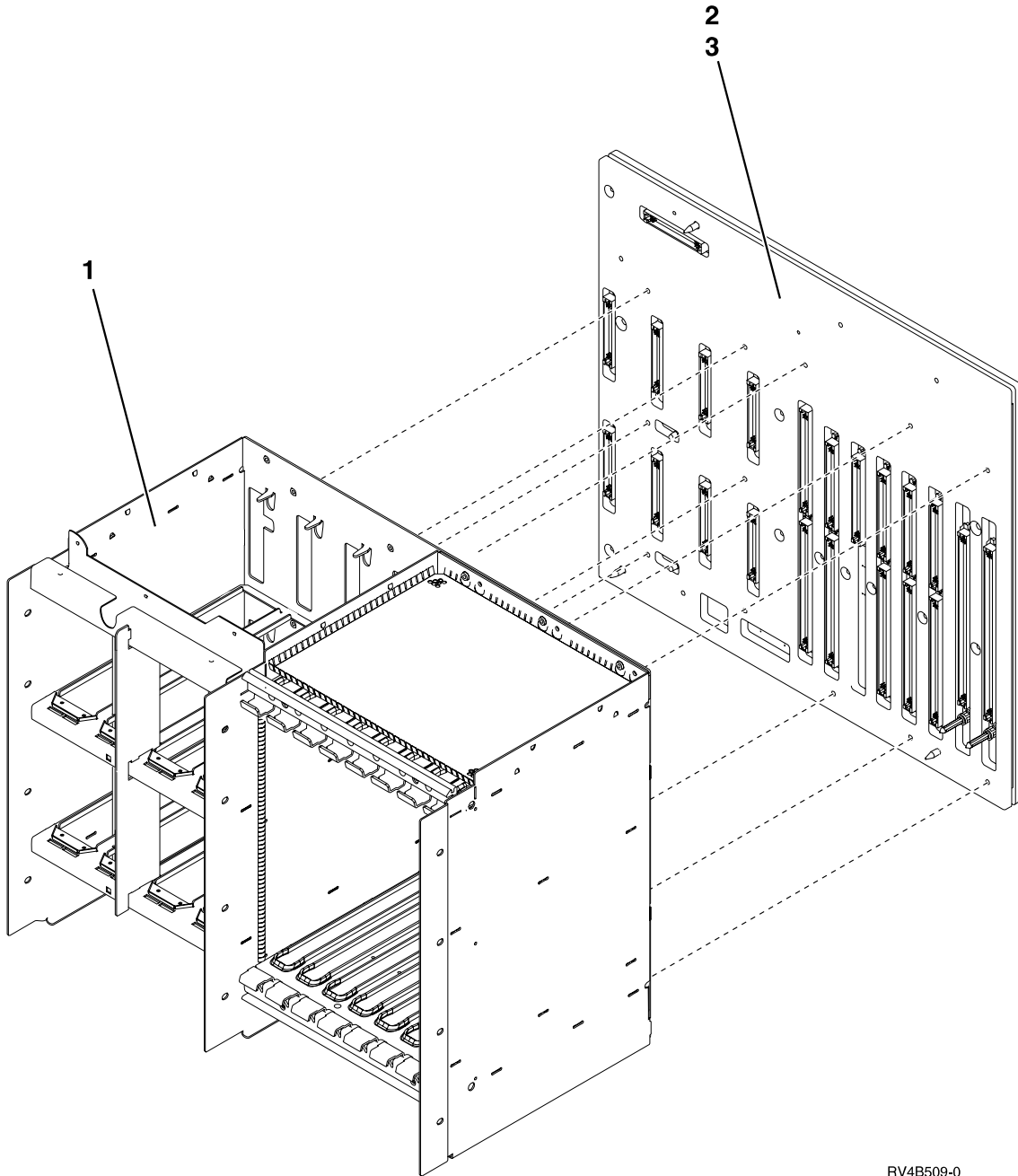


RV4B508-0

Assembly 4: (continued)

Asm- Index	Part Number	Units	Description
4-1	21H7428	1	• Cage Asm
-2	1624766	6	• Screw
-3	90H9437	1	• Backplane Assembly — Model 640 — Model S30 with FC 2257, 2258, 2259, or 2320 — Model 730 with FC 2A6x, 2B6x, 2C6A, or 2C6B
-3	90H9433	1	• Backplane Assembly — Model S30 8-Way — Model 730 with FC 2C6C, 2C6D, 2C6E, 2C6F, or 2D6A
-	NONUM	NP	• Cables For cable information, see “Assembly 23: Internal Cable Assemblies” on page 984.

Assembly 5: Models 640, 730 and S30 SPD/DASD Cage Assembly

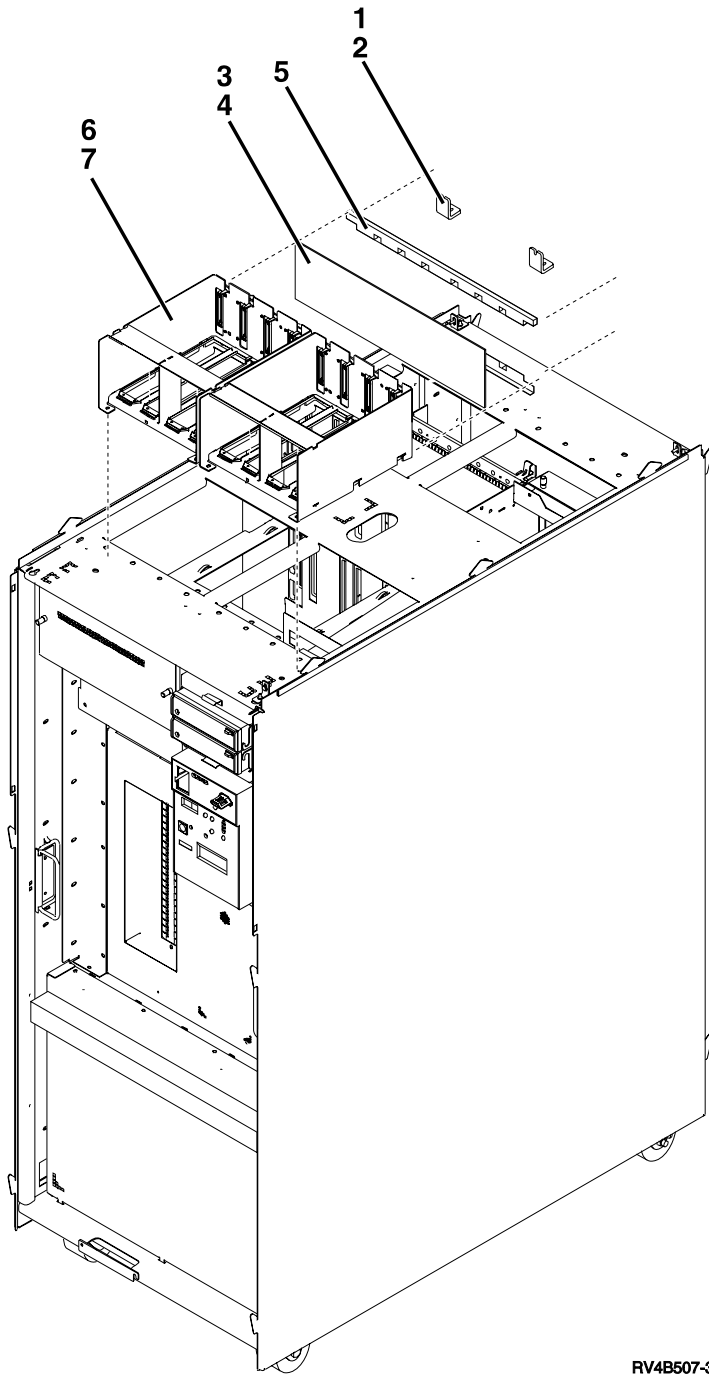


RV4B509-0

Assembly 5: (continued)

Asm- Index	Part Number	Units	Description
5-1	21H7433	1	• SPD/DASD Cage Asm
-2	21H7403	1	• Board/Stiffener Asm
-3	1622680	6	• Screw
-	21H7624	AR	• REM4 SCSI Jumper
-	21H7625	AR	• REM8 SCSI Redrive
-	90H6285	AR	• Terminator

Assembly 6: Models 640, 730, and S30 Storage Expansion Unit (FC 5055)



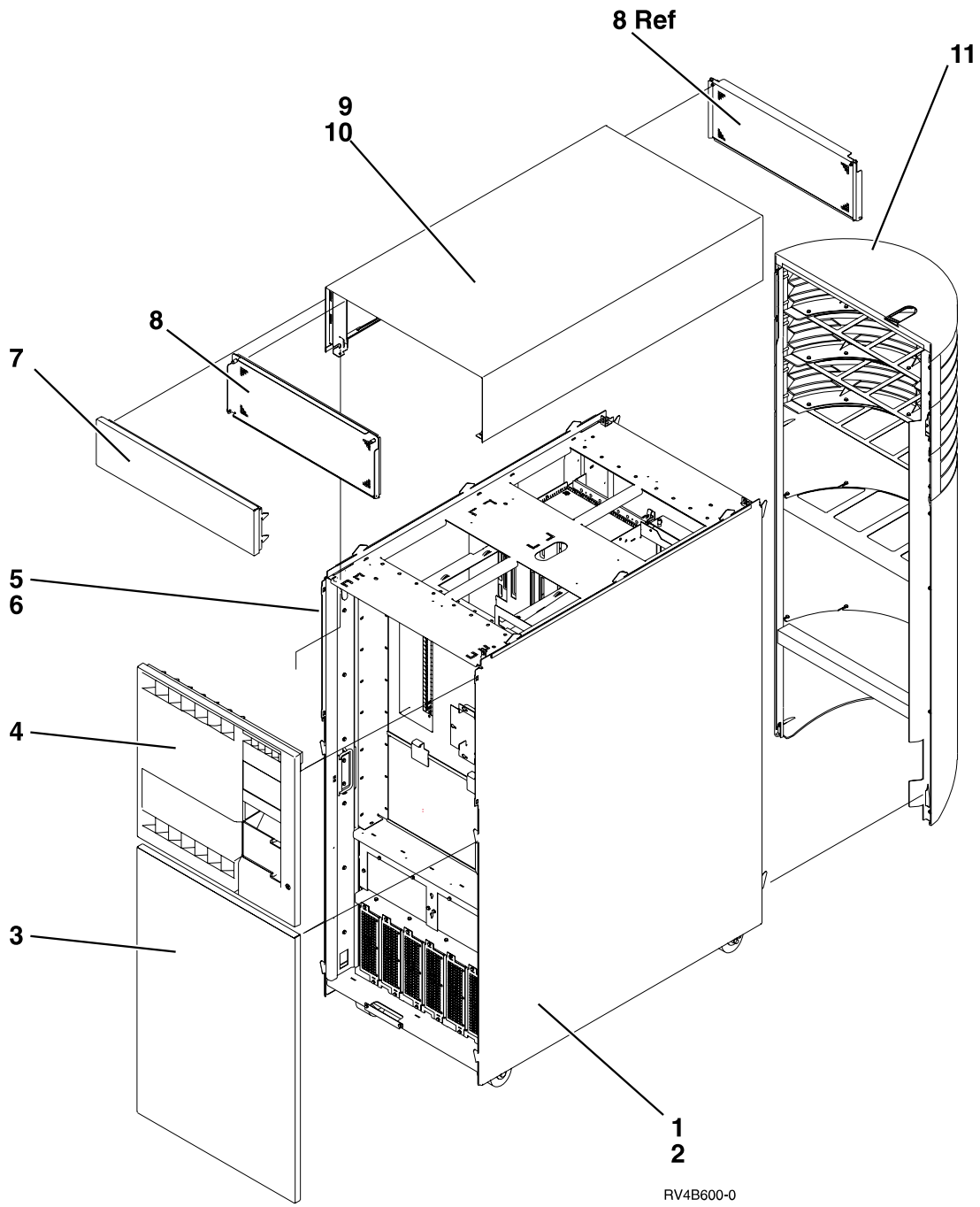
RV4B507-3

Assembly 6: (continued)

Asm- Index	Part Number	Units	Description
6-1	21H7521	2	• Guide Tie Down
-2	1621815	4	• Screw
-3	21H7750	1	• DASD Backplane Asm
-4	1621813	4	• Screw
-5	21H7481	2	• Stiffener
-6	21H7308	2	• DASD Guide Asm
-7	1621811	4	• Screw, M4 (10mm)

Assemblies Models 650, 740, S40, and SB1

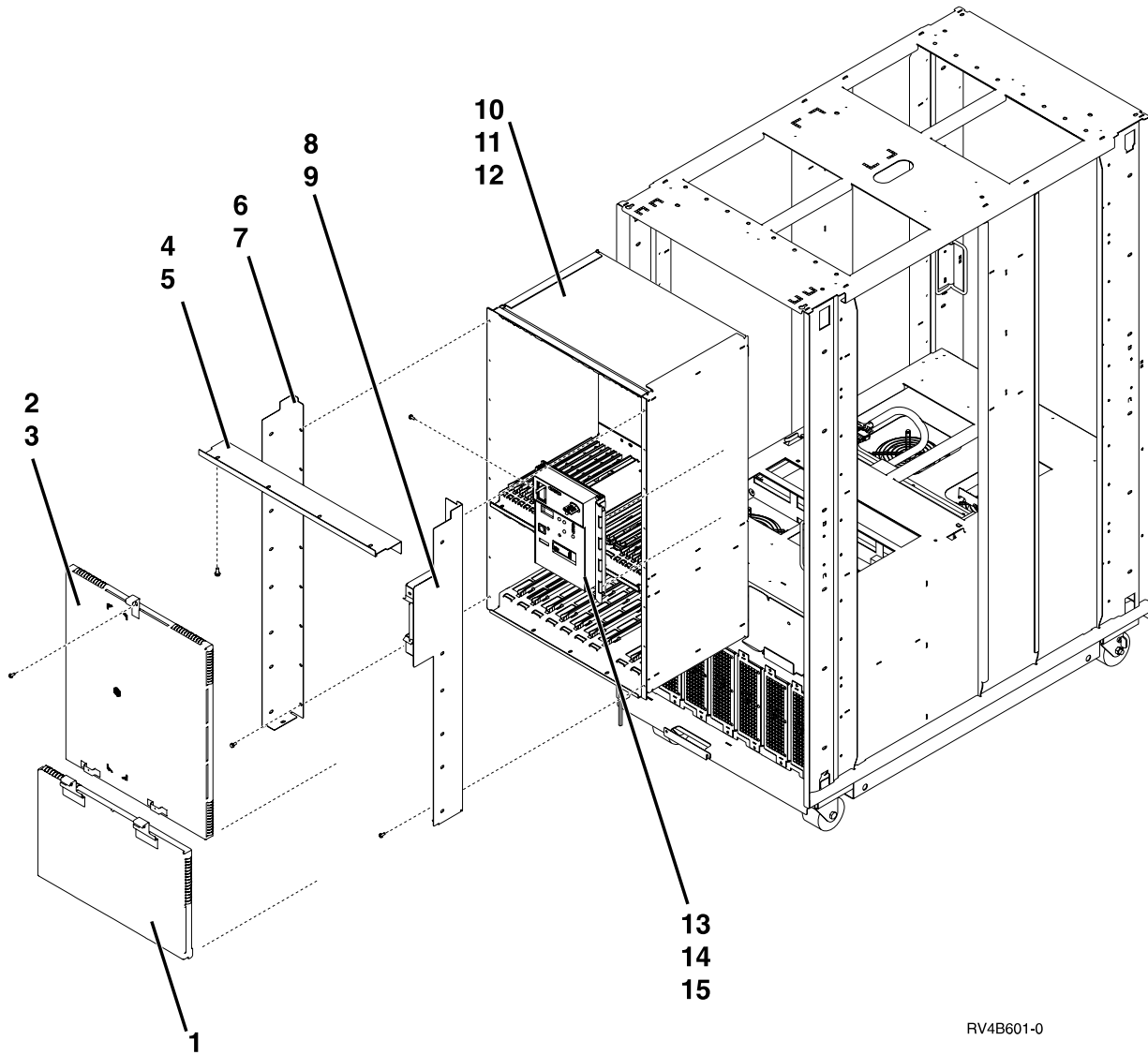
Assembly 7: Models 650, 740, S40, and SB1 Covers



Assembly 7: (continued)

Asm- Index	Part Number	Units	Description
7-1	21H7212	1	• Cover, Right Side
-2	1621811	12	• Screw, M4 (10mm)
-3	21H7209	1	• Cover, Lower Front
-4	21H7217	1	• Cover, Middle Front (model 650)
-4	90H6582	1	• Cover, Middle Front (models S40 and SB1)
-4	97H7767	1	• Cover, Middle Front (model 740)
-5	21H7213	1	• Cover, Left Side
-6	1621811	12	• Screw, M4 (10mm)
-7	21H7208	1	• Cover Upper Front
-8	21H7523	2	• EMC access plate
-9	21H7211	1	• Cover, Top
-10	1621811	4	• Screw, M4 (10mm)
-11	21H7572	1	• Cover, Rear (model 650)
-11	90H6304	1	• Cover, Rear (models 740, S40, and SB1)

Assembly 8: Models 650, 740, S40, and SB1 Final Assembly - Front

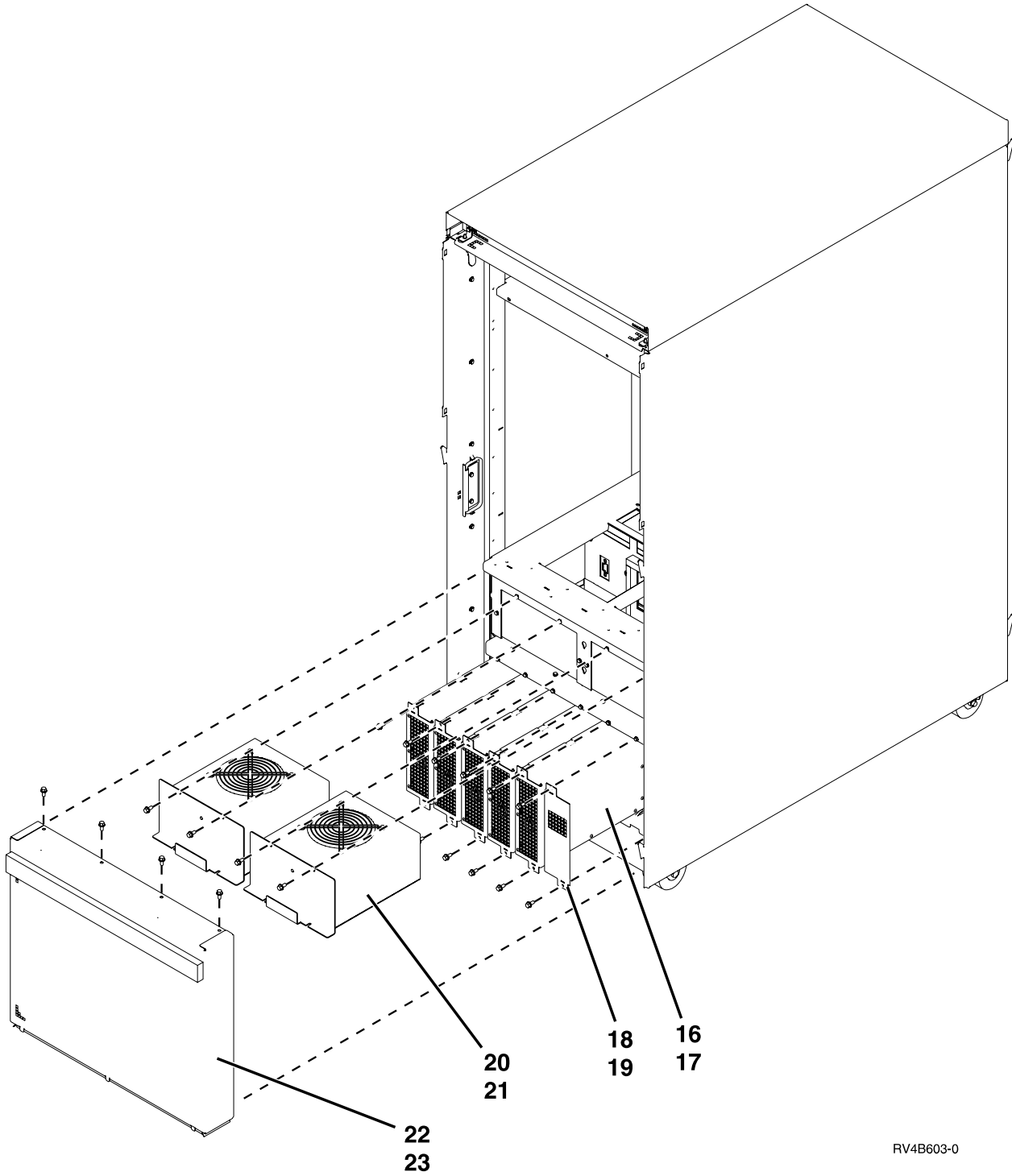


RV4B601-0

Assembly 8: (continued)

Asm- Index	Part Number	Units	Description
8-1	21H7604	1	• EMC access plate, Front Cage
-2	21H7495	1	• EMC access plate, Front Cage
-3	1621811	1	• Screw, M4 (10mm)
-4	21H7507	1	• EMC Bracket, Top
-5	1621811	9	• Screw, M4 (10mm)
-6	21H7509	1	• EMC Bracket, Left
-7	1621811	16	• Screw, M4 (10mm)
-8	21H7508	1	• EMC Bracket, Right
-9	1621811	14	• Screw, M4 (10mm)
-10	NONUM	1	• Front Cage/Backplane Asm (see "Assembly 10: Models 650, 740, S40, and SB1 Front Cage/Backplane Assembly" on page 942)
-11	1624766	6	• Screw
-12	1621811	3	• Screw, M4 (10mm)
-13	NONUM	1	• Control Panel Asm, system unit (see "Assembly 12: All Models Control Panel Assembly" on page 946)
-14	1621811	2	• Screw, M4 (10mm)
-15	NONUM	1	• Control Panel Overlay (see "Assembly 12: All Models Control Panel Assembly" on page 946)

Assembly 8: (continued)

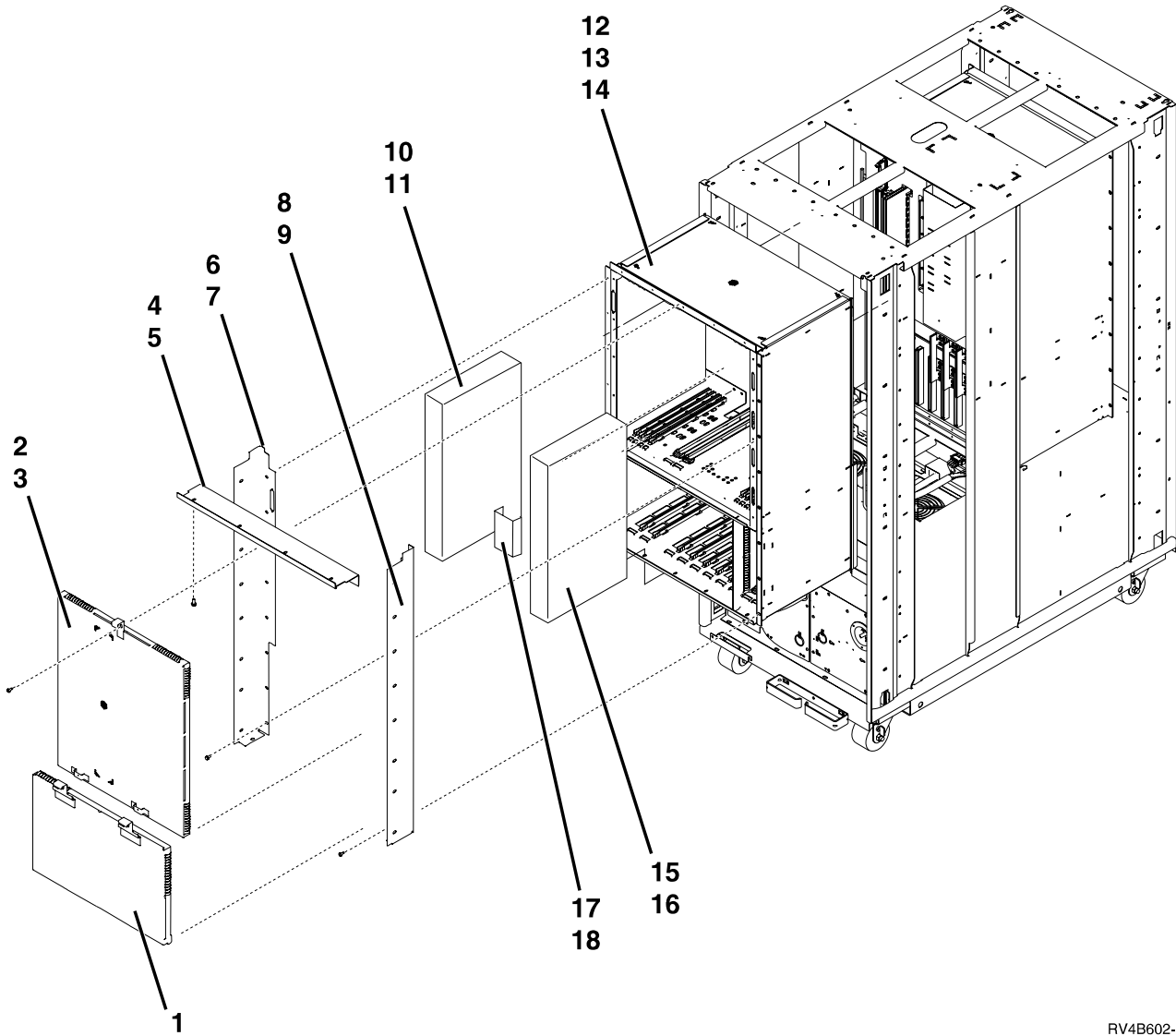


RV4B603-0

Assembly 8: (continued)

Asm- Index	Part Number	Units	Description
8-16	21H7030	6	• Bulk Power
-17	1621811	8	• Screw, M4 (10mm)
-18	86G7684	2	• Filler
-19	1621811	4	• Screw, M4 (10mm)
-20	21H6959	2	• AMD Asm (AMD 1 and AMD 2)
-21	1621811	4	• Screw, M4 (10mm)
-22	21H7516	1	• EMC access plate, Bulk Power
-23	1621811	4	• Screw, M4 (10mm)

Assembly 9: Models 650, 740, S40, and SB1 Final Assembly - Rear

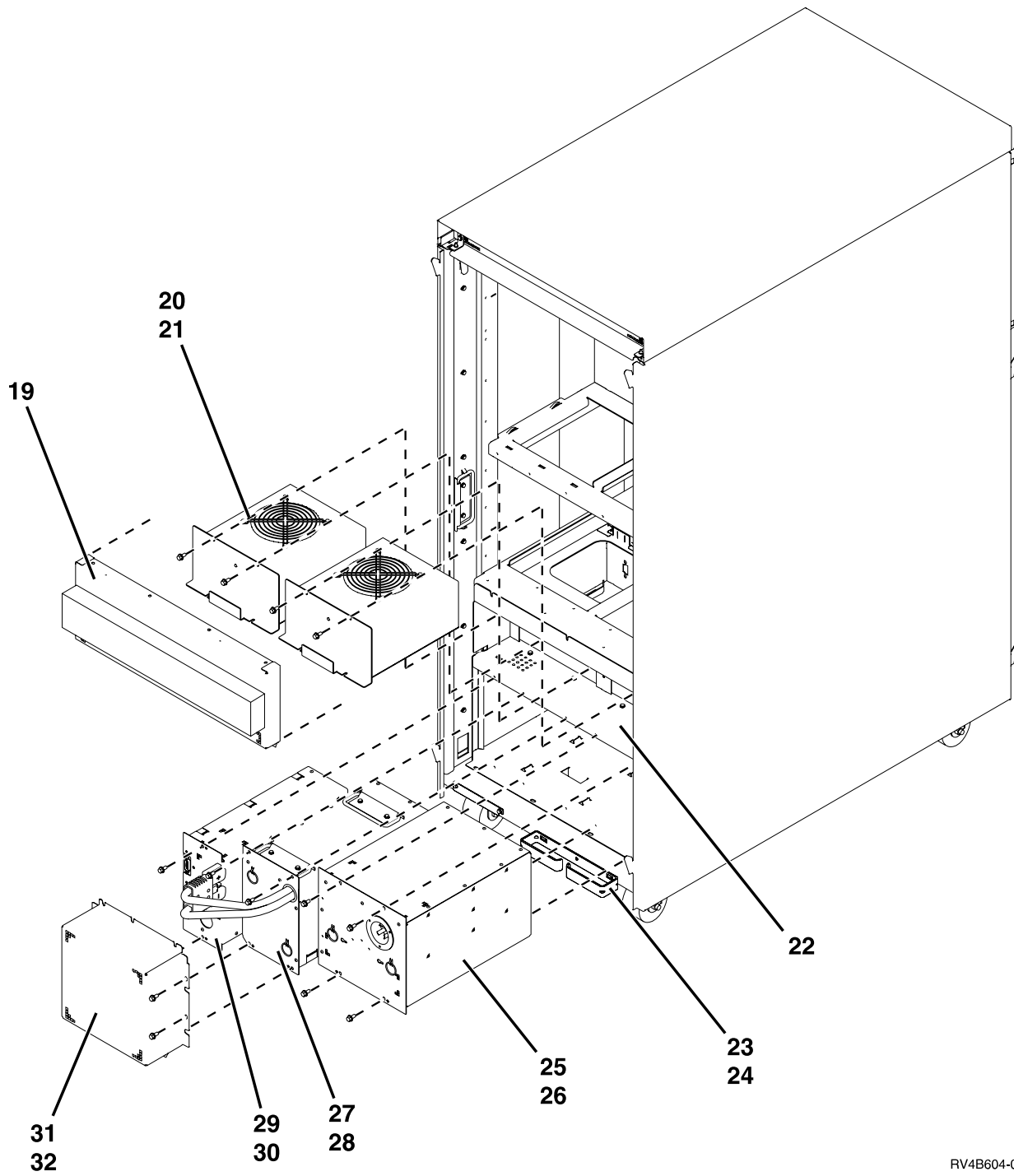


RV4B602-1

Assembly 9: (continued)

Asm- Index	Part Number	Units	Description
9-1	21H7605	1	• EMC access plate
-2	21H7606	1	• EMC access plate
-3	1621811	1	• Screw, M4 (10mm)
-4	21H7510	1	• EMC Bracket, Top
-5	1621811	9	• Screw, M4 (10mm)
-6	21H7512	1	• EMC Bracket, Left
-7	1621811	16	• Screw, M4 (10mm)
-8	21H7511	1	• EMC Bracket, Right
-9	1621811	16	• Screw, M4 (10mm)
-10	21H7639	1	• EMC access plate, Cable
-11	1621811	15	• Screw, M4 (10mm)
-12	21H7420	1	• Cage Asm, Rear
-13	1621811	6	• Screw, M4 (10mm)
-14	1624766	6	• Screw
-15	21H7639	1	• EMC access plate, Cable
-16	1621811	15	• Screw, M4 (10mm)
-17	21H8020	1	• Air Baffle
-18	1621811	1	• Screw, M4 (10mm)

Assembly 9: (continued)

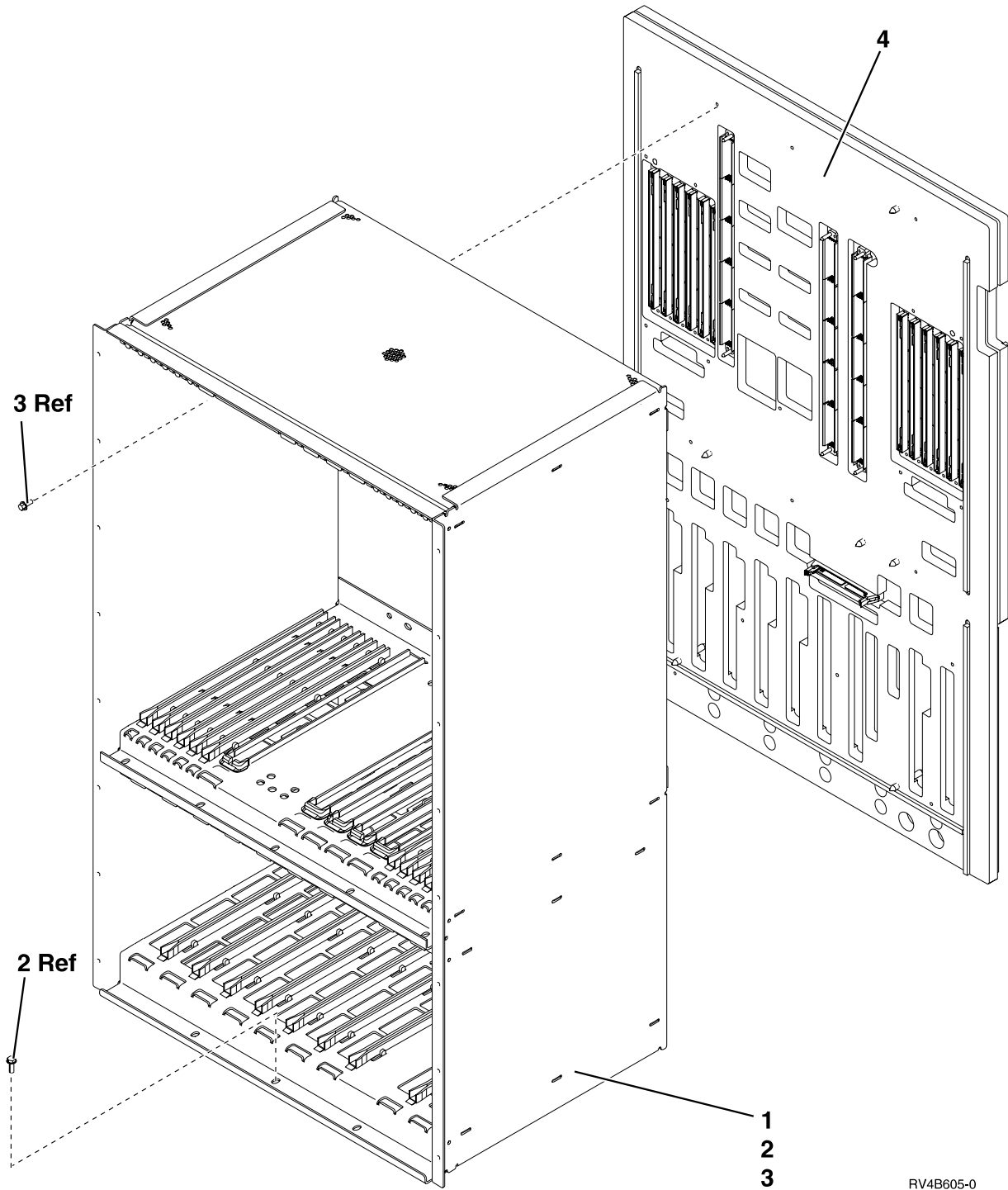


RV4B604-0

Assembly 9: (continued)

Asm- Index	Part Number	Units	Description
9-19	21H7517	1	• EMC access plate, Rear AMD
-20	21H6959	2	• AMD Asm (AMD 3 and AMD 4)
-21	1621811	4	• Screw, M4 (10mm)
-22	NONUM	1	• Power Subframe Asm
-23	46G3666	1	• Bracket, Cable
-24	1621811	1	• Screw
-25	21H7000	1	• AC Box Asm — Don 1 Phase
-26	1621811	4	• Screw, M4 (10mm)
-27	21H7080	1	• Battery Asm
-28	1621811	4	• Screw, M4 (10mm)
-29	21H7060	1	• Battery Charger Asm
-30	1621811	2	• Screw, M4 (10mm)
-31	21H7518	1	• EMC access plate, Battery Backup
-32	1621811	6	• Screw, M4 (10mm)

Assembly 10: Models 650, 740, S40, and SB1 Front Cage/Backplane Assembly

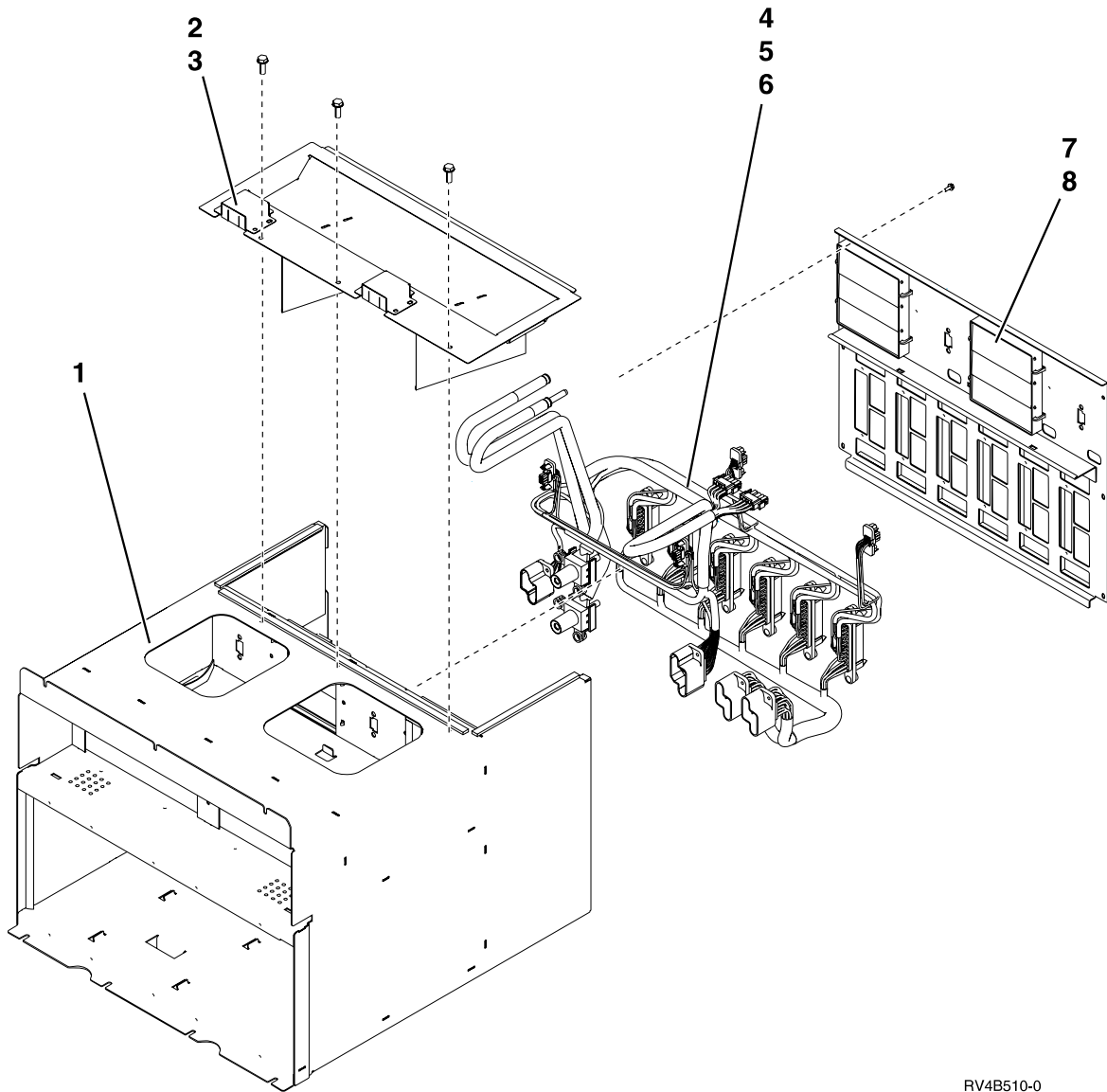


Assembly 10: (continued)

Asm- Index	Part Number	Units	Description
10-	NONUM	1	• Front Cage/Backplane Asm
-1	21H7407	1	• • Front Cage Asm
-2	1624766	6	• • Screw
-3	1621811	3	• • Screw, M4 (10mm)
-4	90H9429	1	• • Model 650, 740, S40, SB1 Backplane Asm

Assemblies Common to All Models

Assembly 11: All Models Power Subframe Assembly

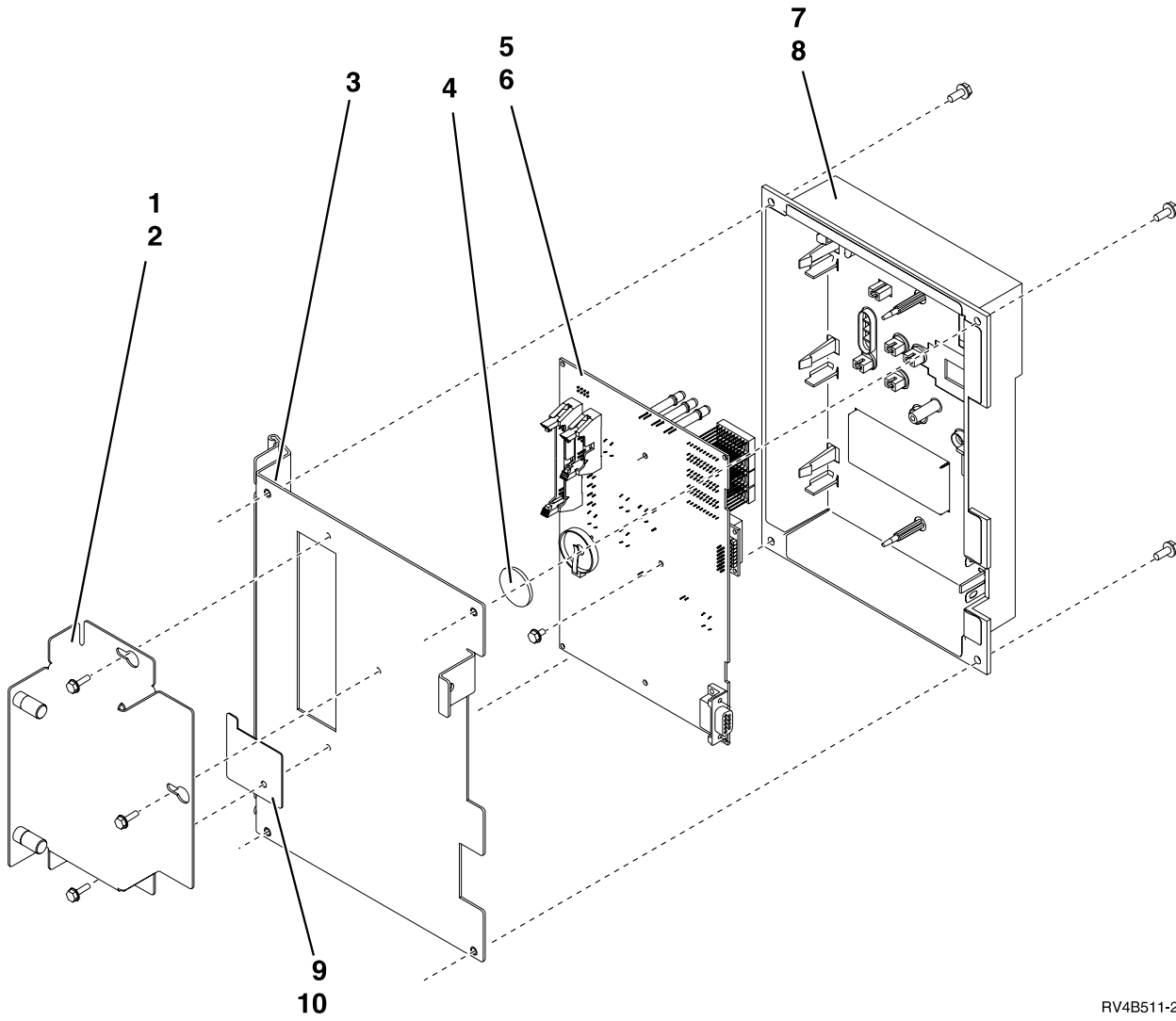


RV4B510-0

Assembly 11: (continued)

Asm- Index	Part Number	Units	Description
11-	90H6360	1	• Power Subframe Assembly
-1	NONUM	1	• • Power Subframe Cage
-2	NONUM	1	• • Cover, Top
-3	NONUM	3	• • Screw
-4	NONUM	1	• • Power Distribution Harness
-5	NONUM	8	• • Screw
-6	NONUM	12	• • Screw
-7	NONUM	1	• • Cover, Back
-8	NONUM	6	• • Screw

Assembly 12: All Models Control Panel Assembly



RV4B511-2

Assembly 12: (continued)

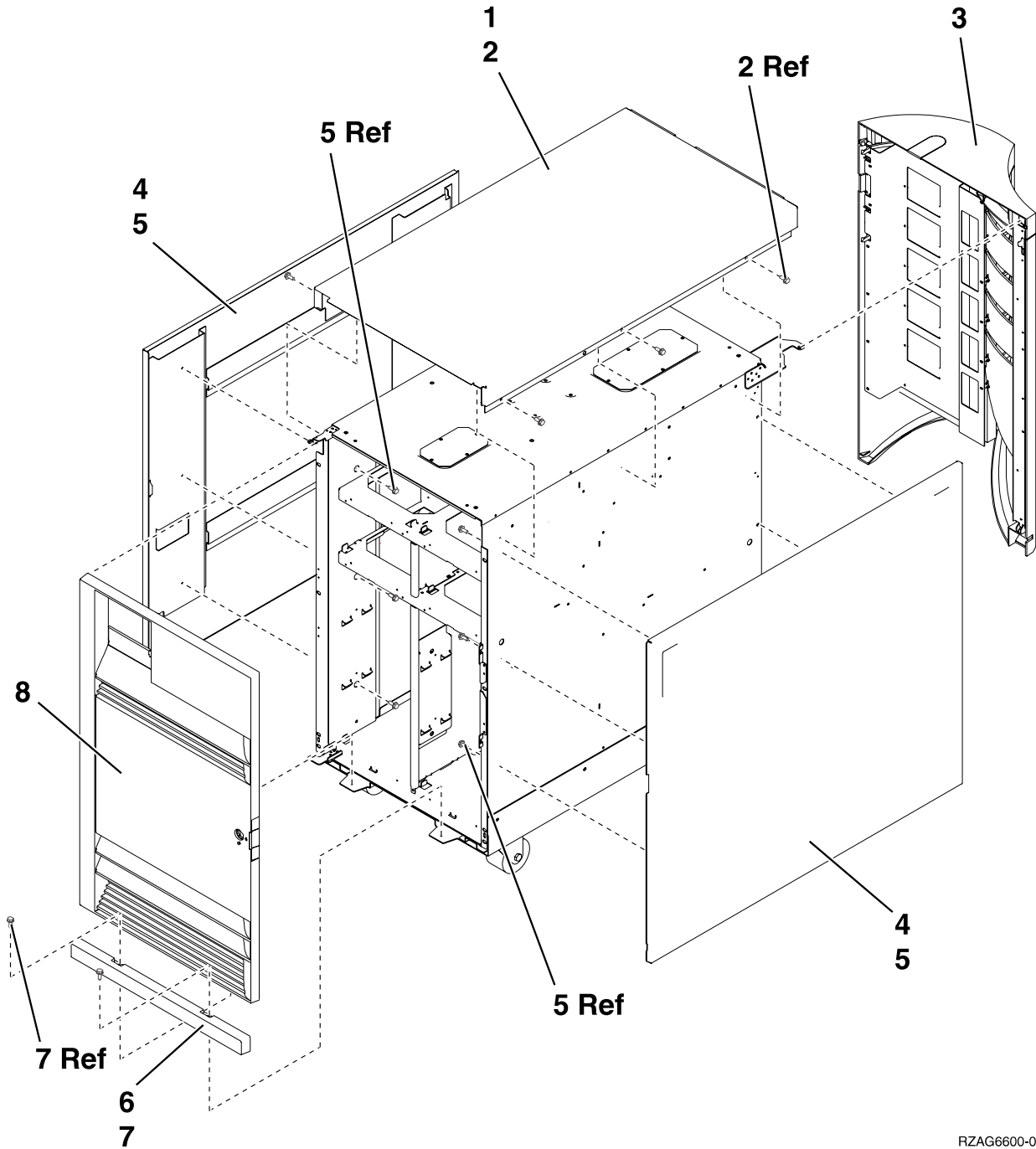
Asm-Index	Part Number	Units	Description
12-	NONUM	1	• Control Panel Assembly
-1	NONUM	1	• • Connector Cover, Models 650, 740, S40, and SB1
-2	1621812	3	• • Connector Cover screws, Models 650, 740, S40, and SB1
-3	NONUM	1	• • Mounting Bracket
-4	16G8095	1	• • Battery
-5	21H3727	1	• • Control Panel Card Asm and Keystick Cycle Hold Button – part number 21H3736 (Must order separately if needed.) Ordering Additional Keysticks: Cost and ordering information for additional or replacement control panel keysticks may be obtained by following the instructions on the key tag that is attached to the key ring or by writing to the following address. The key tag with the key code stamped on it is required for all control panel keystick orders. Write to: Turtle Mountain Corporation First Street South Dunseith, ND 58329
-5	46G3507	1	• • Keystick - Control Panel
-6	1622673	2	• • Screw
-7	NONUM	1	• • Bezel Asm
-8	1621812	4	• • Screw
-9	97H7589	1	• • Cover, Control Panel Battery
-10	1621812	1	• • Screw
			Control Panel Overlays
-	21H3740	1	• • System Unit Overlay, English (1 way, 2 way, and 4 way processors)
-	21H3741	1	• • System Unit Overlay, German (1 way, 2 way, and 4 way processors)
-	21H3742	1	• • System Unit Overlay, Italian (1 way, 2 way, and 4 way processors)
-	21H3743	1	• • System Unit Overlay, Japanese (1 way, 2 way, and 4 way processors)
-	21H3744	1	• • System Unit Overlay, China-s (1 way, 2 way, and 4 way processors)
-	21H3745	1	• • System Unit Overlay, China-t (1 way, 2 way, and 4 way processors)
-	21H3746	1	• • System Unit Overlay, Korean (1 way, 2 way, and 4 way processors)
-	21H3747	1	• • System Unit Overlay, Norwegian (1 way, 2 way, and 4 way processors)
-	21H3748	1	• • System Unit Overlay, French (1 way, 2 way, and 4 way processors)
-	21H3749	1	• • System Unit Overlay, Spanish (1 way, 2 way, and 4 way processors)
-	21H7705	1	• • System Unit Overlay, Portuguese (1 way, 2 way, and 4 way processors)
-	21H7706	1	• • System Unit Overlay, Hungarian (1 way, 2 way, and 4 way processors)
-	21H7707	1	• • System Unit Overlay, Polish (1 way, 2 way, and 4 way processors)
-	21H7708	1	• • System Unit Overlay, Russian (1 way, 2 way, and 4 way processors)
-	21H7709	1	• • System Unit Overlay, Czech (1 way, 2 way, and 4 way processors)
-	21H7275	1	• • System Unit Overlay, English (8 way processors)
-	21H7276	1	• • System Unit Overlay, German (8 way processors)
-	21H7277	1	• • System Unit Overlay, Italian (8 way processors)
-	21H7278	1	• • System Unit Overlay, Japanese (8 way processors)
-	21H7279	1	• • System Unit Overlay, China-s (8 way processors)
-	21H7280	1	• • System Unit Overlay, China-t (8 way processors)
-	21H7281	1	• • System Unit Overlay, Korean (8 way processors)
-	21H7282	1	• • System Unit Overlay, Norwegian (8 way processors)
-	21H7283	1	• • System Unit Overlay, French (8 way processors)
-	21H7284	1	• • System Unit Overlay, Spanish (8 way processors)

Assembly 12: (continued)

Asm-Index	Part Number	Units	Description
-	21H7711	1	• • System Unit Overlay, Portuguese (8 way processors)
-	21H7712	1	• • System Unit Overlay, Hungarian (8 way processors)
-	21H7713	1	• • System Unit Overlay, Polish (8 way processors)
-	21H7714	1	• • System Unit Overlay, Russian (8 way processors)
-	21H7715	1	• • System Unit Overlay, Czech (8 way processors)
-	90H6376	1	• • System Unit Overlay, English (12 way processors)
-	90H6377	1	• • System Unit Overlay, German (12 way processors)
-	90H6378	1	• • System Unit Overlay, Italian (12 way processors)
-	90H6379	1	• • System Unit Overlay, Japanese (12 way processors)
-	90H6380	1	• • System Unit Overlay, China-s (12 way processors)
-	90H6381	1	• • System Unit Overlay, China-t (12 way processors)
-	90H6382	1	• • System Unit Overlay, Korean (12 way processors)
-	90H6383	1	• • System Unit Overlay, Norwegian (12 way processors)
-	90H6384	1	• • System Unit Overlay, French (12 way processors)
-	90H6385	1	• • System Unit Overlay, Spanish (12 way processors)
-	90H6386	1	• • System Unit Overlay, Portuguese (12 way processors)
-	90H6387	1	• • System Unit Overlay, Hungarian (12 way processors)
-	90H6388	1	• • System Unit Overlay, Polish (12 way processors)
-	90H6389	1	• • System Unit Overlay, Russian (12 way processors)
-	90H6390	1	• • System Unit Overlay, Czech (12 way processors)
-	NONUM	AR	• • 9251 Base I/O and Expansion Units Control Panel (see "Assembly 18: 9251 and 507x, 508x Expansion Tower(s) Control Panel" on page 974)

Assemblies - FC 9251 Base I/O and Expansion Towers

Assembly 13: Cover Assemblies for FC 5065 and FC 5066 Expansion Towers

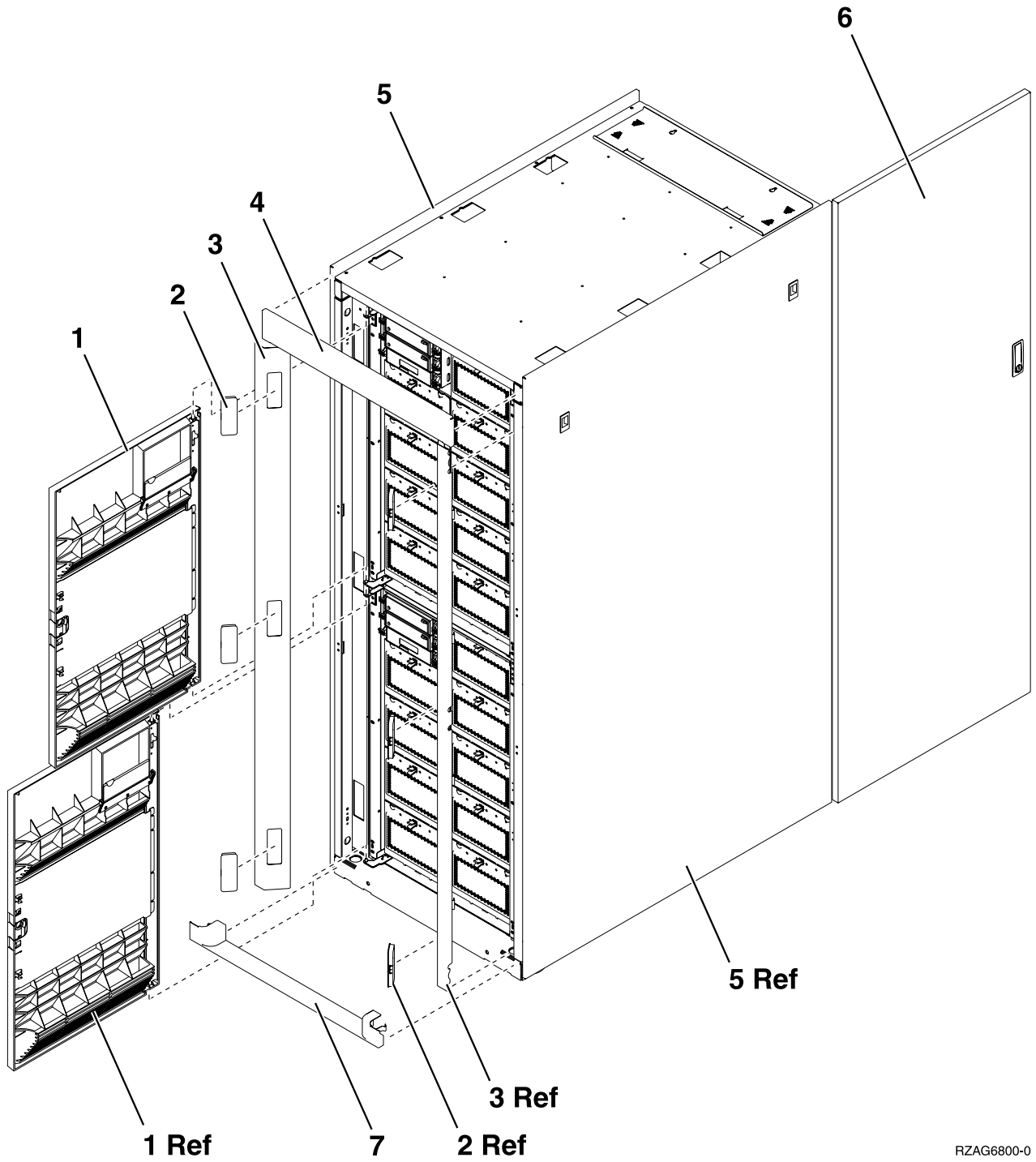


RZAG6600-0

Assembly 13: (continued)

Asm- Index	Part Number	Units	Description
13-1	24L0825	1	Top cover
-2	1621811	4	Screw
-3	24L1079	1	Rear cover
-4	24L0824	1	Side cover
-5	1621811	12	Screw
-6	24L1078	1	Front filler cover
-7	1621811	2	Screw
-8	24L1069	1	Front cover

Assembly 13: (continued)

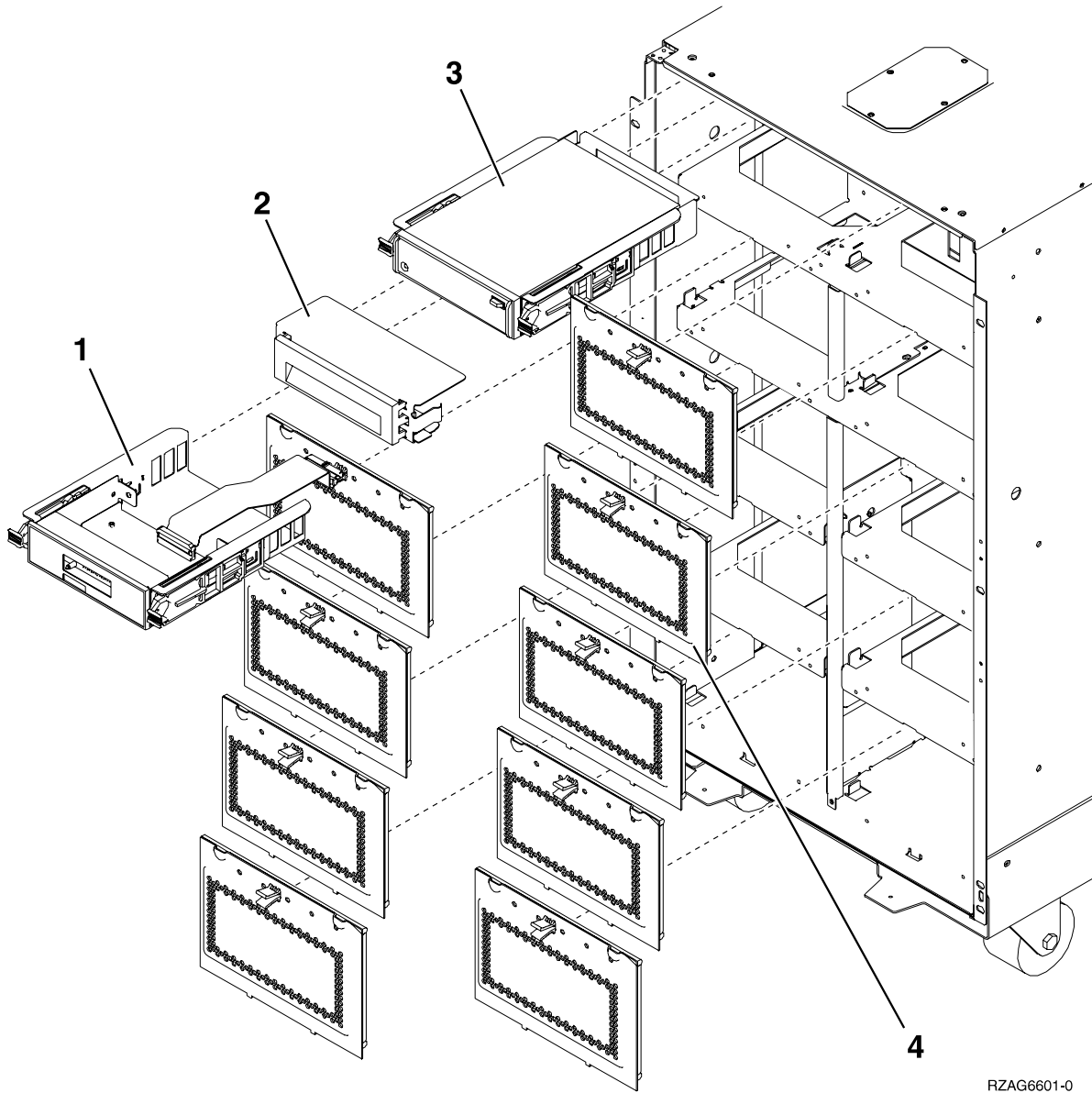


RZAG6800-0

Assembly 13: (continued)

Asm- Index	Part Number	Units	Description
13-1	24L1069	2	Cover Asm, Front
-2	05N6809	6	Cover, Trim Kit
-3	12K0034	2	Side Bezel, Trim Kit
-4	12K0032	1	Top Bezel, Trim Kit
-5	31L7519	2	Cover, Side
-6	31L7523	1	Cover, Rear
-7	12K0024	1	Bottom Bezel, Trim Kit

Assembly 14: Final Assemblies for FC 5065 expansion tower

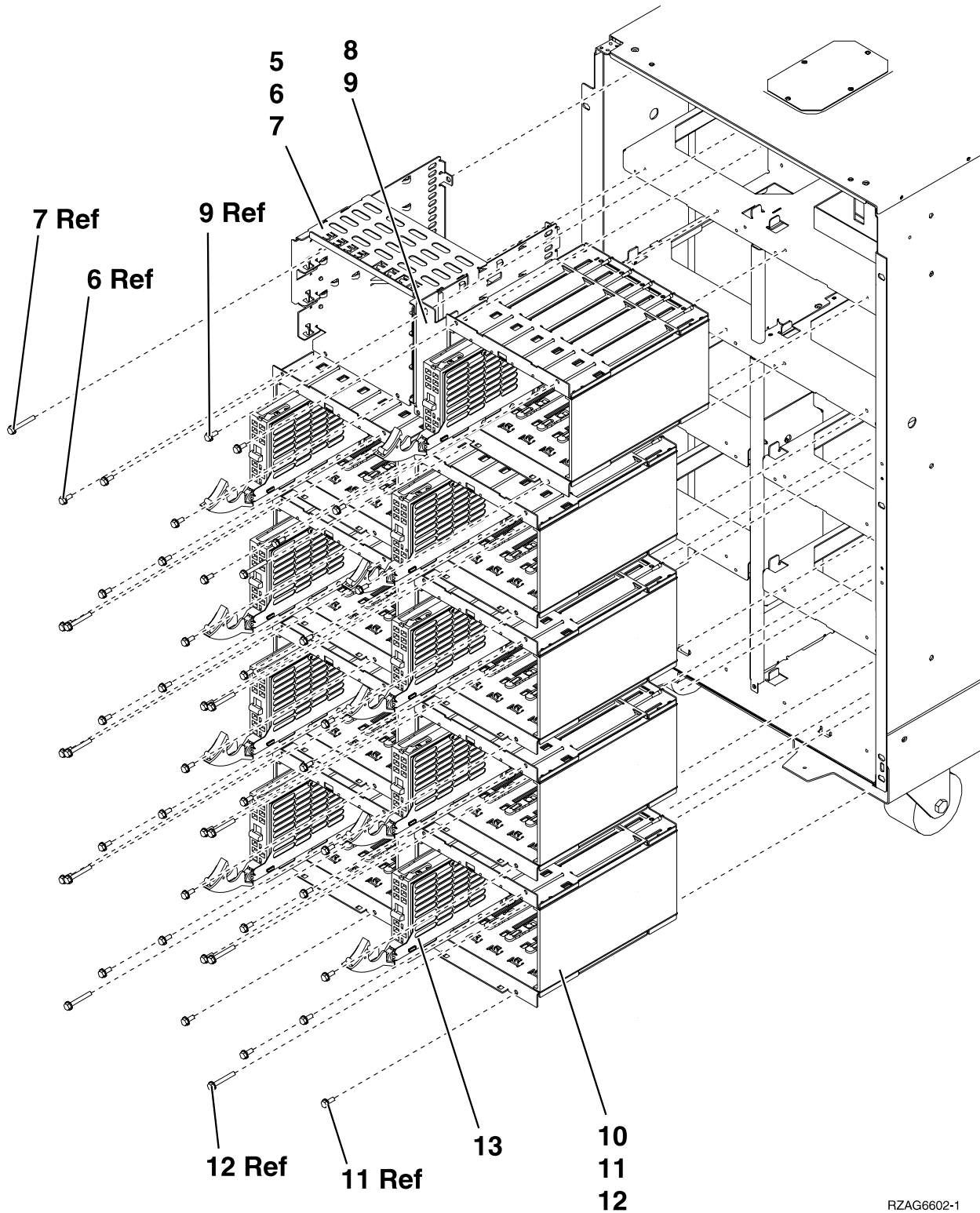


RZAG6601-0

Assembly 14: (continued)

Asm- Index	Part Number	Units	Description
14-1	24L0946	1	Control Panel
-2	44H8406	AR	Filler (Removable media)
-2		AR	Optical Storage Unit See "Type, Model, and Part Number List" on page 362.
-3		AR	Removable media See "Type, Model, and Part Number List" on page 362.
-4	24L0821	AR	DASD EMC access plate

Assembly 14: (continued)

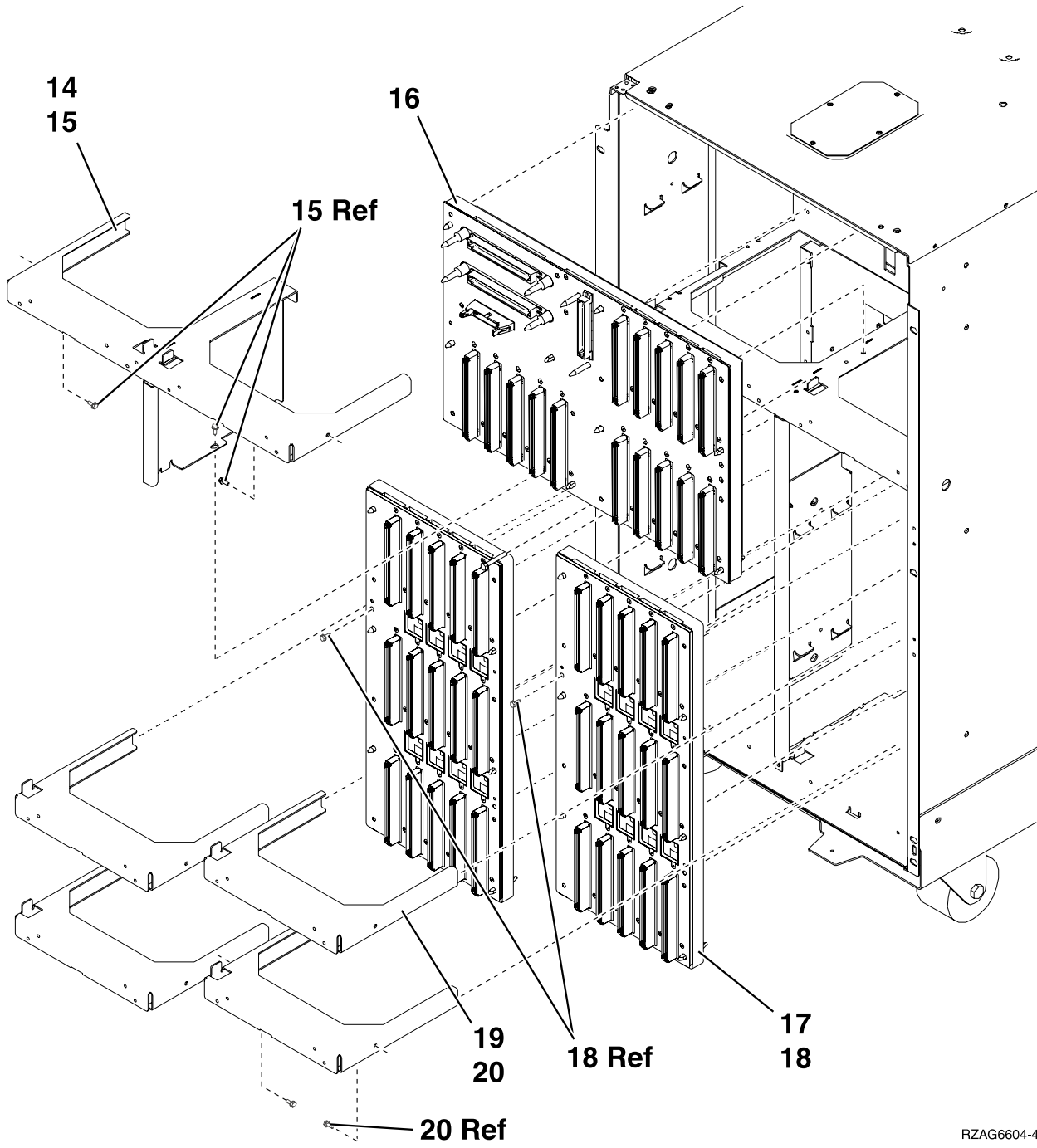


RZAG6602-1

Assembly 14: (continued)

Asm- Index	Part Number	Units	Description
14-5	NONUM	1	Removable media cage assembly
-6	1621811	2	Screw
-7	1621817	2	Screw
-8	24L1067	1	Center Support Bracket
-9	1621811	2	Screw
-10	NONUM	AR	5 disk unit cage assembly
-11	1621811	12	Screw
-12	1621817	6	Screw
-13		AR	Disk unit assembly See "Disk Unit Type, Model, and Part Number List" on page 370.

Assembly 14: (continued)

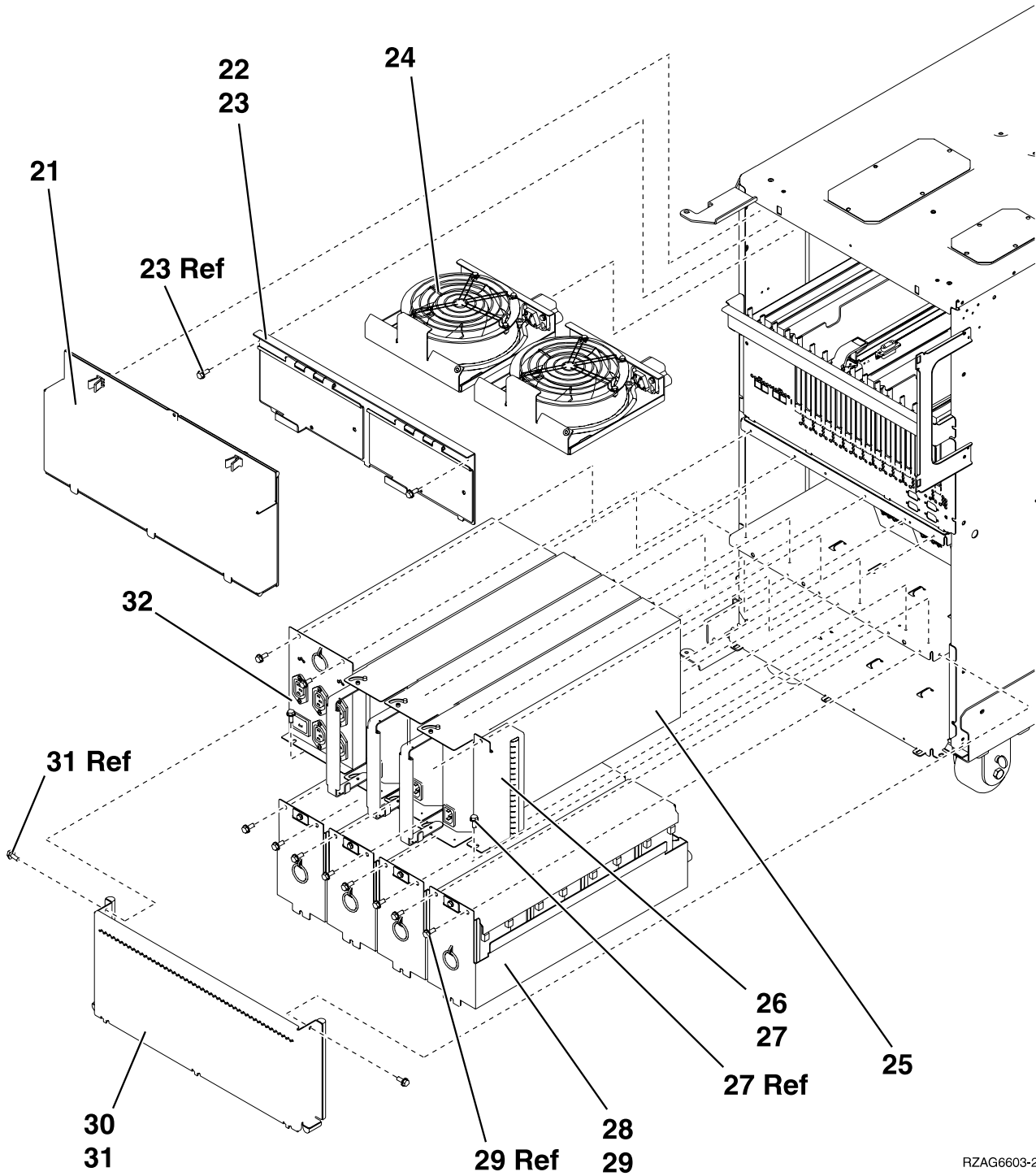


RZAG6604-4

Assembly 14: (continued)

Asm- Index	Part Number	Units	Description
14-14	NONUM	1	Shelf, Base DASD
-15	1621811	3	Screw
-16	24L0892	1	Base DASD Bd/Stiff. Asm. (DB3)
-17	24L1029	AR	DASD Bd/Stiff. Asm. (DB1 & DB2)
-18	1621838	1	Screw
-19	NONUM	AR	Shelf, DASD
-20	162811	2	Screw

Assembly 14: (continued)

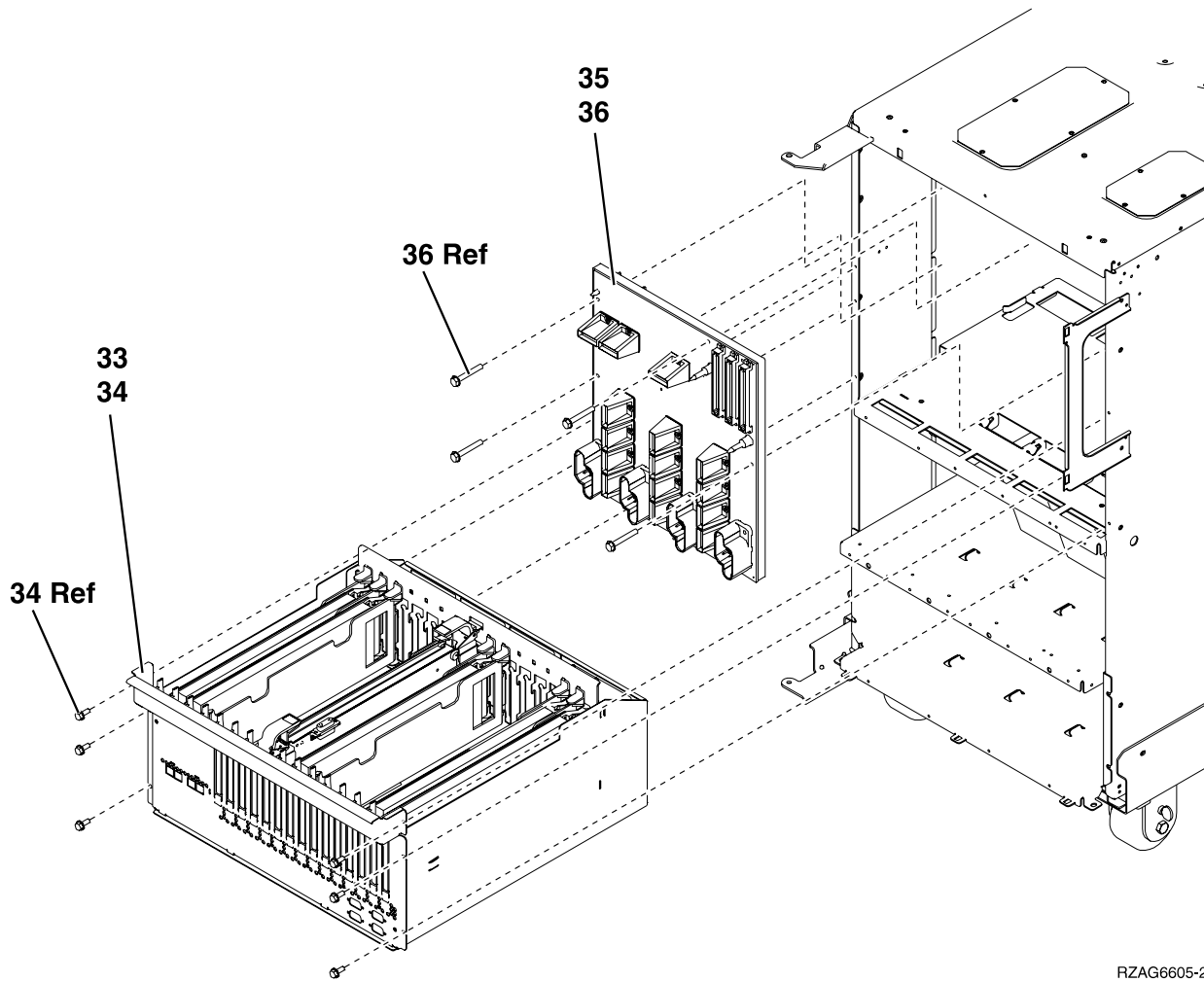


RZAG6603-2

Assembly 14: (continued)

Asm- Index	Part Number	Units	Description
14-21	24L0823	1	EMC access plate
-22	NONUM	1	AMD door assembly
-23	1621811	2	Screw
-24	44L0023	2	AMD
-25	90H6629	3	Power supply — 765 watts
-26	24L0940	AR	Filler for power supply
-27	1621811	2	Screw
-28	97H7320	4	Battery pack
-29	1621811	12	Screw
-30	NONUM	1	EMC access plate
-31	1621811	2	Screw
-32	97H7316	1	Battery Charger

Assembly 14: (continued)

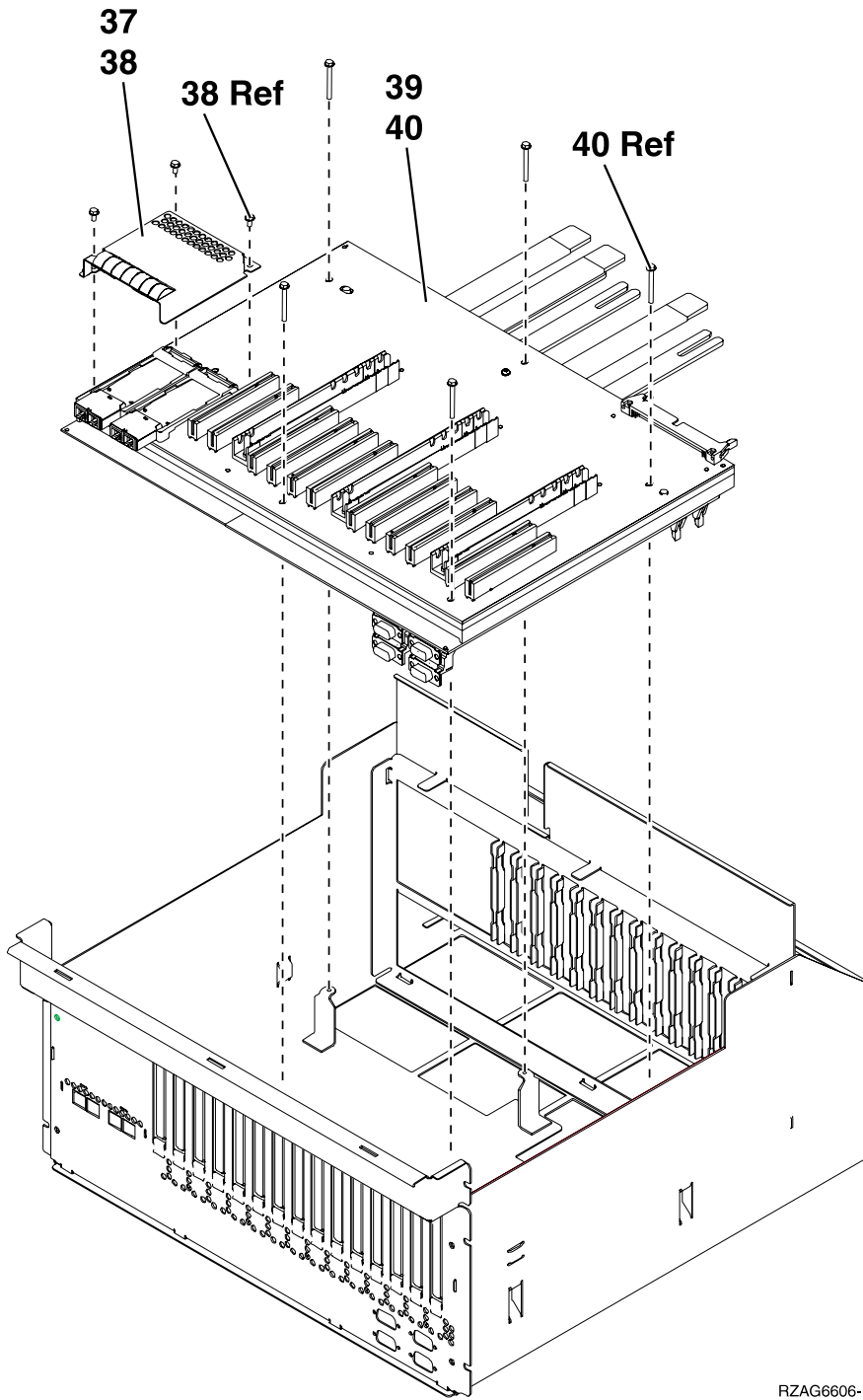


RZAG6605-2

Assembly 14: (continued)

Asm- Index	Part Number	Units	Description
14-33	NONUM	1	PCI Card Cage/Asm.
-34	1621811	6	Screw
-35	24L0891	1	Power Board/Stiff. Asm.
-36	1621816	6	Screw

Assembly 14: (continued)

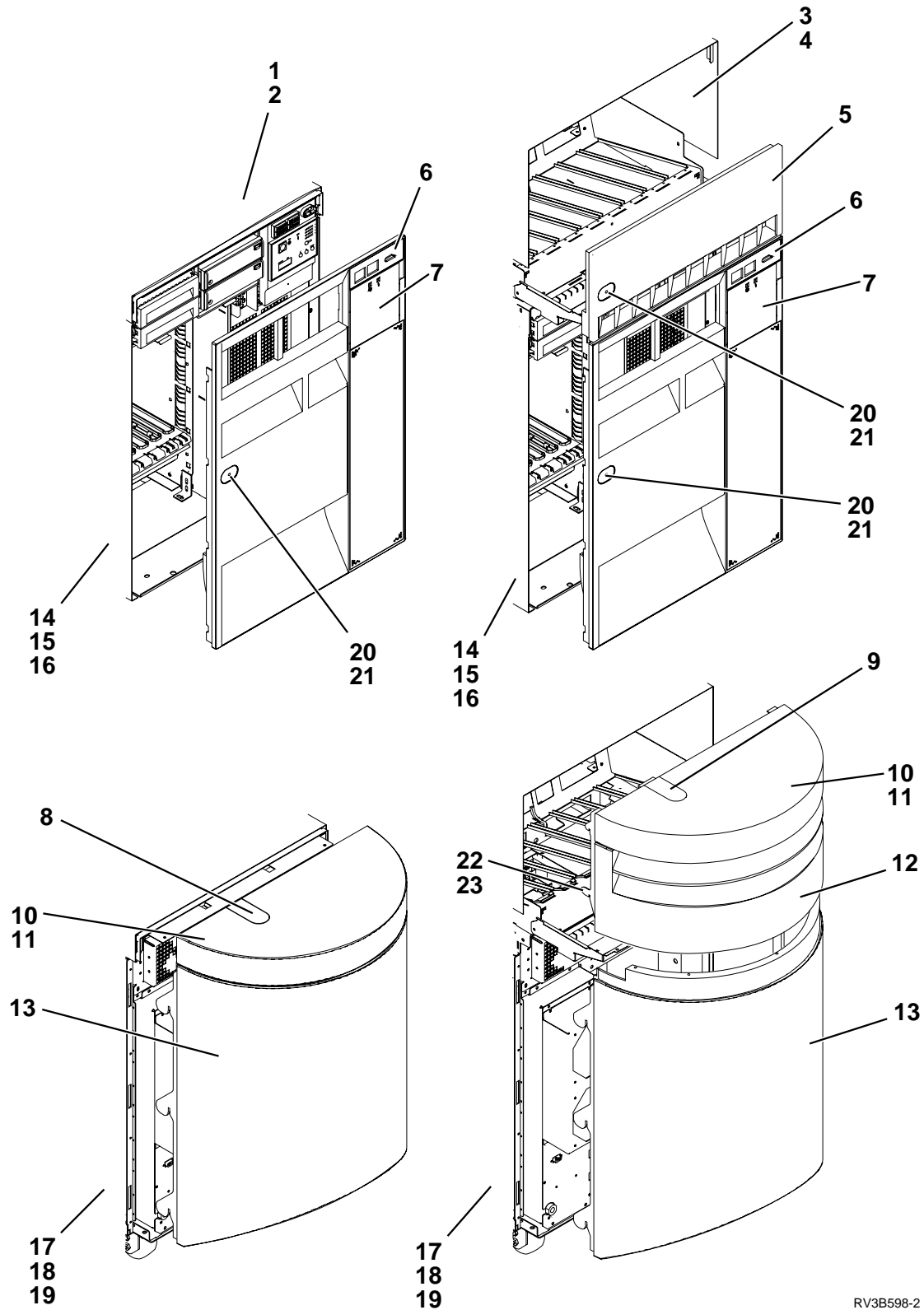


RZAG6606-1

Assembly 14: (continued)

Asm- Index	Part Number	Units	Description
14-37	NONUM	1	EMC access plate
-38	1621811	3	Screw
-39	97H7532	1	Tower Card Asm.
-40	1621621	5	Screw

Assembly 15: Cover Assemblies - 9251 Base I/O, 507x & 508x Expansion Units

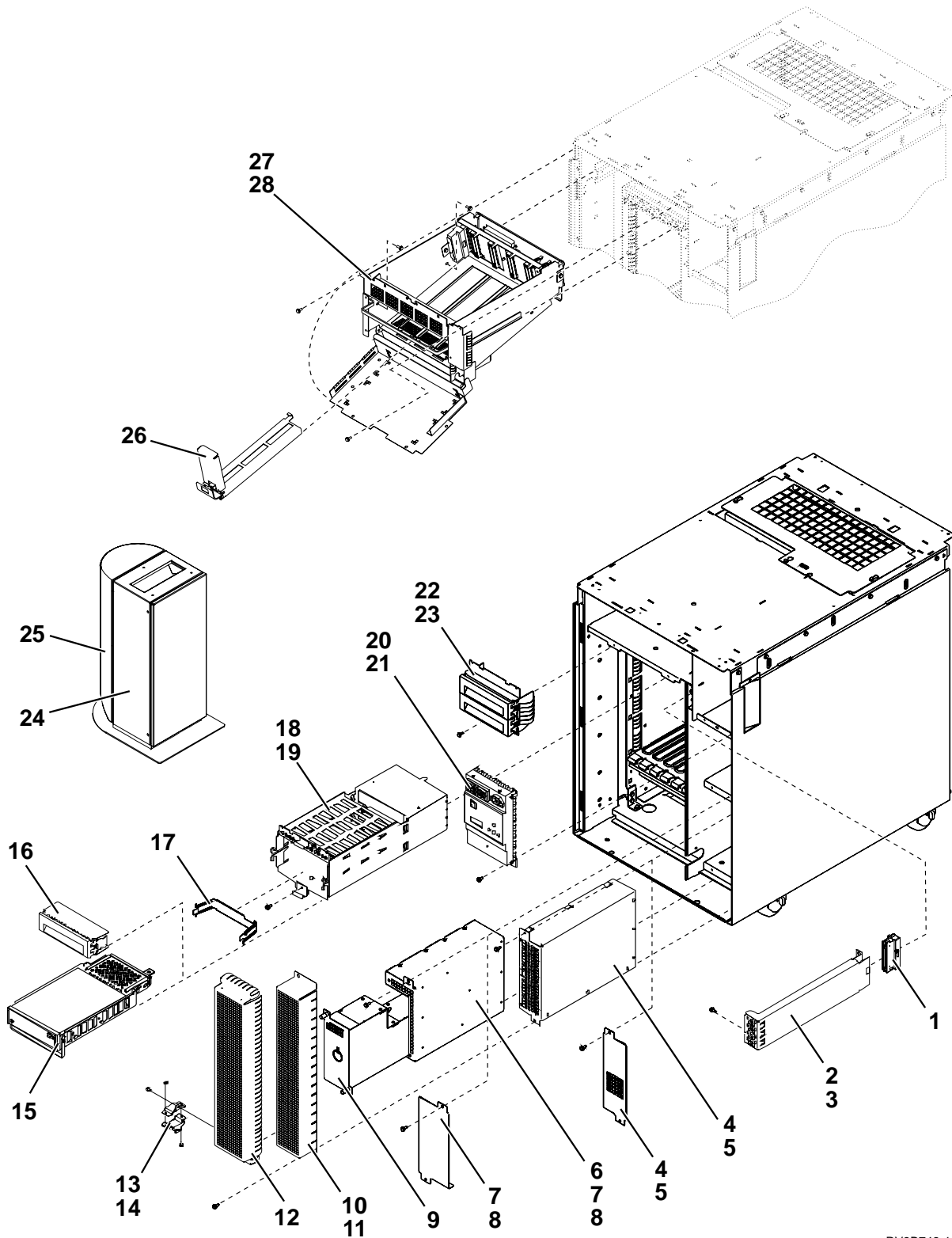


RV3B598-2

Assembly 15: (continued)

Asm- Index	Part Number	Units	Description
15-1	46G3484	1	• Cover - Top
-2	1621812	3	• Screw (8mm)
-3	46G3580	1	• Cover - Top, Storage Expansion Unit
-4	1621811	AR	• Screw, M4 (10mm)
-5	86G7739	1	• Cover - Front, Storage Expansion Unit
-6	46G3478	1	• Cover - Front (black)
-6	90H6507	1	• Cover - Front (blue)
-6	90H6588	1	• Cover - Front (red)
-7	86G7857	1	• • Door - Contol Panel
-8	46G3688	1	• Plug
-9	46G3670	1	• Plug
-10	86G7677	1	• Cover - Rear Top Cap
-11	1622677	5	• Screw (12mm)
-12	86G7738	1	• Cover - Rear, Storage Expansion Unit (black)
-12	21H3739	1	• Cover - Rear, Storage Expansion Unit (blue)
-12	90H6306	1	• Cover - Rear, Storage Expansion Unit (red)
-13	86G7740	1	• Cover - Rear Round
-14	46G3647	1	• Cover - Left Side
-15	1621811	17	• Screw, M4 (10mm)
-16	46G3648	1	• Handle
-17	46G3542	1	• Cover - Right Side
-18	1621811	17	• Screw, M4 (10mm)
-19	46G3648	1	• Handle
-20	NONUM	NP	• Logo, AS/400 Advanced
-21	NONUM	NP	• Logo, AS/400 Advanced Server
-22	46G3695	1	• Bracket, Rear Storage Expansion Unit Mounting
-23	1622677	7	• Screw (12mm)

Assembly 16: Final Assembly - 9251 Base I/O, 507x & 508x Expansion Towers

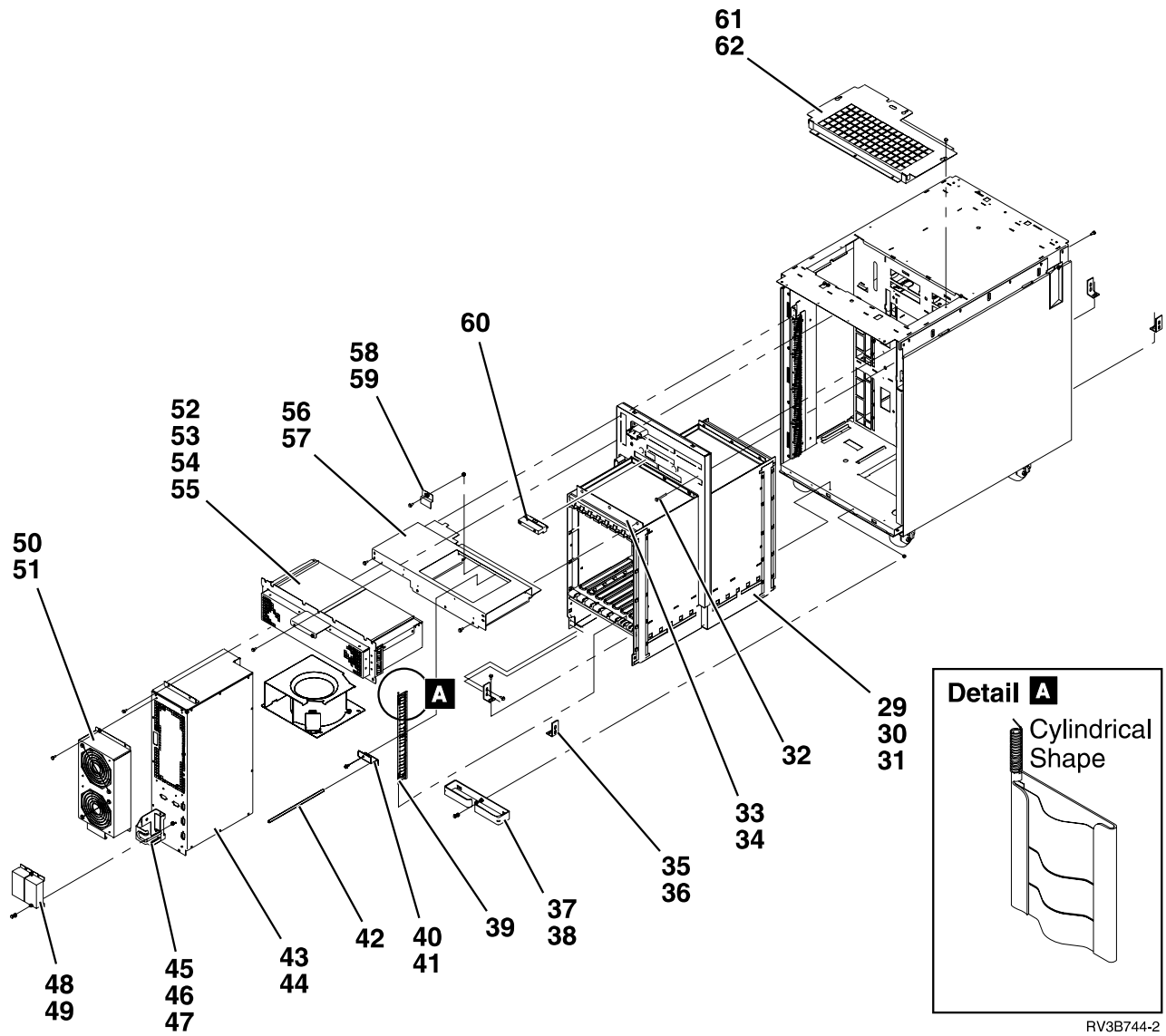


RV3B743-1

Assembly 16: (continued)

Asm-Index	Part Number	Units	Description
16-1	90H6285	1	• Terminating Plug for FC 5070, 5072, 5080, 5082
-1	90H6285	1	• Terminating Plug (TRM50) for System Units (including 9251) and FC 5071, 5073, 5081, 5083
-2	NONUM	NP	• Cover, Terminating Plug
-3	1621811	1	• Screw, M4 (10mm)
-4	87G6290	AR	• Power Supply Asm (FC 5070, 5072, 5080, 5082)
-4	87G6110	AR	• Power Supply Asm (FC 5071, 5073, 5081, 5083, 9251)
-4	86G7684	AR	• Power Supply Filler Plate
-5	1621811	2	• Screw, M4 (10mm)
-6	86G8020	1	• Battery Power Unit Charger
-7	86G7750	1	• External Battery Power Unit Charger Asm
-7	86G7685	AR	• Battery Power Unit Filler Plate
-8	1621811	2	• Screw, M4 (10mm)
-9	86G8040	1	• Battery Power Unit
-10	46G3499	1	• Shield - Power
-11	1621811	4	• Screw, M4 (10mm)
-12	46G3500	1	• Shield - Battery Power Unit
-13	86G7773	2	• Clamp, External Battery Power Unit Charger Cable Asm
-14	1621812	3	• Screw (8mm)
-15		AR	• Removable Media (tape) See "Type, Model, and Part Number List" on page 362.
-15		AR	• Optical Storage Unit (632x) See "Type, Model, and Part Number List" on page 362.
-16	86G7623	AR	• Removable Media Filler Bezel
-17	86G7656	AR	• Key - Tape Unit
-18	46G3700	AR	• Removable Media Tray Asm
-18	46G3620	AR	• Removable Media Tray Asm, Empty
-19	1621811	6	• Screw, M4 (10mm)
-20	17G0574	NP	• Control Panel For detail breakdown, see "Assembly 18: 9251 and 507x, 508x Expansion Tower(s) Control Panel" on page 974
-21	1621811	2	• Screw, M4 (10mm)
-22	86G7865	1	• Filler Bezel Asm
-23	1621811	1	• Screw, M4 (10mm)
-24	86G7714	1	• External Battery Power Unit Battery Asm
-25	46G0321	1	• External Battery Power Unit Battery Rear Cover Asm
-26	46G3529	AR	• Filler Asm, Disk Unit
-27	87G4362	1	• Disk Unit Guide Asm, (508x Only)
-28	1621811	8	• Screw, M4 (10mm)
-29	87G6049	1	• 507x Expansion Regulator
-29	17G1209	1	• 508x Expansion Regulator

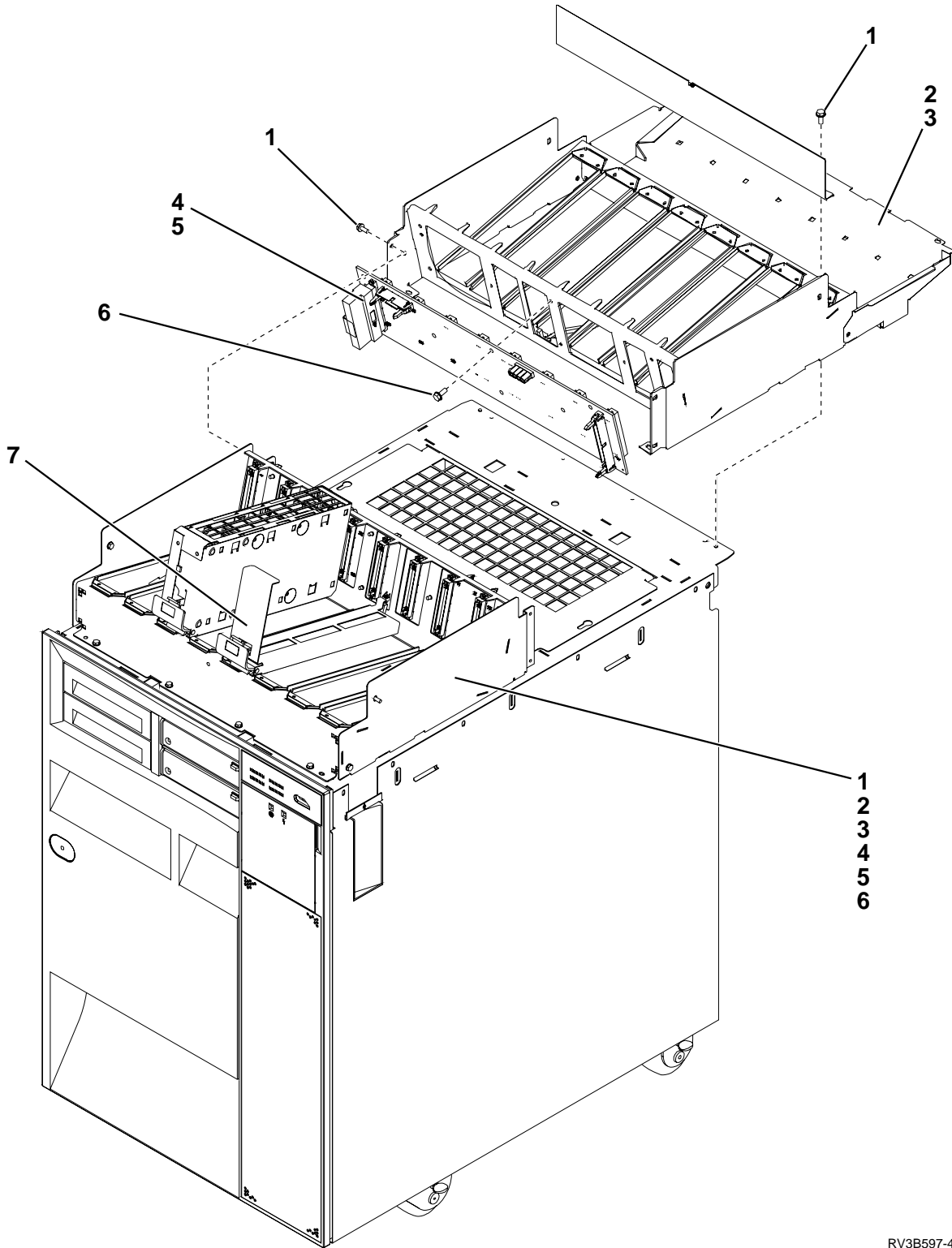
Assembly 16: (continued)



Assembly 16: (continued)

Asm- Index	Part Number	Units	Description
16-29	86G7633	1	• Expansion Unit Card Enclosure Asm, Models 5070 and 5072 (lower)
-29	90H6425	1	• Expansion Unit Card Enclosure Asm, Models 5071 and 5073 (lower)
-29	87G4357	1	• Expansion Unit Card Enclosure Asm, Models 5080 and 5082 (lower)
-29	87G4362	1	• Expansion Unit Card Enclosure Asm, Models 5080, 5081, 5082, and 5083 (upper)
-29	90H6426	1	• Expansion Unit Card Enclosure Asm, Models 5081 and 5083 (lower)
-29	21H7465	1	• Feature 9251 Base I/O Tower Card Enclosure Asm
-30	21H3759	AR	• Enclosure Spring
-31	1621811	11	• Screw, M4 (10mm)
-32	1621838	4	• Screw (35mm)
-33	46G3646	2	• Card Retaining Bar
-34	1621811	3	• Screw, M4 (10mm)
-35	46G3663	4	• Bracket, Cage Mounting
-36	1621811	12	• Screw, M4 (10mm)
-37	46G3666	1	• Bracket, Rear I/O cable ret.
-38	1621811	1	• Screw, M4 (10mm)
-39	91H0250	AR	• Card Spring (verticle SPD card separators)
-40	21H3473	1	• Clamp, Light Pipe
-41	1621811	1	• Screw, M4 (10mm)
-42	21H3472	1	• Light Pipe
-43	87G6300	1	• AC Module Asm (FC 5070, 5072, 5080, 5082)
-43	21H7697	1	• AC Module Asm (FC 9251, 5071, 5073, 5081, 5083)
-44	1621811	4	• Screw, M4 (10mm)
-45	NONUM	NP	• Power Cord Retaining Bracket
-46	NONUM	NP	• Power Cord Retaining Clamp
-47	NONUM	4	• Screw, Torx M3 x 10 Lg
-48	90H6287	2	• SPCN Optical Adapter Asm
-49	1621811	4	• Screw, M4 (10mm)
-50	46G3510	1	• AMD Asm - AC Module (AMD 1 and AMD2)
-51	1621811	4	• Screw, M4 (10mm)
-52	46G3509	1	• AMD Asm (AMD 3 and AMD 4)
-53	46G3587	2	• • AMD
-54	1621811	4	• • Screw, M4 (10mm)
-55	1621811	4	• Screw, M4 (10mm)
-56	NONUM	NP	• AMD Mounting Asm
-57	1621811	7	• Screw, M4 (10mm)
-58	46G3667	1	• Bracket - Term Ret
-59	1621811	1	• Screw, M4 (10mm)
-60	NONUM	NP	• Terminator/Redrive plug
-61	1621811	3	• Screw, M4 (10mm)

Assembly 17: Storage Expansion Unit Assembly



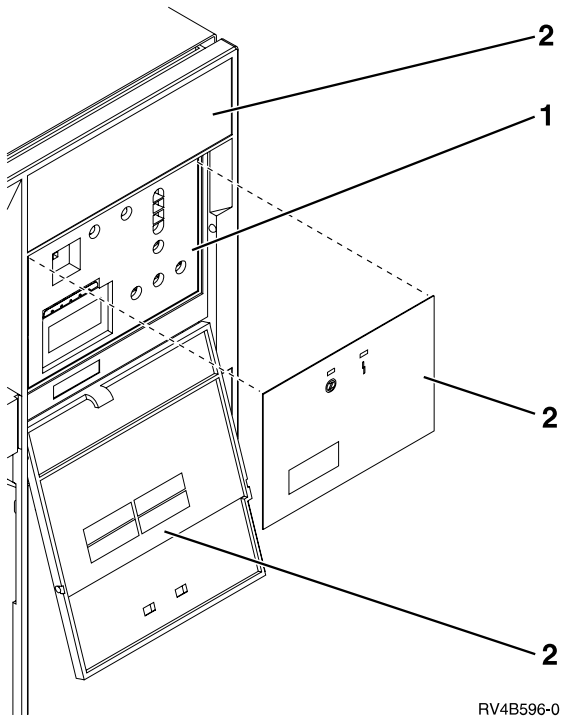
RV3B597-4

Asm-Index	Part Number	Units	Description
17-1	1621811	10	• Screw, M4 (10mm)

Assembly 17: (continued)

Asm- Index	Part Number	Units	Description
-2	46G3581	2	• Cover
-3	1621811	5	• Screw, M4 (10mm)
-4	16G6496	1	• Backplane (front) K1 - K8 FC 5052
-4	86G7872	1	• Backplane (rear) K9 - K16 FC 5052
-4	21H7750	1	• Backplane (front) K1 - K8 FC 5055
-4	21H6938	1	• Backplane (front) K1 - K8 FC 5058
-4	21H6940	1	• Backplane (front) K1 - K8 FC 5057
-4	21H6940	1	• Backplane (rear) K9 - K16 FC 5057 and 5058
-5	NONUM	AR	• Terminating Plug (See "DEVTERM" on page 387.)
-6	1621811	8	• Screw, M4 (10mm)
-7	46G3529	AR	• Disk Unit Filler Asm

Assembly 18: 9251 and 507x, 508x Expansion Tower(s) Control Panel

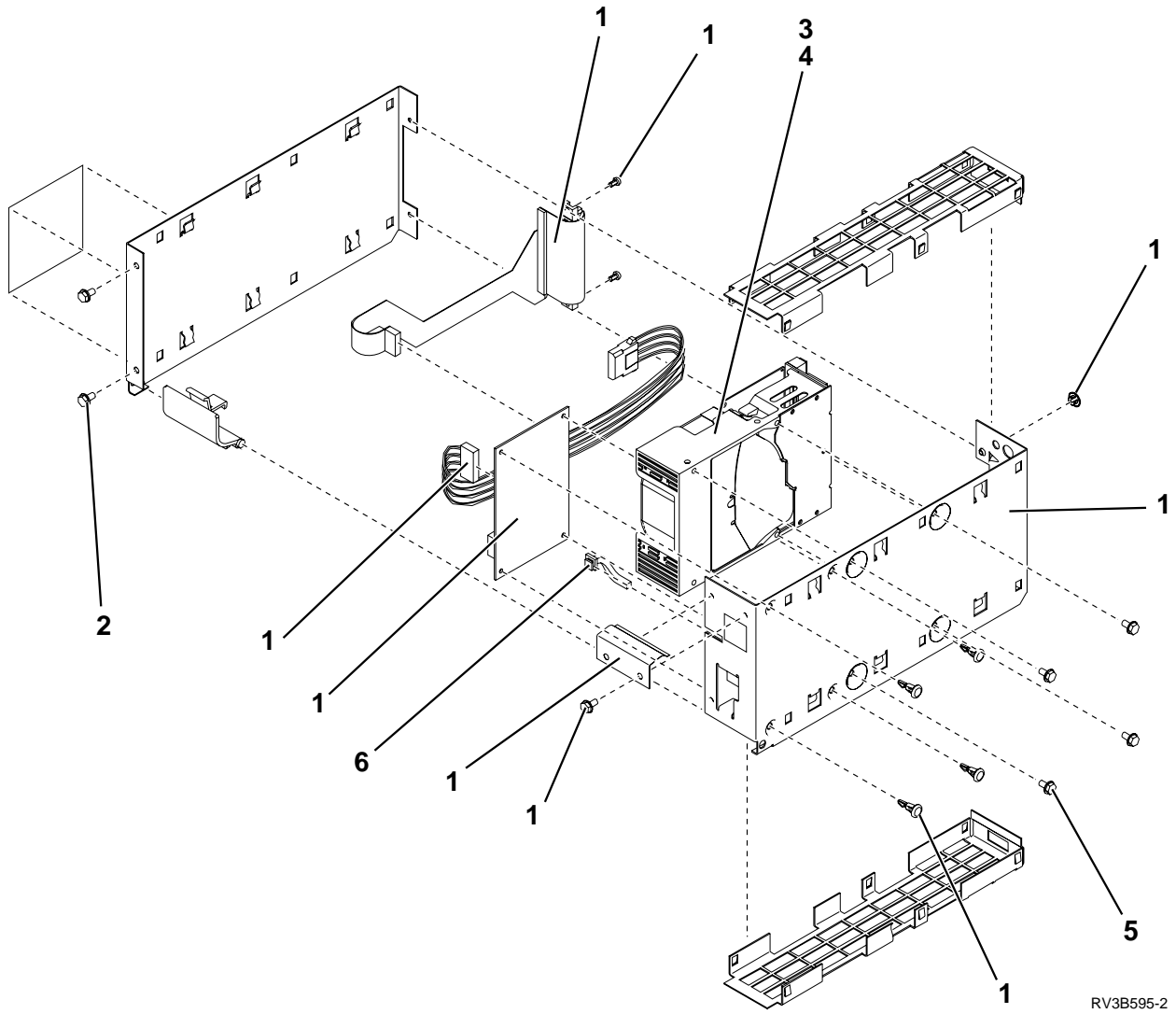


RV4B596-0

Assembly 18: (continued)

Asm- Index	Part Number	Units	Description
18-1	NONUM	NP	Control Panel
-	17G0574	1	• Circuit Card
-2	46G3570	1	Control Panel Overlay

Assembly 19: Disk Unit Assemblies

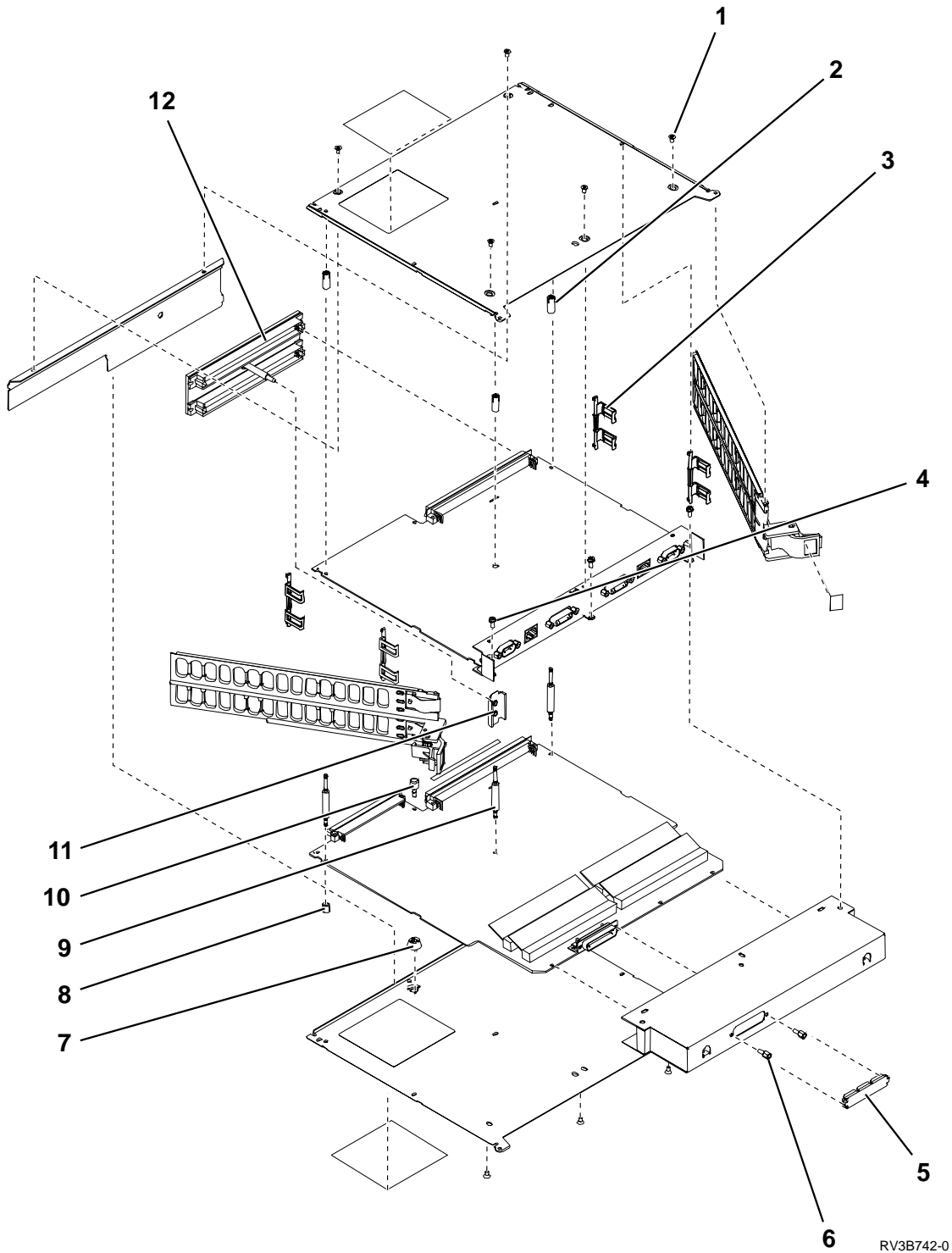


RV3B595-2

Assembly 19: (continued)

Asm- Index	Part Number	Units	Description
19-	NONUM	NP	Disk Unit Assembly
-1	NONUM	AR	• Tray Asm *
-2	1621811	2	• Screw, M4 (10mm) Thd-Form Hx Wshr Hd
-3	NONUM	AR	• Disk Drive *
-4	NONUM	AR	• • Disk Drive Logic Card *
-5	60X8709	4	• • Screw (6mm)
-6	46G3530	1	• Light Pipe
			* See "Disk Unit Type, Model, and Part Number List" on page 370 for part numbers for Tray Assembly and Disk Drives.

Assembly 20: File Server Book Assembly Type 6506

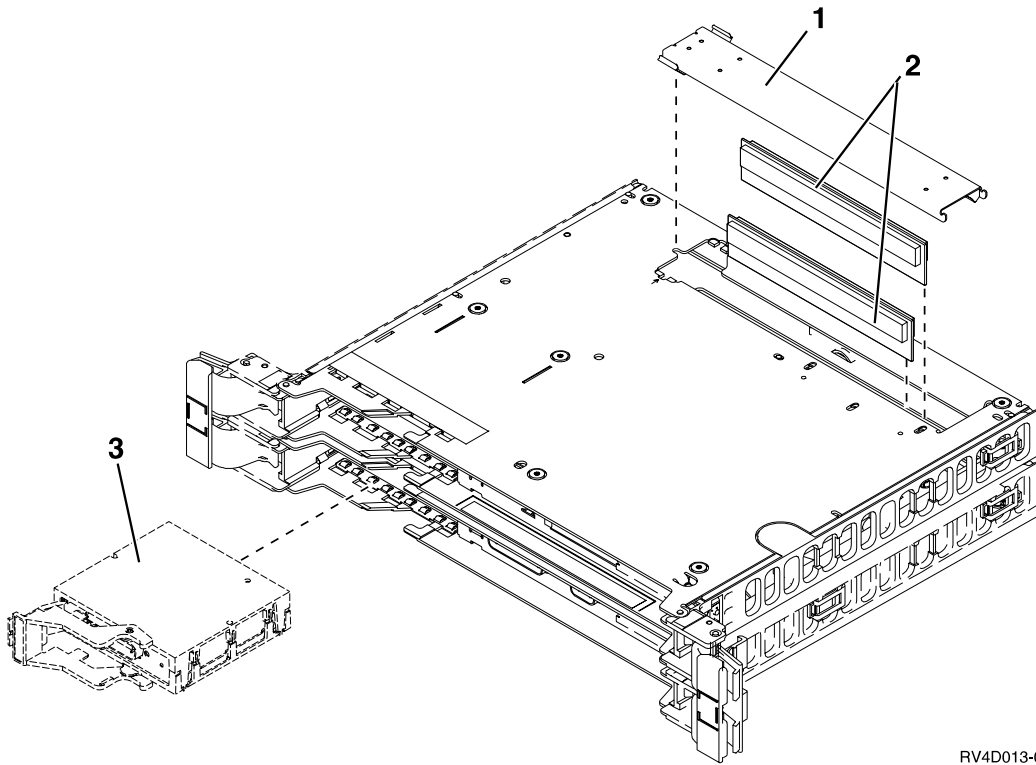


RV3B742-0

Assembly 20: (continued)

Asm- Index	Part Number	Units	Description
20-	NONUM	NP	File Server Book Asm
-1	21F9053	8	• Screw (4.5mm)
-2	86G7622	3	• Standoff, Right
-3	86G7619	4	• Rail Retainer
-4	21F4419	5	• Screw (6mm)
-5	17G2534	4	• Cover, Test Port
-6	72X6451	2	• Standoff
-7	86G7640	1	• Button, Card Support
-8	86G7621	3	• Standoff, Left
-9	86G7620	3	• Standoff, Middle
-10	86G7639	1	• Bow Clip Guide
-11	75G5716	1	• Stiffener, Docking
-12	86G7681	1	• Crossover Connector Asm

Assembly 21: File Server Book Assembly Type 6616

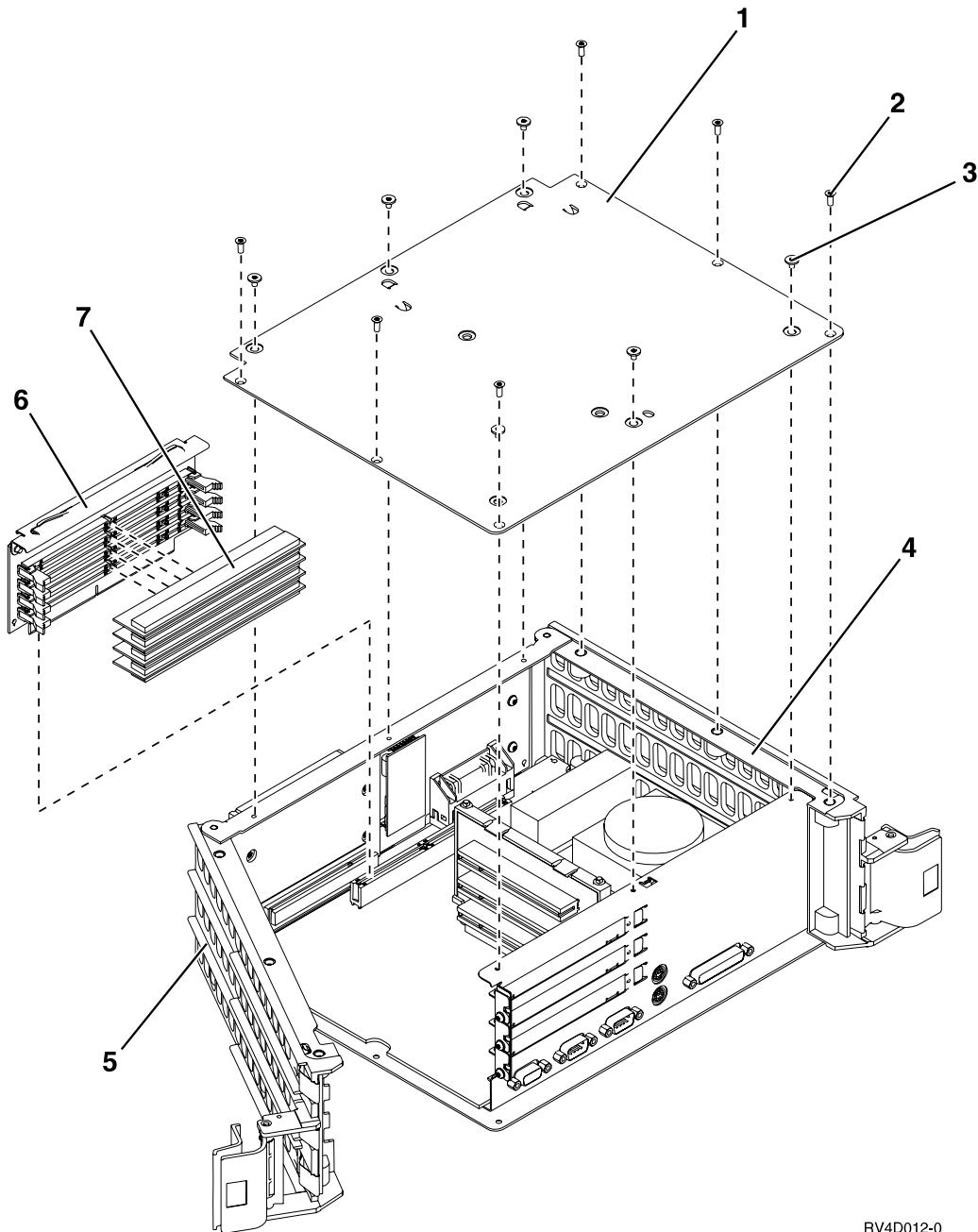


RV4D013-0

Assembly 21: (continued)

Asm- Index	Part Number	Units	Description
21-	91H0353	1	File Server Book Asm
-1	NONUM	1	• Access cover
-2	44H7558	1	• 32 MB Memory DIMM
-2	90H9075	1	• 128 MB Memory DIMM
-3	NONUM	1	• Adapter Card *
			* See "Type, Model, and Part Number List" on page 362 for part numbers for Adapter Card part numbers.

Assembly 22: File Server Book Assembly Type 6617



RV4D012-0

Assembly 22: (continued)

Asm- Index	Part Number	Units	Description
22-	97H7627	1	File Server Book Asm
-1	NONUM	1	• Access cover
-2	56F0346	6	• Cover screw (small, 3.35mm)
-3	21F9053	6	• Cover screw (large, 4.5mm)
-4	90H6464	1	• Lower rail
-5	90H6462	1	• Upper rail
-6	NONUM	1	• Riser for Memory DIMM
-7	44H7558	4	• 32 MB Memory DIMM
-7	90H9075	4	• 128 MB Memory DIMM
-7	97H7725	4	• 256 MB Memory DIMM

Assembly 23: Internal Cable Assemblies

Asm- Index	Part Number	Units	Description Base I/O and Expansion Units
23-	46G3520	1	SIG30A, System unit control panel cable (DLX)
-	46G3521	1	SIG30B, Expansion unit control panel cable
-	46G3829	1	SIG30C, System unit control panel cable (LX)
-	46G3524	1	SIG41, Card Enclosure to Storage Expansion Unit (Bus 2, Drives 5-8)
-	46G3523	1	SIG42, Card Enclosure to Storage Expansion Unit (Bus 0, Drives 1-4)
-	46G3787	1	SIG43, Card Enclosure to Storage Expansion Unit (Bus 1, Drives 9-16)
-	46G3527	1	SIG44A, Card Enclosure to Storage Expansion Unit (SPCN 1)
-	46G3525	1	SIG44B, Card Enclosure to Storage Expansion Unit (SPCN 2)
-	46G3816	1	SIG45, Card Enclosure to Storage Expansion Unit (Model 530 Only)
-	46G3525	1	SIG50, Card Enclosure to Storage Expansion Unit (SPCN 2)
-	21H6981	1	SIG51, Card Enclosure to Storage Expansion Unit (SCSI)
-	21H6983	1	SIG52, Card Enclosure to Storage Expansion Unit (SPCN)
-	46G3523	1	SIG53, Card Enclosure to Storage Expansion Unit (SCSI 0)
-	46G3524	1	SIG54, Card Enclosure to Storage Expansion Unit (SCSI 2)
-	46G3787	1	SIG55, Card Enclosure to Storage Expansion Unit
-	97H7481	1	SIG60, PCI Assembly to DB3 board (FC 5065 or 5066 Expansion Tower)
-	97H7484	1	SIG61, PCI Assembly to DB2 board (FC 5065 or 5066 Expansion Tower)
-	97H7484	1	SIG62, PCI Assembly to DB1 board (FC 5065 or 5066 Expansion Tower)
-	97H7473	1	SIG63, DB3 to Control Panel NB1 (FC 5065 or 5066 Expansion Tower)
-	24L0803	1	SIG64, PCI Assembly to Power Dist. board (FC 5065 or 5066 Expansion Tower) Includes part numbers 97H7476, 97H7477, and 97H7606
-	46G3528	1	PWR20A, Card Enclosure to Storage Expansion Unit (Power 1)
-	46G3524	1	PWR20B and 2, Card Enclosure to Storage Expansion Unit (Power 1 and 2)
-	21H6941	1	PWR50, Card Enclosure to Storage Expansion Unit
-	21H6942	1	PWR51, Card Enclosure to Storage Expansion Unit
-	21H6982	1	PWR52, Card Enclosure to Storage Expansion Unit
-	97H7469	1	PWR60 (FC 5065 or 5066 Expansion Tower)
-	97H7483	1	PWR61 thru PWR64, PWR66 thru PWR69, and PWR71 thru PWR74 (FC 5065 or 5066 Expansion Tower)
-	97H7544	1	PWR65, PWR70 (FC 5065 or 5066 Expansion Tower)
-	97H7475	1	PWR75 (FC 5065 or 5066 Expansion Tower)
-	97H7474	1	PWR76 (FC 5065 or 5066 Expansion Tower)
-	36L8858	1	PWR77 thru PWR 79 (FC 5065 or 5066 Expansion Tower)
-	90H6285	1	SCSI Terminating Plug for FC 5070, 5072, 5080, 5082
-	90H6285	1	TRM 50 Terminating Plug (TRM50) for System Units, 9251 Base I/O Tower, and FC 5071, 5073, 5081, 5083 Expansion Towers
-	87G6056	1	AC Box to AMD
-	87G6054	1	SPCN

Assembly 23: (continued)

Asm- Index	Part Number	Units	Description Base I/O and Expansion Units
-	75G5712	1	JTAG
-	75G6001	1	AMD 3 & 4
			Models 640, 730 and S30 Systems
-	21H6972	3	SPD Backplane Power
-	21H6974	1	SIG30D, Control Panel (Service Processor and Interactive Card)
-	21H6976	1	Miscellaneous Signals #2
-	21H6977	1	Miscellaneous Signals #1
-	21H6978	1	SCIL #0
-	21H6979	1	SCIL #1
-	21H6980	1	JTAG
-	21H6984	1	Removable Media
-	21H6987	1	SPCN #1
-	21H6988	1	SPCN #2
-	21H6981	1	Storage Expansion Unit SCSI Cable
-	21H6982	1	Storage Expansion Unit power cable
-	21H6983	1	Storage Expansion Unit SPCN cable
			Models 650, 740, S40, and SB1 Systems
-	21H6990	1	Miscellaneous, CEC to Active Backplane
-	21H6996	1	SIG30G, Control Panel to front tailgate
-	21H7376	1	Four Port SCIL to rear tailgate
-	21H7759	1	JTAG to rear tailgate
-	21H7760	1	SIG30F, Control Panel (Service Processor and Interactive Card)
-	21H7374	1	SIG30H, Control Panel, (Base I/O Attach)
-	21H7375	1	JTAG Base I/O Attach
-	21H7643	1	SCIL/RIO Base I/O Attach

Assembly 24: External Cable Assemblies

Asm- Index	Part Number	Units	Description
24-	21F5097	AR	ASCII, 6 m (20 feet) - 6-Port (9841)
-	59X3829	AR	ASCII, 6 m (20 feet) - 12-Port (9825)
-	59X3816	AR	ASCII, 3 m (10 feet) - 12-Port (9825)
-	21F4339	AR	ASCII, 6 m (20 feet)
-	21F4344	AR	ASCII, 12 m (40 feet)
-	21F9966	AR	ASCII, 6 m (20 feet) - PC to Modem
-	21F9036	AR	ASCII, 6 m (20 feet) - PC to ASCII
-	21F4405	AR	ASCII, Surge Suppress
-	59X3833	AR	Async, 6 m (20 feet) - Modem
-	21F2591	AR	Async, 6 m (20 feet) - Modem (Germany)
-	93X0185	AR	Async, 6 m (20 feet) - Modem (Japan)
-	46G0450	AR	Communication console, 6 m (20 feet) (Germany)
-	46G0479	AR	Communication console, 2.5 m (8 feet)
-	85F8109	AR	Cryptographic, 6 m (20 feet) (9848)
-	46G3658	AR	Diskette, 2.4 m (8 feet) (9890)
-	46G3585	AR	Diskette and Twinaxial, 2.4 m (8 feet) (9891)
-	86G7691	AR	Ethernet Cable (9025) for the Integrated PC Server (IOP) Card
-	86G7712	1	External Battery Power Unit Cable (2.4 meters)
-	87G6236	AR	Fax, 10 m (32.8 feet) - US, Canada, Japan, Spain, Taiwan, Philippines
-	75G3803	AR	Fax, 10 m (32.8 feet) - France
-	75G3805	AR	Fax, 10 m (32.8 feet) - UK
-	75G3804	AR	Fax, 10 m (32.8 feet) - Germany
-	75G3802	AR	Fax, 10 m (32.8 feet) - Italy
-	75G3806	AR	Fax, 10 m (32.8 feet) - Sweden
-	75G3807	AR	Fax, 10 m (32.8 feet) - Australia
-	75G3808	AR	Fax, 10 m (32.8 feet) - Hong Kong
-	75G3809	AR	Fax, 10 m (32.8 feet) - Finland
-	75G3810	AR	Fax, 10 m (32.8 feet) - Netherlands
-	75G3811	AR	Fax, 10 m (32.8 feet) - Switzerland
-	75G3812	AR	Fax, 10 m (32.8 feet) - Denmark
-	21H4902	AR	Fax, 10 m (32.8 feet) - Austria
-	21H4903	AR	Fax, 10 m (32.8 feet) - Belgium
-	21H4904	AR	Fax, 10 m (32.8 feet) - South Africa
-	21H4905	AR	Fax, 10 m (32.8 feet) - Israel
-	62X3427	AR	I/O Bus Extension, 4 m (12 feet)
-	62X3428	AR	I/O Bus Extension, 8 m (26 feet)
-	54G3385	AR	I/O Bus Exp., 7 m (23 feet) - Optical (9893)
-	54G3386	AR	I/O Bus Exp., 13 m (42.6 feet) - Optical (9893)
-	54G3387	AR	I/O Bus Exp., 22 m (72.2 feet) - Optical (9893)
-	6495249	AR	IPI-3, 0.75 m (2.46 feet) (98xx)
-	6495250	AR	IPI-3, 2.5 m (8.2 feet) (9803)
-	6495252	AR	IPI-3, 4 m (13.1 feet) (9804)
-	6495251	AR	IPI-3, 6 m (19.7 feet) (9805)
-	6495253	AR	IPI-3, 0.6 m (9801)
-	6495254	AR	IPI-3, 1.5 m (4.92 feet) (9802)
-	6495255	AR	IPI-3, 10 m (32.8 feet) (9806)
-	6495256	AR	IPI-3, 20 m (65.6 feet) (9807)
-	6495257	AR	IPI-3, 30 m (98.4 feet) (9808)
-	6495258	AR	IPI-3, 40 m (131.2 feet) (9809)
-	6495264	AR	IPI-3, 60 m (196.8 feet) (9810)
-	6495275	AR	IPI-3, 30 m (98.4 feet) - Plenum (9811)

Assembly 24: (continued)

Asm- Index	Part Number	Units	Description
-	6495276	AR	IPI-3, 40 m (131.2 feet) - Plenum (9812)
-	6495277	AR	IPI-3, 60 m (196.8 feet) - Plenum (9813)
-	74F1663	AR	ISDN (9844)
-	21H5067	AR	ISDN - Canada
-	8191822	AR	ISDN - Euro
-	75G3980	AR	ISDN - New Zealand
-	17G2528	AR	ISDN - France (9844)
-	8191781	AR	ISDN - Switzerland (9844)
-	8191922	AR	ISDN - Euro NIA (9844)
-	22F0149	AR	EIA232, 6 m (20 feet) (9022)
-	22F0151	AR	EIA232, 6 m (20 feet) - Japan (9022)
-	22F0150	AR	EIA232, 6 m (20 feet) - Germany (9022)
-	21F9348	AR	EIA232, 15.6 m (50 feet) (9836)
-	21F9349	AR	EIA232, 15.6 m (50 feet) - Japan (9836)
-	21F9353	AR	EIA232, 15.6 m (50 feet) - Germany (9836)
-	72X5643	AR	RS366 (AUTOCALL), 6 m (20 feet) (9840)
-	21F4415	AR	RS366 (AUTOCALL), 6 m (20 feet) - Japan (9840)
-	21F4348	AR	RS422, 30 m (100 feet)
-	6495268	AR	SCSI, 4 m (12 feet) (9826)
-	6495269	AR	SCSI, 12 m (40 feet) (9827)
-	21F4980	AR	SCSI, 20 m (60 feet) (9846)
-	87G6235	AR	SPCN, 2 Meter (6.5 feet) - Frame to Frame (9206)
-	21F9469	AR	SPCN, 6 Meter (20 feet) - Frame to Frame (9219)
-	21F9358	AR	SPCN, 15 Meter (50 feet) - Frame to Frame (9213)
-	21F9359	AR	SPCN, 30 Meter (98 feet) - Frame to Frame (9214)
-	21F9360	AR	SPCN, 60 Meter (197 feet) - Frame to Frame (9215)
-	21F9412	AR	SPCN, 60 Meter (197 feet) - Optical (9211)
-	21F9415	AR	SPCN, 100 Meter - Optical (9212)
-	NONUM	AR	Tape signal cables. (See "EXTSCSI" on page 396.)
-	6339098	AR	Token-Ring LAN
-	72X5645	AR	Twinaxial, 4-Port 3 m (10 feet)
-	21F5093	AR	Twinaxial, 6 m (20 feet) - 8-Port Molded
-	21F8075	AR	Twinaxial Extender, 9 m (30 feet) - 8-Port only
-	4236482	AR	Twinaxial, 8 m (26.2 feet) - To First W/S Console
-	22F0152	AR	V.24 6 m (20 feet) (9023)
-	22F0154	AR	V.24 6 m (20 feet) - Japan (9023)
-	22F0153	AR	V.24 6 m (20 feet) - Germany (9023)
-	21F9350	AR	V.24 15.6 m (50 feet) (9835)
-	21F9351	AR	V.24 15.6 m (50 feet) - Japan (9835)
-	21F9352	AR	V.24 15.6 m (50 feet) - Germany (9835)
-	85F9396	AR	V.24 24.4 m (80 feet) - Japan
-	85F9397	AR	V.24 24.4 m (80 feet) - Germany
-	74F1837	AR	V.24 24.4 m (80 feet)
-	1749352	AR	V.35, French Stub
-	21F9357	AR	V.35 - 15.6 m (50 feet) (9838)
-	72X5641	AR	V.35 - 6 m (20 feet) (9020)
-	17G3991	AR	V.35 - 6 m (20 feet) (9879) for FC 2666
-	74F1839	AR	V.35 - 24.4 m (80 feet)
-	17G3992	AR	V.35 - 24.4 m (80 feet) (9880) for FC 2666
-	17G4000	AR	V.36/RS449 - 6 m (20 feet) (9882) for FC 2666
-	17G4001	AR	V.36/RS449 - 24.4 m (80 feet) (9883) for FC 2666*

Assembly 24: (continued)

Asm-Index	Part Number	Units	Description
-	17G4002	AR	V.36/RS449 - 45.7 m (150 feet) (9884) for FC 2666* (* looped clocking modem required)
-	21F9356	AR	X.21 - 15.6 m (50 feet) (9839)
-	72X5640	AR	X.21 - 6 m (20 feet) (9021)
-	17G3987	AR	X.21 - 6 m (20 feet) (9885) for FC 2666
-	21F9345	AR	2 Port Adapter Cable
-	21F9044	AR	4 m (13 feet) (9871) for FC 6500
-	21F9043	AR	2 m (6.5 feet) 2161 to 9427 — 6500 to 9337
-	21F9046	AR	1.5 m (5 feet) (9878) for FC 6501
-	56F0382	AR	6 m (20 feet) (9872) for FC 6500
-	21F9045	AR	20 m (60 feet) (9873) for FC 6500
-	21F9047	AR	4 m (13 feet) (9876) for FC 6501
-	56F0381	AR	6 m (20 feet) (9877) for FC 6501
-	21F9048	AR	24 m (78.8 feet) (9878) for FC 6501
-	62X3421	AR	370 Tape IOP Adapter (Dual 50-Pin to Bus/Tag)
-	6473029	AR	370 Tape IOP Adapter (78-Pin to Bus/Tag)
-	6473011	AR	370 Tape Internal Channel, 1.7 m (78-Pin to 78-Pin)
-	6473014	AR	370 Tape Internal Channel, 6.6 m (78-Pin to 78-Pin)
-	6473016	AR	370 Tape Internal Channel, 24.0 m (78-Pin to 78-Pin)
-	6473026	AR	370 Tape Device Adapter (Bus/Tag to 78-Pin, 3490E C Models Only)
			WAN SPD Cables
-	21H3764	AR	EIA232/V.24 cable 6.1 meter (20 feet)
-	21H3765	AR	EIA232/V.24 cable 6.1 meter (20 feet) - Germany
-	21H3766	AR	EIA232/V.24 cable 6.1 meter (20 feet) - Japan
-	21H3767	AR	EIA232/V.24 cable 15.2 meter (50 feet)
-	21H3768	AR	EIA232/V.24 cable 15.2 meter (50 feet) - Germany
-	21H3769	AR	EIA232/V.24 cable 15.2 meter (50 feet) - Japan
-	97H7389	AR	EIA232/V.24 cable 24.4 meter (80 feet)
-	97H7390	AR	EIA232/V.24 cable 24.4 meter (80 feet) - Germany
-	97H7391	AR	EIA232/V.24 cable 24.4 meter (80 feet) - Japan
-	21H3770	AR	V.24 cable 6.1 meter (20 feet)
-	21H3771	AR	V.24 cable 6.1 meter (20 feet) - Germany
-	21H3772	AR	V.24 cable 6.1 meter (20 feet) - Japan
-	21H3773	AR	V.24 cable 15.2 meter (50 feet)
-	21H3774	AR	V.24 cable 15.2 meter (50 feet) - Germany
-	21H3775	AR	V.24 cable 15.2 meter (50 feet) - Japan
-	21H3776	AR	V.24 cable 24.4 meter (80 feet)
-	21H3777	AR	V.24 cable 24.4 meter (80 feet) - Germany
-	21H3778	AR	V.24 cable 24.4 meter (80 feet) - Japan
-	21H3787	AR	V.36 cable 6.1 meter (20 feet)
-	21H3788	AR	V.36 cable 15.2 meter (50 feet)
-	21H3789	AR	V.36 cable 45.7 meter (150 feet)
-	21H3792	AR	V.35 cable 6.1 meter (20 feet)
-	21H3785	AR	V.35 cable 15.2 meter (50 feet)
-	21H3786	AR	V.35 cable 24.4 meter (80 feet)
-	21H3782	AR	X.21 cable 6.1 meter (20 feet)
-	21H3783	AR	X.21 cable 15.2 meter (50 feet)
-	21H3779	AR	Console cable 6.1 meter (20 feet) Models 640, 650, 730, 740, S30, S40, and SB1
-	21H7695	AR	Battery Backup Cable, 14.5 meter
-	21H7377	AR	RIO Cable, 15 meter
-	21H7643	AR	RIO Cable, 6 meter
-	97H7556	AR	Operations Console cable, 6.1 meter (20 feet) (36 pin for feature 2699)

Assembly 24: (continued)

Asm- Index	Part Number	Units	Description
-	97H7584	AR	Remote Control Panel cable (SAMI)

Assembly 25: Miscellaneous

Asm- Index	Part Number	Units	Description
25-	16G5609	AR	Optical bus terminator
-	16G8095	AR	Control Panel Battery
-	21F9354	1	AA Card Wrap (T-pack)
-	72X6365	1	BB Card Wrap (universal)
-	74F1846	1	CC Card Wrap (Enet)
-	17G4124	1	DD Card Wrap (SDDI)
-	17G4138	1	EE Card Wrap (Fax)
-	17G4009	1	FF Card Wrap (High Speed)
-	92F9003	1	GG Card Wrap (FDDI)
-	23F5634	1	HH Card Wrap (Crypto)
-	6165899	1	II Card Wrap (TR lan)
-	86G7674	1	JJ Card Wrap (for FC 2723, 2724, 6149, 6181, 6510, and 6520)
-	21H6871	1	KK Card Wrap (WS)
-	21H3548	1	LL Card Wrap (ATM)
-	21H3547	1	MM Card Wrap (WS)
-	42H0540	1	NN Card Wrap (ATM)
-	45H2364	1	OO Card Wrap (WS PCI)
-	21H3760	1	PP Card Wrap (WAN SPD)
-	44H7479	1	QQ Card Wrap (WAN PCI)
-	90H6024	1	RR Card Wrap (PAR PORT)
-	21H4811	1	SS RJ45 Card Wrap (for FC 2810, 2838)
-	97H7749	1	UU Card Wrap (ISDN) FC 2750
-	97H7745	1	VV Card Wrap (ISDN) FC 2751
-	97H7754	1	WW Card Wrap FC 2761
-	16G5609	1	YY Card Wrap FC 2743
-	75G2725	1	Optical BUS Card Wrap/Terminator
-	59X3832	1	ASCII Cable Wrap
-	56F0307	1	ISDN Cable Wrap
-	81G3185	1	Optical Cable Wrap
-	97H7526	1	Optical Cable Wrap (When no ext. optical is used)
-	17G2641	1	EIA232 Cable Wrap
-	17G2642	1	ASYNC Cable Wrap
-	17G2643	1	RS366 Cable Wrap
-	17G2644	1	RS449 Cable Wrap
-	17G2645	1	V24 Cable Wrap
-	17G2646	1	X21 Cable Wrap
-	17G4103	1	X21HS Cable Wrap
-	17G2647	1	V35HS Cable Wrap
-	17G2648	1	V35 Cable Wrap
-	21H3761	1	V.24AD Cable Wrap
-	21H3762	1	RS232AD Cable Wrap
-	21H3763	1	V35AD Cable Wrap
-	21H3790	1	RS449AD Cable Wrap
-	21H3791	1	X21AD Cable Wrap
-	59X4262	1	Twinax port tester (93X2040)
-	21H6806	AR	Airflow Card Asm, Processor (263B)
-	21H6950	AR	Airflow Card Asm, Memory (263C)
-	46G3556	AR	Airflow Card Asm, Full (264A)
-	73F9384	AR	Airflow Card Asm, 1/2
-	75G3907	AR	Airflow Card Asm, 1/3
-	92G5190	AR	Antenna, Yagi directional

Assembly 25: (continued)

Asm-Index	Part Number	Units	Description
-	92G5195	AR	Antenna cable - 20ft. wireless
-	92G5196	AR	Antenna cable - 50ft. wireless
-	92G5194	AR	Antenna, directional 90 degrees
-	92G5192	AR	Antenna, omni-directional, 360 degrees
-	41F9970	AR	Cryptographic key pad, full function
-	82F5486	AR	Cryptographic key pad, limited function
-	92G5193	AR	2663 Hemispherical
-	92G5197	AR	2663 485 Balun with line terminator
-	71G9988	AR	Fax Coupler - US, Canada
-	71G9991	AR	Fax Coupler - France
-	71G9993	AR	Fax Coupler - UK
-	71G9992	AR	Fax Coupler - Germany
-	71G9989	AR	Fax Coupler - Japan
-	71G9990	AR	Fax Coupler - Italy
-	72G0002	AR	Fax Coupler - Spain
-	71G9994	AR	Fax Coupler - Sweden
-	71G9995	AR	Fax Coupler - Australia
-	60F0707	AR	Fax Coupler - Denmark
-	71G9996	AR	Fax Coupler - Hong Kong
-	71G9997	AR	Fax Coupler - Taiwan
-	71G9998	AR	Fax Coupler - Finland
-	71G9999	AR	Fax Coupler - Netherlands
-	72G0000	AR	Fax Coupler - Switzerland
-	72G0001	AR	Fax Coupler - Philippines
-			1/4-inch cartridge tapes
-	46G0298	AR	Adapter, 25 pin to 9 pin EIA232
-	82F0421	AR	2620 keypad reader
-	82F0422	AR	2628 keypad reader
-	16G8467	AR	Cleaning Cartridge, 8mm abrasive
-	16G8572	AR	Cleaning Cartridge (QIC-120 and QIC-525)
-	46G2674	AR	Cleaning Cartridge (QIC-1000, QIC-2GB, QIC-2GB (DC), QIC-4GB, QIC-5010) all countries
-	21F8586	AR	CE Test Tape, FC 6378, 6342, 6347, 6367 (QIC-120)
-	92X7518	AR	CE Test tape, FC 9346, 6341, 6346, 6366 (QIC-525)
-	21F8734	AR	CE Test Tape, FC 6379, 6343, 6348, 6368 (QIC-1000)
-	81F8902	AR	CE Test Tape, 1.25L (QIC-1000)
-	46G2660	AR	CE Test Tape, FC 7208 (8mm, off-line)
-	21F8577	AR	CE Test Tape, FC 6390, 7208 (8mm, on-line)
-	16G8438	AR	CE Test Tape, FC 6381 (QIC-2GB)
-	87G1643	AR	CE Test Tape, FC 6335 (QIC-Mini test Tape)
-	59H2677	AR	CE Test Tape, FC 7208- model 342
-	59H3661	AR	CE Test Tape, FC 6382, 7207-122 (QIC-4GB)
-	87G1626	AR	CE Test Tape, FC 6383, 6385 (MLR1)
-	59H4127	AR	CE Test Tape, FC 6386 (MLR3)
-	87G1626	AR	CE Test Tape (QIC5010, MLR1)

Power Cord Part Numbers and Receptacle Descriptions

Table 54. AS/400 System Power Cords and Receptacles

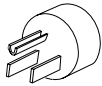

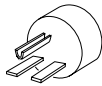

B - FC 5070, 5072, 5080, 5082 D ¹ - Model 620, 720, S20 E ¹ - Model 600, 610 F - Models 640, 650, 730, 740, S30, S40, SB1 G - Models 170, 250 H - FC 5081, 5083, 5071, 5073, 9251		
Plug	Receptacle	Countries
Type 4  125V 15A		<i>National Electrical Manufacturers Association</i> NEMA WD-1: 5-15P Antigua, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Curacao, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Liberia, Mexico, Montserrat, Netherlands Antilles, Nicaragua, Panama, Philippines, St. Kitts, Taiwan, Tortola (BVI), Trinidad/Tobago, United States, Venezuela
	Part Number 86G7648 (6 ft) B 76H4865 (6 ft) E 87G3880 (14 ft) B 76H4866 (14 ft) E 75G2695 (9 ft) G	
Type 5  250V 15A		<i>National Electrical Manufacturers Association</i> NEMA WD-1: 6-15P Antigua, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Canada, Cayman Islands, Costa Rica, Curacao, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Montserrat, Netherlands Antilles, Nevis, Nicaragua, Panama, Philippines, St. Kitts, Taiwan, Thailand, Tortola (BVI), Trinidad/Tobago, Turks and Caicos Islands, United States, Venezuela
	Part Number 1838576 (6 ft) B H 14F1547 (6 ft) D E 1838573 (14 ft) B H 14F1548 (14 ft) D E 1838574 (9 ft) G	

Table 54. AS/400 System Power Cords and Receptacles (continued)





<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 6</p>  <p>250V 10A</p>		<p><i>International Electrotechnical Commission</i></p> <p>IEC 83-A5</p> <p>Argentina, Australia, Brazil, Cape Verde Islands, Fiji Islands, New Zealand, Papua New Guinea, People's Republic of China, Western Samoa</p>
	<p>Part Number</p> <p>13F9939 (6 ft) B H</p> <p>13F9940 (9 ft) G</p> <p>13F9941 (14 ft) B H</p>	
<p>Type 7</p>  <p>125V 15A Locking</p>		<p><i>National Electrical Manufacturers Association</i></p> <p>NEMA WD-1: L5-15P</p> <p>Canada, United States</p>
	<p>Part Number</p> <p>86G7874 (6 ft) B</p> <p>76H4868 (6 ft) E</p> <p>87G3881 (14 ft) B</p> <p>76H4869 (14 ft) E</p>	

Table 54. AS/400 System Power Cords and Receptacles (continued)





<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 10</p>  <p>250V 15A Locking</p>		<p>National Electrical Manufacturers Association</p> <p>NEMA WD-5: L6-15P</p> <p>Canada, Columbia, Japan, Mexico, United States</p> <p>Note: Plug Type 10 supports models 15x, 17x, P0x, 2xx, 4xx, and 9910-080 in Colombia and Mexico. Plug Type 10 is not available in Canada, Japan, and the United States for these models.</p>
	<p>Part Number</p> <p>14F1549 (6 ft) D E</p> <p>14F1550 (14 ft) D E</p> <p>86G7878 (6 ft) B H</p> <p>86G7879 (14 ft) B H [outside Canada and United States G]</p>	
<p>Type 11</p>  <p>250V 20A</p>		<p>NEMA WD-5: L6-20P</p> <p>Argentina, Cape Verde Islands</p>
	<p>Part Number</p> <p>14F1553 (14 ft) D E</p>	

Table 54. AS/400 System Power Cords and Receptacles (continued)



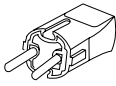

<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 12</p>  <p>250V 30A Locking</p>		<p><i>National Electrical Manufacturers Association</i></p> <p>NEMA WD-5: L6-30P</p> <p>Afghanistan, Anguilla, Antigua, Argentina, Aruba, Bahamas, Bangladesh, Barbados, Belize, Bermuda, Bolivia, Bonaire, Brunei, Caicos Islands, Chile, Canada, Cape Verde Islands, Cayman Islands, Colombia, Costa Rica, Curacao, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Hong Kong, Indonesia, Japan, Jamaica, Malaysia, Mexico, Montserrat, Myanmar, Netherlands Antilles, Nicaragua, Panama, Paraguay, Peoples Republic of China, Peru, Philippines, St. Kitts & Nevis, Sri Lanka, St. Martin, Suriname, Taiwan, Thailand, Trinidad/Tobago, Tortola (BVI), Turks Island, United States, Uruguay, Venezuela</p>
	<p>Part Number</p> <p>11F0114 (6 ft) F</p> <p>11F0113 (14 ft) F</p>	
<p>Type 18</p>  <p>250V 16A</p>		<p><i>International Rule for the Approval of Electrical Equipment</i></p> <p>CEE 7 VII</p> <p>Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Belarus, Belgium, Benin, Bosnia, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Congo, Croatia, Czech Republic, Djibouti, Egypt, Equatorial Guinea, Estonia, Finland, France, French Polynesia, French Guyana, Gabon, Georgia, Germany, Greece, Guadeloupe, Guinea, Guinea-Bissau, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Kazakhstan, Kirghizia, Laos, Latvia, Lebanon, Liberia, Lithuania, Luxembourg, Macau, Macedonia, Mali, Martinique, Mauritania, Moldavia, Monaco, Morocco, Mozambique, Netherlands, New Caledonia, Niger, North Korea, Norway, Paraguay, Peru, Poland, Portugal, Principe, Reunion, Romania, Russia, Rwanda, Sao Thome Island, Saudi Arabia, Senegal, Serbia, Slovenia, Slovakia, South Korea, Spain, Sudan, Suriname, Swaziland, Sweden, Syria, Tahiti, Togo, Tunisia, Turkey, Ukraine, Uruguay, Uzbekistan, Vietnam, Zaire, Zimbabwe</p>
	<p>Part Number</p> <p>13F9978 (6 ft) B H</p> <p>13F9979 (9 ft) G</p> <p>13F9980 (14 ft) B H</p> <p>14F1554 (14 ft) D E</p>	

Table 54. AS/400 System Power Cords and Receptacles (continued)





<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 19</p>  <p>250V 10A</p>		<p><i>International Rule for the Approval of Electrical Equipment</i></p> <p>CEE</p> <p>Denmark</p>
	<p>Part Number</p> <p>13F9996 (6 ft) B H</p> <p>13F9997 (9 ft) G</p> <p>13F9998 (14 ft) B H</p>	
<p>Type 22</p>  <p>250V 16A</p>		<p><i>South African Bureau of Standards</i></p> <p>SABS 164 BS 546</p> <p>Bangladesh, Myanmar, Pakistan, South Africa, Sri Lanka</p>
	<p>Part Number</p> <p>14F0014 (6 ft) B H</p> <p>14F0015 (9 ft) G</p> <p>14F0016 (14 ft) B H</p> <p>14F1557 (14 ft) D E</p>	

Table 54. AS/400 System Power Cords and Receptacles (continued)





<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 23</p>  <p>250V 13A</p>		<p><i>British Standards Institution</i></p> <p>BS 1363A</p> <p>Abu Dhabi, Antigua, Bahrain, Botswana, Brunei, Cyprus, Dominica, Gambia, Ghana, Grenada, Grenadines, Guyana, Hong Kong, India, Iraq, Ireland, Jordan, Kenya, Kuwait, Lesotho, Malawi, Malaysia, Malta, Namibia, Nepal, Nigeria, Oman, Qatar, Sierra Leone, Singapore, St. Lucia, Tanzania, Uganda, United Arab Emirates, United Kingdom, Yemen, Zambia</p>
	<p>Part Number</p> <p>14F0032 (6 ft) B H</p> <p>14F0033 (9 ft) G</p> <p>14F0034 (14 ft) B H</p> <p>12J5988 (14 ft) D E</p>	
<p>Type 24</p>  <p>250V 10A</p>		<p><i>Schweizerischer Elektrotechnischer Verein</i></p> <p>SEV 24507</p> <p>Liechtenstein, Switzerland</p>
	<p>Part Number</p> <p>14F0050 (6 ft) B H</p> <p>14F0051 (9 ft) G</p> <p>14F0052 (14 ft) B H</p>	

Table 54. AS/400 System Power Cords and Receptacles (continued)





<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 25</p>  <p>250V 10A/16A</p>		<p><i>Comitato Electtrotecnico Italiano</i></p> <p><i>CEI 23-16</i></p> <p>Chile, Ethiopia, Italy, Libya, Somalia</p>
	<p>Part Number</p> <p>14F0068 (6 ft) B H</p> <p>14F0069 (9 ft) G</p> <p>14F0070 (14 ft) B H</p> <p>14F1560 (14 ft) D E</p>	
<p>Type 32</p>  <p>250V 10A/16A</p>		<p><i>Standards Institution of Israel</i></p> <p><i>SII 32-1971</i></p> <p>Israel</p>
	<p>Part Number</p> <p>14F0086 (6 ft) B H</p> <p>14F0087 (9 ft) G</p> <p>14F0088 (14 ft) B H</p> <p>14F1561 (14 ft) D E</p>	

Table 54. AS/400 System Power Cords and Receptacles (continued)

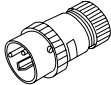

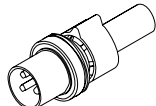

<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 34</p>  <p>250V 10A/15A Water Resistant</p>		<p><i>Manufacturer's Number Russel/Stoll</i></p> <p>Plug 3720U-2</p> <p>Connector 3913U-2</p> <p>Receptacle 3743U-2</p> <p>Canada, Japan, United States</p>
	<p>Part Number</p> <p>73F4931 (6 ft) B H</p> <p>14F1551 (6 ft) D E</p> <p>73F4932 (14 ft) B H</p> <p>14F1552 (14 ft) D E</p>	
<p>Type 40</p>  <p>250V 30A Water Resistant</p>		<p><i>Manufacturer's Number Russel / Stoll</i></p> <p>Plug 3750 (Duraguard 9R33U0W)</p> <p>Connector 3933</p> <p>Receptacle 3753</p> <p>Canada, United States</p>
	<p>Part Number</p> <p>46F4593 (6 ft) F</p> <p>46F4594 (14 ft) F</p>	

Table 54. AS/400 System Power Cords and Receptacles (continued)

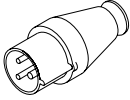

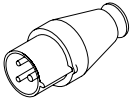

<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 46 (P+N+G)</p>  <p>250V 32A</p>		<p><i>International Electrotechnical Commission</i></p> <p>IEC 309</p> <p>Abu Dubai, Albania, Algeria, Andorra, Angola, Armenia, Bahrain, Belarus, Belgium, Benin, Bosnia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Congo, Croatia, Cyprus, Djibouti, Dominica, Egypt, Equatorial Guinea, Ethiopia, France, French Guyana, French Polynesia, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Grenada, Grenadines, Guadeloupe, Guinea, Guinea-Bissau, Guyana, Hungary, Iceland, India, Iran, Iraq, Ireland, Italy, Ivory Coast, Jordan, Kazakhstan, Kenya, Kirghizia, Kuwait, Laos, Lesotho, Lebanon, Liberia, Libya, Luxembourg, Macau, Macedonia, Malawi, Mali, Malta, Martinique, Mauritania, Moldavia, Monaco, Morocco, Mozambique, Namibia, Nepal, Netherlands, New Caledonia, Niger, Nigeria, Norway, Oman, Pakistan, Poland, Principe, Qatar, Reunion, Romania, Rwanda, Sao Thome Island, Saudi Arabia, Senegal, Serbia, Sierra Leone, Singapore, Slovakia, Slovenia, Somalia, Spain, St. Lucia, St. Vincent, Sudan, Swaziland, Syria, Tanzania, Togo, Tunisia, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uzbekistan, Vietnam, Western Samoa, Yemen, Zaire, Zambia, Zimbabwe</p>
	<p>Part Number</p> <p>21H7693 (14 ft) F</p>	
<p>Type 46 (P+N+G)</p>  <p>250V 16A</p>		<p><i>International Electrotechnical Commission</i></p> <p>IEC 309</p> <p>Denmark, Liechtenstein, Switzerland</p>
	<p>Part Number</p> <p>14F1555 (14 ft) D E</p>	

Table 54. AS/400 System Power Cords and Receptacles (continued)

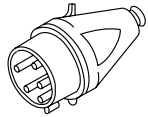

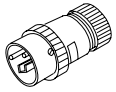



<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 46 (3P+N+G)</p>  <p>250V 16A</p>		<p><i>International Electrotechnical Commission</i></p> <p>IEC 309</p> <p>Austria, Czech Republic, Denmark, Estonia, Finland, Israel, Latvia, Liechtenstein, Lithuania, Portugal, Russia, South Africa, Sweden, Switzerland, Turkey</p>
	<p>Part Number</p> <p>21H7691 (14 ft) F</p> <p>Dual Phase</p>	
<p>Type 51</p>  <p>125V 13A/15A Water Resistant</p>		<p><i>Manufacturer's Number Russel/Stoll</i></p> <p>Plug 3720U-1</p> <p>Receptacle 3743U-1</p> <p>Inline 3913U-1</p> <p>Canada, United States</p>
	<p>Part Number</p> <p>46F5893 (6 ft) B</p> <p>12J6005 (6 ft) E</p> <p>46F5894 (14 ft) B</p> <p>12J6007 (14 ft) E</p>	
<p>Type 54</p>  <p>250V 15A</p>		<p><i>International Electrotechnical Commission</i></p> <p>SAA-AS 3112</p> <p>Australia, Brazil, Fiji, New Zealand, Papua New Guinea, People's Republic of China, Western Samoa</p>
	<p>Part Number</p> <p>14F1559 (14 ft) D E</p>	

Table 54. AS/400 System Power Cords and Receptacles (continued)

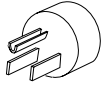



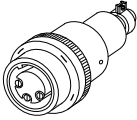

<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 59</p>  <p>125V 20A</p>		<p><i>JIS C-8303-1983</i></p> <p>Japan</p>
	<p>Part Number</p> <p>34G0222 (6 ft) B</p> <p>34G0224 (14 ft) B</p>	
<p>Type KP</p>  <p>250V 30A</p>		<p>North Korea, South Korea</p>
	<p>Part Number</p> <p>87G6067 (14 ft) F</p>	
<p>Type PDL</p>  <p>250V 30A</p>		<p>Australia, Fiji, New Zealand, Papua New Guinea</p>
	<p>Part Number</p> <p>11F0106 (14 ft) F (Australia)</p> <p>11F0107 (14 ft) F (New Zealand)</p>	

Table 54. AS/400 System Power Cords and Receptacles (continued)

B - FC 5070, 5072, 5080, 5082		
D ¹ - Model 620, 720, S20		
E ¹ - Model 600, 610		
F - Models 640, 650, 730, 740, S30, S40, SB1		
G - Models 170, 250		
H - FC 5081, 5083, 5071, 5073, 9251		
Plug	Receptacle	Countries
<p>Note:¹ When connecting the power line cord to the Models 600, S10, 620, 720, and S20 system unit, you must do the following to have a secure connection:</p> <ul style="list-style-type: none"> • Ensure that the power cord is properly routed through the strain relief on the back of the system. • Ensure that the power cord is fully inserted in the power receptacle inlet on the back of the system unit. This may require another push with a minimum amount of force. 		

Part 3. Appendixes

Appendix A. Problem Summary Form

Use this problem summary form in this appendix to record information displayed on the control panel when a problem occurs on the system.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 781, before continuing with this procedure.

If the system has logical partitions, then use this form to record information displayed on either the control panel or the *Work with Partition Status* screen. To access the panel functions of a logically partitioned system go to "Accessing a Logical Partition's Panel Functions" on page 787.

Note: You may copy this form as necessary.

1. Describe the problem.
2. Record the date and time.
3. Record any control panel lights that are on.
 - Power Active
 - Processor Active
 - Attention
4. Does the system have logical partitions?

No **Yes**

↓ Record the following information:

Partition Information	
Partition's ID	
Partition's Name (Not Req'd)	
Partition's State Examples: Failed, Hold, etc.	
Partition's OS/400 Version and Release Example: V4R4	
Record the Date and Time system values set in the partition if possible.	

5. Record the information shown for functions 01, 05, SRC words 1 through 9 (which are in functions 11 - 19), and function 20-3.

Note: If the system has logical partitions and the problem is in a secondary partition, then some of the functions may not be available. Use the system control panel or option 20 on the *Work with Partition Status* screen to record function 20 information.

Note: All functions may not display, depending on the failure.

- Function 1 (This is the IPL Mode/Type)

- Function 5 (This is the power SRC, if applicable)

- Function 11 – 3 (This is SRC word 1)

- Function 12 – 3 (This is SRC word 2)

- Function 13 – 3 (This is SRC word 3)

- Function 14 – 3 (This is SRC word 4)

- Function 15 – 3 (This is SRC word 5)

- Function 16 – 3 (This is SRC word 6)

- Function 17 – 3 (This is SRC word 7)

- Function 18 – 3 (This is SRC word 8)

- Function 19 – 3 (This is SRC word 9)

- Function 20 – 3 (This is the System Type, Model, and Processor Feature)

6. Return to the procedure that sent you here.

Appendix B. System Safety Inspection

Introduction

A safety inspection for the system should be performed:

- When it is inspected for an IBM maintenance agreement
- When IBM service is requested and no service has recently been performed by IBM
- When an alterations and attachments review is performed
- When changes have been made to the equipment that might affect its safety

If the inspection indicates safety conditions that are not acceptable, the conditions must be corrected before IBM services the machine.

Note: The correction of any unsafe condition is the responsibility of the owner of the system.

While performing this inspection, special attention must be given to these areas:

- Feature and model changes and engineering change (EC) upgrades
- Additions of non-IBM power supplies or attachments
- Missing safety covers
- Removed, faded, or painted-over safety labels
- Replacement requirements concerning parts for primary power
- Any other items relating to the product's safety

Before you start, you must have completed the *Electrical Safety Education Course for IBM Service Representatives* (self-study course 77170 or equivalent).

You will need these items:

- An IBM service representative tool kit (or equivalent)
- A copy of AS/400 Service Memorandums (SMs), which include engineering change announcements (ECAs) and service aids (SAs) documents for the system
- Latest machine history, if possible
- *Electrical Safety for IBM Service Representatives*, S229-8124
- A Fluke** 8060A digital voltmeter (part 8496278) or equivalent

Perform each safety check on the following pages and place a check mark in front of each item as you complete it.

Covers

All Models

1. Check for damaged or missing covers.
2. Check covers for sharp edges.

AC Power Cord(s)

All Models

1. With machine powered off, remove the power cord from the electrical outlet.
2. Check the power cord and power plug for visible cracks, wear, or damage.
3. Check for 1.0 ohm or less of resistance between the power cord ground and the power supply frame.
4. Ensure that the power cord is fully inserted and secured into position on the machine end.
5. Ensure that the power cord required for your country and system is installed.

AC Safety Grounds

Models 640, 650, 730, 740, S30, S40, and SB1, Feature Towers 507x and 508x, and I/O Towers for 650, 740, S40, and SB1

1. Ensure that all power supply mounting screws are tight.
2. Ensure that the mounting screws of the ac module or internal UPS are tight.

Safety Labels

Ensure that all the safety labels are visible and readable:

Feature Tower 507x and 508x, and I/O Towers for 650, 740, S40 and SB1

1. Main power rating attached to the right side frame at the back of the machine.
2. 240 V ac attached to each 23 pin connector (J2 and J3) on ac modules that have SPCN connectors (J15 and J16) (46G3576).
3. Danger up to 240 V ac attached to the bottom frame under the power supplies (46G3575).
4. Weight restriction label attached under the handle on the cover of the External Battery Backup Unit (74F9976).

Models 640, 650, 730, 740, S30, S40, and SB1

1. Main power rating attached to the left side frame at the back of the machine.
2. Danger up to 240 V ac attached to the bottom frame under each power supply (90H6275).
3. Caution Lead Acid battery attached to side of internal battery unit (21H7089).
4. Weight restriction label attached to top of internal battery (74F9976).
5. Weight restriction label attached to top of power sub-frame assembly (74F9976).
6. Models 640, 730 and S30 only: Two weight restriction labels attached to SPD/DASD cage sub-frame assembly (74F9976).
7. Two weight restriction labels attached to active back plane assembly (74F9976).
8. Main power rating attached to back plate on external battery unit.
9. Caution lead Acid battery label attached to back plate on external battery unit (21H7089).

10. Weight restriction label attached to base at rear of external battery unit (74F9978).

Power Off and On (System Unit)

All Models

1. Ensure that the system powers off correctly.
2. Ensure that the system powers on correctly.

Internal Mechanical Inspection

Feature Towers 507x and 508x, and I/O Towers for 650, 740, S40, and SB1

1. Ensure that AMD shields are installed on the ac module AMD assembly.
2. Ensure that the EMC access plate is installed over the power supplies.
3. Ensure that the card retainers are installed on the front and back of the card enclosure.
4. Ensure that the latch to lock the bottom adapter card is installed on all Magnetic Storage IOP (2624) cards with part number 86G8317.
5. Ensure that the safety shield is installed over the left side of the expansion unit AMD assembly.
6. Check the external battery backup power supply cable (if present) for visible cracks, wear, or damage.

Models 640, 650, 730, 740, S30, and S40 and SB1

1. Models 640, 730, and S30 only: Ensure that the retainer that holds the vertical SPD card separators is in place.
2. Ensure that the vertical rods between DASD units are in place (model 640, 730 and S30 only).
3. Ensure that the EMC access plate is installed over the charger and internal battery unit.
4. Ensure that the EMC access plates are installed over all cages.

Appendix C. Preventive Maintenance (PM) Checklist

Complete all items in the following list during every PM call.

1. PM is performed on systems that have been installed for longer than one year.

Note: Do not perform PM on systems during the warranty period.

2. Review the PTF level:

- a. PTFs correct problems that look like hardware failures. Discuss with the customer the importance of installing PTFs on a regular basis to decrease possible system down time. Refer the Customer to *Basic System Operation, Administration, and Problem Handling*, SC41-5206-04 book or Web page <http://as400service.ibm.com> for latest PTF Maintenance Strategy and details on PTF management and application.

- b. Review the following procedures with the system operators:

- 1) Check for the last cumulative PTF package that was installed:

- For OS/400, use the command DSPPTF 5769SS1 (the Display PTF command).

You will see a PTF TCxxyyy. This indicates that the presently installed cumulative PTF package is xxyyy, where xx is the year and yyy is the day of the year that the cumulative PTF package was built. For example, in **PTF TC95012**, the 95 in the entry indicates 1995; the 012 indicates day 12 of the year.

- 2) If the installed cumulative PTF package is more than four months old, recommend that the customer order and install the latest cumulative PTF package (the following instructions are for ordering a cumulative PTF package in the United States, similar options are available for other countries):

- a) To order the latest cumulative PTF package:

- By Electronic Customer Support (if available), use the command **SNDPTFORD SF99vrm** where **vrm** is the version, release, and modification of the PTF package you order. For example, SF99420 is used to order a V4R2M0 PTF package.
- By mail, order from

IBM Corporation
Dept 909
3605 Highway 52 North
Rochester, MN 55901

- By FAX, dial **1-800-288-9584**
- By telephone (if entitled), dial **1-800-274-0015**
- By IBM Link (if available), use Service Link - Electronic Trouble Reporting (ETR)

- b) To install the latest cumulative PTF package:

Each cumulative PTF package is shipped with installation instructions. These must be followed to ensure correct installation.

3. Review the Product Activity Log for possible problems.

Note: Check the Product Activity Log sizes and make them larger, if necessary, to hold older errors in the log (see “Product Activity Log” in the *AS/400 Service Functions* information).

4. Review the system configuration list (see “Hardware Service Manager” in the *AS/400 Service Functions* information).
 - Visually inspect the system hardware and compare it to the system configuration list.
 - Correct the system configuration list if necessary.
Check for any missing or failed hardware.
 - Compare the serial number on the system to the serial number on the system configuration list. If they do not match, ask your next level of support for assistance.
5. Inspect all installed frames to ensure that there are **no** open card slots. If only one card slot is open, the airflow through the system will be reduced enough to possibly cause intermittent problems or hardware failures. Install airflow cards where any are missing (see Chapter 8. Parts Listing in “Chapter 6. Removal and Installation Procedures” on page 793).
6. Inspect the system for safety hazards such as loose cables, open doors, and bent covers.
7. Inspect the site environment where the system is kept.
Recommend that the customer correct items that do not meet IBM specifications. These items include:
 - The system is in a limited service area
 - Poor ventilation
 - Blocked air vents
 - The environment is hot
 - The environment has dust
8. Perform any necessary PM on the I/O units and show the procedures to any new system operators.
Use the I/O service information, when necessary, to determine the PM needs and procedures for the following:
 - IBM disk units; for example, clean dust from the front air vent, ensure that all AMDs are working.
 - IBM tape units; for example, clean the heads and the tape path.
 - IBM diskette units; for example, clean the heads.
 - IBM printers; for example, clean the print mechanism.
9. Vacuum and clean, if necessary.
10. Ensure that all system accessories are available (for example, service information and wrap connectors). You should normally store these items in the system service kit. Ensure that the customer knows the location of all these items.
11. Verify that all engineering changes for the system and I/O units have been installed.
12. Fill out the “Appendix E. Service Log” on page 1021 or in the *Account Management Planning Guide*
13. Inform the customer of any problems you found on the system (hardware, software, performance).

Inform IBM personnel in other functions as suitable (Marketing Representative, Systems Engineering, Software Support, Administration, Field Manager).

14. Discuss with the customer the importance and benefits of maintaining a valid backup, using Electronic Customer Support, managing the Problem Log, and performing problem determination.
15. Review your PM actions and analysis with the customer:
 - Explain what you performed.
 - Describe any problems you found (and corrected).
 - Answer questions.
 - Address concerns.
 - Take action as needed.
 - Thank the customer for the maintenance business.

How to Record Your Time (Service Code–SC)

- Record SC 01 against the device that was repaired.
- Record SC 08 against any device for which PM was completed.
- Record SC 48 for any Account Management actions.

Appendix D. Working with Electrostatic Discharge-Sensitive Parts

When holding or installing electrostatic discharge-sensitive (ESD) parts, use the ESD handling kit (IBM* part 6428316) or similar. Read the instructions inside the top cover of the carrying case.

All system logic cards are sensitive to electrostatic discharge (ESD). To prevent damage to ESD-sensitive logic cards, follow these instructions:

- Switch off power to the system or device before removing logic cards.
- Keep the ESD-sensitive card in the original shipping container until you install the card in the machine.
- When holding logic cards, move your body as little as possible to prevent an increase of static electricity from clothing fibers, carpet fibers, and furniture.
- Just before touching the ESD-sensitive card, discharge any static electricity in your body by touching the metal frame or cover of the machine. If possible, keep one hand on the frame when, for example, you are installing or removing a logic card.
- Hold the ESD-sensitive card by the edge or connector shroud cover. Do not touch the pins. If you are removing a field-replaceable module, use the correct tool.
- Return the card to the special container when it is not being used. Do not place the ESD-sensitive card on the machine cover or on a metal table. Machine covers and metal tables are electrical grounds. They make a discharge path from the ESD-sensitive card through your body to ground, increasing the risk of damage to the card. Large metal objects can be discharge paths without being grounded.
- Prevent ESD-sensitive cards from being touched accidentally by other persons. Reinstall machine covers when you are not working on the machine. Do not place unprotected ESD-sensitive cards on a table.
- Be careful when working with ESD-sensitive cards during cold weather heating. Cold weather heating causes low humidity and increases the risk of static electricity.

Table 55. System Name: (continued)

Status	Resource Name	Type	System DSA	Host System/ Logical Partition	Host Card In DSA	Host Card Out DSA	Attached System/ Logical Partition	Attached Resource Name

Appendix G. Notices

This information was developed for products and services offered in the U.S.A. IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
500 Columbus Avenue
Thornwood, NY 10594
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

IBM World Trade Asia Corporation
Licensing
2-31 Roppongi 3-chome, Minato-ku
Tokyo 106, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

The drawings and specifications contained herein shall not be reproduced in whole or in part without the written permission of IBM.

IBM has prepared this publication for use by hardware service representatives in the maintenance or repair of the specific machines indicated. IBM makes no representations that it is suitable for any other purpose.

Trademarks

The following terms are trademarks of International Business Machines Corporation in the United States, or other countries, or both:

AIX
Application System/400
APPN
AS/400
AS/400e
Client Access
IBM
Micro Channel
Operating System/400
OS/400
System/370
400

Lotus Notes is a trademark of Lotus Development Corporation in the United States, or other countries, or both.

Java is a trademark of Sun Microsystems, Inc. in the United States, or other countries, or both.

AFS and DFS are trademarks of Transarc Corporation in the United States, or other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are registered trademarks of Microsoft Corporation.

Other company, product, and service names may be trademarks or service marks of others.

Glossary

This glossary includes terms and definitions from:

- The *American National Dictionary for Information Systems* ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI). Copies may be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018. Definitions are identified by the symbol (A) after the definition.
- The *Information Technology Vocabulary* developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Committee (ISO/IEC JTC1/SC1). Definitions of published parts of this vocabulary are identified by the symbol (I) after the definition; definitions taken from draft international standards, committee drafts, and working papers being developed by ISO/IEC JTC1/SC1 are identified by the symbol (T) after the definition, indicating that final agreement has not yet been reached among participating National Bodies of SC1.

ac. Alternating current.

adapter card. A smaller card that attaches to a full-size card.

allocate. To assign.

alternative console. A display device assigned by the operating system to function as the console if the console is not working.

American National Standards Institute. An organization sponsored by the Computer and Business Equipment Manufacturers Association for establishing voluntary industry standards.

ANSI. American National Standards Institute. An organization sponsored by the Computer and Business Equipment Manufacturers Association for establishing voluntary industry standards.

APAR. Authorized program analysis report. A request for correction of a problem in a release of an IBM-supplied program.

ASC. Asynchronous.

ASP. Auxiliary storage pool. A group of disk units defined from the auxiliary storage devices. See also *system ASP* and *user ASP*.

authorized program analysis report. A request for correction of a problem in a release of an IBM-supplied program.

auxiliary storage pool. A group of disk units defined from the auxiliary storage devices. See also *system ASP* and *user ASP*.

backplane. A hardware part that has (in one or more planes) logic paths, low-voltage distribution paths, and grounding paths of a section of a machine.

basic assurance test. An automatic testing of a machine when the power is switched on.

BAT. basic assurance test. An automatic testing of a machine when the power is switched on.

battery power unit. A source of electrical power that can be used when the normal utility power fails.

BBBBCCbb. Addressing scheme for the bus (BBBB), card (Cc), and board (bb).

bring up. The process of starting a computer system or a subsystem that is to operate under the control of the system.

BSC. Bisynchronous.

card enclosure. The area in the system unit that contains the logic cards.

CCM. Concurrent maintenance. The process of removing or replacing hardware while the system is in use.

CD. Compact disk; an optical storage medium.

CFIOP. Combined Function Input Output Processor.

checksum. A utility that writes data in a sector for error detection purposes.

checksum protection. A function that protects data stored in an auxiliary storage pool from being lost because of the failure of a single disk. When checksum protection is in effect and a disk failure occurs, the system automatically reconstructs the data when the system program is loaded after the device is repaired.

concurrent maintenance. The process of removing or replacing hardware while the system is in use.

configure. To describe to a system the devices, optional features, and programs installed on the system.

Glossary

cryptography. A method of transforming customer data to conceal its meaning. Cryptographic services include data encryption and message authentication.

DASD. Direct access storage device. Also referred to as disk unit.

dc. Direct current.

debug. To check, diagnose, and remove errors in programs.

dedicated service tools. The part of the service function used to service the system when the operating system is not working.

device parity protection. A function that protects data stored on a disk unit subsystem from being lost because of the failure of a single disk unit in the disk unit subsystem. When a disk unit subsystem has device parity protection and one of the disk units in the subsystem fails, the system continues to run. The disk unit subsystem reconstructs the data after the disk unit in the subsystem is repaired or exchanged.

DFCI. Disk file control interface.

DIMM. Dual in-line memory module.

disk enclosure. The part of a disk unit that contains the read and write heads, the magnetic disks, and the actuators.

download. To transfer data from a processing unit to an attached device, such as a microcomputer, for processing.

DST. Dedicated service tools. The part of the service function used to service the system when the operating system is not working.

DVD. Digital versatile disk.

EMC. Electromagnetic compatibility.

EMI. Electromagnetic interference.

EPO. Emergency power-off.

ERC. Extended reference code

ESD. Electrostatic discharge.

expansion unit. An expansion unit contains I/O hardware such as cards, tapes and disk units. The system may have multiple expansion units.

An expansion unit can be bolted directly to the side of a system unit and is contained within the system unit covers.

An expansion unit can also be mounted on top of a rack or tower and has its own covers.

Internal signal cables interconnect the expansion unit to the system unit, rack, or tower.

FAX. Facsimile machine.

FC. Feature code.

FDS. Flexible distribution system.

FRU. Field-replaceable unit.

GND. Ground (electrical).

ID. Identification.

input/output processor. A device that processes programmed instructions and controls one or more I/O devices or adapters.

INS. Integrated Netfinity Server for AS/400

I/O. Input/output.

IOA. Input/output adapter.

IOP. Input/output processor. A device that processes programmed instructions and controls one or more I/O devices or adapters.

IPL. Initial program load.

LAN. Local area network. A computer network located on a user's premises within a limited geographical area.

LIC. Licensed Internal Code.

license. A permission granted by competent authority to engage in a business or occupation or in an action otherwise unlawful.

Licensed Internal Code. Programming that defines logical operations on data.

LICTR. Licensed Internal Code trouble report.

local area network. A computer network located on a user's premises within a limited geographical area.

logo. An identifying statement.

media. Magnetic disks, tapes, compact disks (CD), or digital versatile disk (DVD).

MES. Miscellaneous equipment specification.

The process of either an upgrade of your existing system or moving parts from an existing system to a new system, are called miscellaneous equipment specification (MES).

MFIOP. Multiple Function I/O Processor.

mirrored protection. A function that protects data by duplicating all disk unit data on one storage unit in an auxiliary storage pool to another storage unit in the same auxiliary storage pool.

MSD. Main store dump.

MSIOP. Magnetic Storage I/O Processor.

OEM. Original equipment manufacturer.

odd/even bus pair. An optical link card supports a pair of buses; one has an even number and the other has an odd number (for example, bus 2 and 3).

optical redundancy. A second optical path used to keep the system operational when a hardware failure occurs.

overview. A general survey or summary.

PAR. Problem analysis and resolution.

PCC. Power control compartment.

PIP. Problem isolation procedure. Written information used by service representatives to repair IBM equipment. A problem isolation procedure contains actions and yes/no questions that send the user to the failing part of the equipment.

plenum. A space used for environmental air.

PM. Preventive maintenance.

pool. (1) A readily available supply. (2) A designated place to store data.

power off. To turn off the power.

power on. To turn on the power.

primary link. The optical connection between a local optical link card and a remote bus adapter card.

problem isolation procedure. Written information used by service representatives to repair IBM equipment. A problem isolation procedure contains actions and yes/no questions that send the user to the failing part of the equipment.

program temporary fix. A temporary solution to, or bypass of, a problem in a licensed program.

PTF. Program temporary fix. A temporary solution to, or bypass of, a problem in a licensed program.

rack. Used on early models of the AS/400, such as models C, D, E, and F, as either a system unit or for I/O hardware such as cards, tapes and disk units. External signal cables interconnect the system unit to the racks that contain I/O hardware.

A rack can be either 1.0 meters or 1.6 meters in height and usually has white covers for AS/400 systems.

Typically, feature codes with numbers less than 5050 are considered "racks" and codes greater than 5050 are considered "towers."

reallocate. To allocate again.

restore. To return to an original value or image; for example, to restore data to main storage from auxiliary storage.

SAL. Service action log

SAVSYS tape. A tape that is generated by the SAVSYS command, on which system data is recorded and saved.

SCSI. Small Computer System Interface

SDIOP. Storage Device I/O Processor.

secondary link. The optical connection between two remote bus adapter cards.

sign-on. The procedure by which the user starts working at a workstation.

SIMM. Single in-line memory module.

single bus connection. Only one bus is connected to the optical link card. One connector is not used.

SPCN. System Power Control Network.

SPD bus. An AS/400 input/output bus architecture.

SRC. System reference code. A group of characters that identifies the machine status or a specific error condition. The system reference code can be displayed on the console from the problem log.

system ASP. The auxiliary storage pool where system programs and data reside. It is the storage pool used if a storage pool is not defined by the user. See also *auxiliary storage pool* and *user ASP*.

system reference code. A group of characters that identifies the machine status or a specific error condition. The system reference code can be displayed on the console from the problem log.

tower. A frame-like structure that, since the introduction of the 3xx/4xx models, has been used to repackage devices formerly housed in racks. Towers provide the equivalent function of racks and have since replaced racks.

A tower can be used for either the system unit or for system expansion. The system unit always contains the processor(s). Towers are standalone and usually have black covers. Like racks, towers can vary in height.

UEPO. Unit emergency power-off.

upgrade. To change the system configuration to a later level.

URC. Unit reference code. Last 4 characters of SRC.

user ASP. One or more auxiliary storage pools used to isolate journals, journal receivers, and save files from

Glossary

the other system objects stored in the system ASP. See also *auxiliary storage pool* and *system ASP*.

vital product data. A structured description of a device or program. For devices, it is recorded in the device at manufacture and includes at least the type, model, serial number, and installed features. It may include the manufacturer's ID and other fields. For programs, it is compiled as a data area accompanying the program and includes the name of the licensed program or Licensed Internal Code group, the release and modification, the program module names, the national language or languages selected, and possibly other fields. Vital product data is transferred from the device to the system and is retained for display. Vital product data is also visible on the device name plate or a similar tag.

VLIC. Vertical Licensed Internal Code.

VPD. See *vital product data*.

workstation I/O processor. An I/O processor card in the card enclosure that provides the direct connection of local workstations to the system.

WSIOP. Workstation I/O processor. An I/O processor card in the card enclosure that provides the direct connection of local workstations to the system.

X.25. In data communications, a specification of the CCITT that defines the interface to an X.25 (packet-switching) network.

Bibliography

You may need to use the following books for more specific information about a problem.

- *FC 504x Problem Analysis and Repair and Parts*
- *ASCII Work Station Reference*
- *AS/400 Service Functions*
- *Backup and Recovery*
- *AS/400 Licensed Internal Code Diagnostic Aids - Volume 1*
- *AS/400 Licensed Internal Code Diagnostic Aids - Volume 2*
- *Physical Planing Reference*
- *Port Tester Use*
- *Security - Reference*
- *Software Installation*
- *Basic System Operation, Administration, and Problem Handling*
- *Twinaxial Cabling Troubleshooting Guide , SY31-0703*
- *AS/400e Handbook*
- *IBM AS/400 Integration for Windows Server -- Setup, SC41-5439-03*

See the following IBM device books:

- *3422 Magnetic Tape Subsystem Maintenance Information, SY32-5058*
- *3422 Magnetic Tape Subsystem Operator's Guide , SA32-0090*
- *3430 Magnetic Tape Subsystem Maintenance Information, SY32-5053*
- *3430 Magnetic Tape Subsystem Operator's Guide , SA32-0079*
- *3480 Magnetic Tape Subsystem Maintenance Information, SY32-5048, SY32-5049, SY32-5050, SY32-5055, SY32-5061*
- *3480 Magnetic Tape Subsystem Operator's Guide , SA32-0066*
- *3490 Magnetic Tape Subsystem Models D31 and D32 Maintenance Information , SY32-7015*
- *3490 Magnetic Tape Subsystem Enhanced Capability Models C10, C11, and C22 Maintenance Information , 94F7378*
- *3490 Magnetic Tape Subsystem Operator's Guide , SA32-0124*
- *3494 Tape Library Dataserver Maintenance Information, SA37-0270*
- *3570 Magnetic Tape Subsystem Maintenance Information, P/N 05H9395*
- *3570 Magnetic Tape Subsystem User's Guide , GA32-0345*
- *3590 High Performance Tape Subsystem Maintenance Information , P/N 05H9928*
- *3590 High Performance Tape Subsystem User's Guide , GA32-0330*
- *3995 AS/400 Compact Optical Library Dataserver Maintenance Information Manual Model 042 , SY32-7034 or SA37-0245*
- *3995 AS/400 Compact Optical Library Dataserver Parts Catalog Model 042 , S132-0024 or S132-0035*
- *3995 AS/400 Optical Library Dataserver Maintenance Information Manual Models 142 and 143 , SA37-0244*
- *3995 AS/400 Optical Library Dataserver Parts Catalog Models 142 and 143 , S132-0027*
- *3995 AS/400 Optical Library Dataserver Maintenance Information Manual Model A43 , GA32-0295*
- *3995 AS/400 Optical Library Dataserver: Maintenance Information for Model Cn0 , 05H5540*
- *3995 AS/400 Optical Library Dataserver: Maintenance Information for Model Cn2 , 05H5541*
- *3995 AS/400 Optical Library Dataserver: Maintenance Information for Models Cn4, Cn6, and Cn8 , 05H5542*
- *5250 Information Display System - Planning and Site Preparation Guide , SA21-9337*
- *7208 Model 002 8-mm Tape Drive Operator's Guide, SA23-2675*
- *7208 Model 002 8-mm Tape Drive Service Guide , SA23-2640*
- *7208 Model 012 8-mm Tape Drive Operator's Guide, SA26-7036*
- *7208 Model 012 8-mm Tape Drive Service Guide , SA26-7037*
- *9331 Diskette Unit Service Information: Service Guide and Reference Code Guide , SY31-0677*
- *9336 Disk Unit Service Information , SY31-0690*
- *9336 Disk Unit Customer Information , SA21-9549*
- *9337 Disk Array Service Information, Models 0xx and 1xx , SY44-0009*
- *9337 Disk Array Service Information, Models 2xx , SY44-0031*

- *9337 Disk Unit Customer Information* , SA41-0014
- *9348 Tape Unit Customer Information* , SA21-9567
- *9348 Tape Unit Service Information* , SY31-0697
- *9427 8-mm Tape Cartridge Library Service Guide* , SA26-7109
- *9427 8-mm Tape Cartridge Library Operator Guide* , SA26-7108

For information regarding other units attached to the system, see the service information for the specific unit.

Part Number Index

Part Number	Asm-Index	Page	Part Number	Asm-Index	Page	Part Number	Asm-Index	Page
05N6809	13-2	953	1621811	17-3	973	1621811	9-32	941
12K0024	13-7	953	1621811	17-6	973	1621811	9-5	939
12K0032	13-4	953	1621811	19-2	977	1621811	9-7	939
12K0034	13-3	953	1621811	2-11	917	1621811	9-9	939
1621621	14-40	965	1621811	2-13	917	1621812	12-10	947
1621811	1-10	913	1621811	2-16	919	1621812	12-2	947
1621811	1-14	915	1621811	2-18	919	1621812	12-8	947
1621811	1-5	913	1621811	2-21	919	1621812	15-2	967
1621811	1-7	913	1621811	2-23	921	1621812	16-14	969
1621811	10-3	943	1621811	2-25	921	1621813	6-4	931
1621811	13-2	951	1621811	2-27	921	1621814	3-9	923
1621811	13-5	951	1621811	2-29	921	1621815	6-2	931
1621811	13-7	951	1621811	2-6	917	1621816	14-36	963
1621811	14-11	957	1621811	2-8	917	1621817	14-12	957
1621811	14-15	959	1621811	3-10	923	1621817	14-7	957
1621811	14-23	961	1621811	3-12	923	1621817	3-3	923
1621811	14-27	961	1621811	3-14	923	1621838	14-18	959
1621811	14-29	961	1621811	3-18	925	1621838	16-32	971
1621811	14-31	961	1621811	3-21	925	1622673	12-6	947
1621811	14-34	963	1621811	3-23	925	1622677	15-11	967
1621811	14-38	965	1621811	3-25	925	1622677	15-23	967
1621811	14-6	957	1621811	3-27	925	1622680	5-3	929
1621811	14-9	957	1621811	3-29	925	1624766	10-2	943
1621811	15-15	967	1621811	3-4	923	1624766	4-2	927
1621811	15-18	967	1621811	6-7	931	1624766	8-11	935
1621811	15-4	967	1621811	7-10	933	1624766	9-14	939
1621811	16-11	969	1621811	7-2	933	162811	14-20	959
1621811	16-19	969	1621811	7-6	933	16G1812	3-6	923
1621811	16-21	969	1621811	8-12	935	16G5609	25-	990
1621811	16-23	969	1621811	8-14	935	16G5609	25-	990
1621811	16-28	969	1621811	8-17	937	16G6496	17-4	973
1621811	16-3	969	1621811	8-19	937	16G8095	12-4	947
1621811	16-31	971	1621811	8-21	937	16G8095	25-	990
1621811	16-34	971	1621811	8-23	937	16G8438	25-	991
1621811	16-36	971	1621811	8-3	935	16G8467	25-	991
1621811	16-38	971	1621811	8-5	935	16G8572	25-	991
1621811	16-41	971	1621811	8-7	935	1749352	24-	987
1621811	16-44	971	1621811	8-9	935	17G0574	16-20	969
1621811	16-49	971	1621811	9-11	939	17G0574	18-	975
1621811	16-5	969	1621811	9-13	939	17G1209	16-29	969
1621811	16-51	971	1621811	9-16	939	17G2528	24-	987
1621811	16-54	971	1621811	9-18	939	17G2534	20-5	979
1621811	16-55	971	1621811	9-21	941	17G2641	25-	990
1621811	16-57	971	1621811	9-24	941	17G2642	25-	990
1621811	16-59	971	1621811	9-26	941	17G2643	25-	990
1621811	16-61	971	1621811	9-28	941	17G2644	25-	990
1621811	16-8	969	1621811	9-3	939	17G2645	25-	990
1621811	17-1	972	1621811	9-30	941	17G2646	25-	990

Part Number	Asm-Index	Page	Part Number	Asm-Index	Page	Part Number	Asm-Index	Page
17G2647	25-	990	21H3473	16-40	971	21H6871	25-	990
17G2648	25-	990	21H3547	25-	990	21H6938	17-4	973
17G3987	24-	988	21H3548	25-	990	21H6940	17-4	973
17G3991	24-	987	21H3727	12-5	947	21H6940	17-4	973
17G3992	24-	987	21H3739	15-12	967	21H6941	23-	984
17G4000	24-	987	21H3740	12-	947	21H6942	23-	984
17G4001	24-	987	21H3741	12-	947	21H6950	25-	990
17G4002	24-	988	21H3742	12-	947	21H6959	2-26	921
17G4009	25-	990	21H3743	12-	947	21H6959	3-17	925
17G4103	25-	990	21H3744	12-	947	21H6959	8-20	937
17G4124	25-	990	21H3745	12-	947	21H6959	9-20	941
17G4138	25-	990	21H3746	12-	947	21H6972	23-	985
21F2591	24-	986	21H3747	12-	947	21H6974	23-	985
21F4339	24-	986	21H3748	12-	947	21H6976	23-	985
21F4344	24-	986	21H3749	12-	947	21H6977	23-	985
21F4348	24-	987	21H3759	16-30	971	21H6978	23-	985
21F4405	24-	986	21H3760	25-	990	21H6979	23-	985
21F4415	24-	987	21H3761	25-	990	21H6980	23-	985
21F4419	20-4	979	21H3762	25-	990	21H6981	23-	984
21F4980	24-	987	21H3763	25-	990	21H6981	23-	985
21F5093	24-	987	21H3764	24-	988	21H6982	23-	984
21F5097	24-	986	21H3765	24-	988	21H6982	23-	985
21F8075	24-	987	21H3766	24-	988	21H6983	23-	984
21F8577	25-	991	21H3767	24-	988	21H6983	23-	985
21F8586	25-	991	21H3768	24-	988	21H6984	23-	985
21F8734	25-	991	21H3769	24-	988	21H6987	23-	985
21F9036	24-	986	21H3770	24-	988	21H6988	23-	985
21F9043	24-	988	21H3771	24-	988	21H6990	23-	985
21F9044	24-	988	21H3772	24-	988	21H6996	23-	985
21F9045	24-	988	21H3773	24-	988	21H7000	3-22	925
21F9046	24-	988	21H3774	24-	988	21H7000	9-25	941
21F9047	24-	988	21H3775	24-	988	21H7030	2-22	921
21F9048	24-	988	21H3776	24-	988	21H7030	8-16	937
21F9053	20-1	979	21H3777	24-	988	21H7060	3-26	925
21F9053	22-3	983	21H3778	24-	988	21H7060	9-29	941
21F9345	24-	988	21H3779	24-	988	21H7080	3-24	925
21F9348	24-	987	21H3782	24-	988	21H7080	9-27	941
21F9349	24-	987	21H3783	24-	988	21H7208	1-11	915
21F9350	24-	987	21H3785	24-	988	21H7208	7-7	933
21F9351	24-	987	21H3786	24-	988	21H7209	1-1	913
21F9352	24-	987	21H3787	24-	988	21H7209	7-3	933
21F9353	24-	987	21H3788	24-	988	21H7210	1-3	913
21F9354	25-	990	21H3789	24-	988	21H7211	1-13	915
21F9356	24-	988	21H3790	25-	990	21H7211	7-9	933
21F9357	24-	987	21H3791	25-	990	21H7212	1-9	913
21F9358	24-	987	21H3792	24-	988	21H7212	7-1	933
21F9359	24-	987	21H4811	25-	990	21H7213	1-6	913
21F9360	24-	987	21H4902	24-	986	21H7213	7-5	933
21F9412	24-	987	21H4903	24-	986	21H7217	1-2	913
21F9415	24-	987	21H4904	24-	986	21H7217	7-4	933
21F9469	24-	987	21H4905	24-	986	21H7220	1-4	913
21F9966	24-	986	21H5067	24-	987	21H7261	3-22	925
21H3472	16-42	971	21H6806	25-	990	21H7264	3-22	925

Part Number	Asm-Index	Page	Part Number	Asm-Index	Page	Part Number	Asm-Index	Page
21H7275	12-	947	21H7572	7-11	933	31L7523	13-6	953
21H7276	12-	947	21H7599	3-11	923	36L8858	23-	984
21H7277	12-	947	21H7600	3-13	923	41F9970	25-	991
21H7278	12-	947	21H7604	8-1	935	4236482	24-	987
21H7279	12-	947	21H7605	3-15	923	42H0540	25-	990
21H7280	12-	947	21H7605	9-1	939	44H7479	25-	990
21H7281	12-	947	21H7606	9-2	939	44H7558	21-2	981
21H7282	12-	947	21H7624	5-	929	44H7558	22-7	983
21H7283	12-	947	21H7625	5-	929	44H8406	14-2	955
21H7284	12-	947	21H7639	9-10	939	44L0023	14-24	961
21H7303	2-12	917	21H7639	9-15	939	45H2364	25-	990
21H7308	2-5	917	21H7643	23-	985	46G0298	25-	991
21H7308	6-6	931	21H7643	24-	988	46G0321	16-25	969
21H7340	2-9	917	21H7695	24-	988	46G0450	24-	986
21H7374	23-	985	21H7697	16-43	971	46G0479	24-	986
21H7375	23-	985	21H7705	12-	947	46G2660	25-	991
21H7376	23-	985	21H7706	12-	947	46G2674	25-	991
21H7377	24-	988	21H7707	12-	947	46G3478	15-6	967
21H7402	3-8	923	21H7708	12-	947	46G3484	15-1	967
21H7403	5-2	929	21H7709	12-	947	46G3499	16-10	969
21H7407	10-1	943	21H7711	12-	948	46G3500	16-12	969
21H7420	9-12	939	21H7712	12-	948	46G3507	12-5	947
21H7428	4-1	927	21H7713	12-	948	46G3509	16-52	971
21H7433	5-1	929	21H7714	12-	948	46G3510	16-50	971
21H7465	16-29	971	21H7715	12-	948	46G3520	23-	984
21H7476	2-10	917	21H7750	17-4	973	46G3521	23-	984
21H7477	3-1	923	21H7750	6-3	931	46G3523	23-	984
21H7478	3-5	923	21H7759	23-	985	46G3523	23-	984
21H7480	2-4	917	21H7760	23-	985	46G3524	23-	984
21H7481	6-5	931	21H8020	9-17	939	46G3524	23-	984
21H7495	2-15	919	22F0149	24-	987	46G3524	23-	984
21H7495	8-2	935	22F0150	24-	987	46G3525	23-	984
21H7501	2-20	919	22F0151	24-	987	46G3525	23-	984
21H7502	2-17	919	22F0152	24-	987	46G3527	23-	984
21H7507	8-4	935	22F0153	24-	987	46G3528	23-	984
21H7508	8-8	935	22F0154	24-	987	46G3529	16-26	969
21H7509	8-6	935	23F5634	25-	990	46G3529	17-7	973
21H7510	9-4	939	24L0803	23-	984	46G3529	2-3	917
21H7511	9-8	939	24L0821	14-4	955	46G3530	19-6	977
21H7512	9-6	939	24L0823	14-21	961	46G3542	15-17	967
21H7515	2-2	917	24L0824	13-4	951	46G3556	25-	990
21H7516	2-28	921	24L0825	13-1	951	46G3570	18-2	975
21H7516	8-22	937	24L0891	14-35	963	46G3580	15-3	967
21H7517	3-16	925	24L0892	14-16	959	46G3581	17-2	973
21H7517	9-19	941	24L0940	14-26	961	46G3585	24-	986
21H7518	3-28	925	24L0946	14-1	955	46G3587	16-53	971
21H7518	9-31	941	24L1029	14-17	959	46G3620	16-18	969
21H7521	6-1	931	24L1067	14-8	957	46G3646	16-33	971
21H7523	1-12	915	24L1069	13-1	953	46G3647	15-14	967
21H7523	7-8	933	24L1069	13-8	951	46G3648	15-16	967
21H7550	3-7	923	24L1078	13-6	951	46G3648	15-19	967
21H7569	1-8	913	24L1079	13-3	951	46G3658	24-	986
21H7572	1-15	915	31L7519	13-5	953	46G3663	16-35	971

Part Number	Asm-Index	Page	Part Number	Asm-Index	Page	Part Number	Asm-Index	Page
46G3666	16-37	971	6495276	24-	987	85F8109	24-	986
46G3666	3-20	925	6495277	24-	987	85F9396	24-	987
46G3666	9-23	941	71G9988	25-	991	85F9397	24-	987
46G3667	16-58	971	71G9989	25-	991	86G7619	20-3	979
46G3670	15-9	967	71G9990	25-	991	86G7620	20-9	979
46G3688	15-8	967	71G9991	25-	991	86G7621	20-8	979
46G3695	15-22	967	71G9992	25-	991	86G7622	20-2	979
46G3700	16-18	969	71G9993	25-	991	86G7623	16-16	969
46G3787	23-	984	71G9994	25-	991	86G7633	16-29	971
46G3787	23-	984	71G9995	25-	991	86G7639	20-10	979
46G3816	23-	984	71G9996	25-	991	86G7640	20-7	979
46G3829	23-	984	71G9997	25-	991	86G7656	16-17	969
54G3385	24-	986	71G9998	25-	991	86G7674	25-	990
54G3386	24-	986	71G9999	25-	991	86G7677	15-10	967
54G3387	24-	986	72G0000	25-	991	86G7681	20-12	979
56F0307	25-	990	72G0001	25-	991	86G7684	16-4	969
56F0346	22-2	983	72G0002	25-	991	86G7684	2-24	921
56F0381	24-	988	72X5640	24-	988	86G7684	8-18	937
56F0382	24-	988	72X5641	24-	987	86G7685	16-7	969
59H2677	25-	991	72X5643	24-	987	86G7691	24-	986
59H3661	25-	991	72X5645	24-	987	86G7712	24-	986
59H4127	25-	991	72X6365	25-	990	86G7714	16-24	969
59X3816	24-	986	72X6451	20-6	979	86G7738	15-12	967
59X3829	24-	986	73F9384	25-	990	86G7739	15-5	967
59X3832	25-	990	74F1663	24-	987	86G7740	15-13	967
59X3833	24-	986	74F1837	24-	987	86G7750	16-7	969
59X4262	25-	990	74F1839	24-	987	86G7773	16-13	969
60F0707	25-	991	74F1846	25-	990	86G7857	15-7	967
60X8709	19-5	977	75G2725	25-	990	86G7865	16-22	969
6165899	25-	990	75G3802	24-	986	86G7872	17-4	973
62X3421	24-	988	75G3803	24-	986	86G8020	16-6	969
62X3427	24-	986	75G3804	24-	986	86G8040	16-9	969
62X3428	24-	986	75G3805	24-	986	87G1626	25-	991
6339098	24-	987	75G3806	24-	986	87G1626	25-	991
6473011	24-	988	75G3807	24-	986	87G1643	25-	991
6473014	24-	988	75G3808	24-	986	87G4357	16-29	971
6473016	24-	988	75G3809	24-	986	87G4362	16-27	969
6473026	24-	988	75G3810	24-	986	87G4362	16-29	971
6473029	24-	988	75G3811	24-	986	87G6049	16-29	969
6495249	24-	986	75G3812	24-	986	87G6054	23-	984
6495250	24-	986	75G3907	25-	990	87G6056	23-	984
6495251	24-	986	75G3980	24-	987	87G6110	16-4	969
6495252	24-	986	75G5712	23-	985	87G6235	24-	987
6495253	24-	986	75G5716	20-11	979	87G6236	24-	986
6495254	24-	986	75G6001	23-	985	87G6290	16-4	969
6495255	24-	986	8191781	24-	987	87G6300	16-43	971
6495256	24-	986	8191822	24-	987	90H6024	25-	990
6495257	24-	986	8191922	24-	987	90H6285	16-1	969
6495258	24-	986	81F8902	25-	991	90H6285	16-1	969
6495264	24-	986	81G3185	25-	990	90H6285	23-	984
6495268	24-	987	82F0421	25-	991	90H6285	23-	984
6495269	24-	987	82F0422	25-	991	90H6285	5-	929
6495275	24-	986	82F5486	25-	991	90H6287	16-48	971

Part Number	Asm- Index	Page	Part Number	Asm- Index	Page	Part Number	Asm- Index	Page
90H6295	1-8	913	97H7474	23-	984	NONUM	19-3	977
90H6304	1-15	915	97H7475	23-	984	NONUM	19-4	977
90H6304	7-11	933	97H7481	23-	984	NONUM	2-1	917
90H6306	15-12	967	97H7483	23-	984	NONUM	2-14	917
90H6360	11-	945	97H7484	23-	984	NONUM	2-14	917
90H6376	12-	948	97H7484	23-	984	NONUM	2-19	919
90H6377	12-	948	97H7526	25-	990	NONUM	2-3	917
90H6378	12-	948	97H7532	14-39	965	NONUM	2-7	917
90H6379	12-	948	97H7544	23-	984	NONUM	20-	979
90H6380	12-	948	97H7556	24-	988	NONUM	21-1	981
90H6381	12-	948	97H7584	24-	989	NONUM	21-3	981
90H6382	12-	948	97H7589	12-9	947	NONUM	22-1	983
90H6383	12-	948	97H7627	22-	983	NONUM	22-6	983
90H6384	12-	948	97H7725	22-7	983	NONUM	24-	987
90H6385	12-	948	97H7745	25-	990	NONUM	3-19	925
90H6386	12-	948	97H7749	25-	990	NONUM	3-2	923
90H6387	12-	948	97H7754	25-	990	NONUM	4-	927
90H6388	12-	948	97H7767	1-2	913	NONUM	8-10	935
90H6389	12-	948	97H7767	7-4	933	NONUM	8-13	935
90H6390	12-	948	NONUM	10-	943	NONUM	8-15	935
90H6425	16-29	971	NONUM	11-1	945	NONUM	9-22	941
90H6426	16-29	971	NONUM	11-2	945			
90H6462	22-5	983	NONUM	11-3	945			
90H6464	22-4	983	NONUM	11-4	945			
90H6507	15-6	967	NONUM	11-5	945			
90H6582	1-2	913	NONUM	11-6	945			
90H6582	7-4	933	NONUM	11-7	945			
90H6588	15-6	967	NONUM	11-8	945			
90H6629	14-25	961	NONUM	12-	947			
90H9075	21-2	981	NONUM	12-	948			
90H9075	22-7	983	NONUM	12-1	947			
90H9429	10-4	943	NONUM	12-3	947			
90H9433	4-3	927	NONUM	12-7	947			
90H9437	4-3	927	NONUM	14-10	957			
91H0250	16-39	971	NONUM	14-14	959			
91H0353	21-	981	NONUM	14-19	959			
92F9003	25-	990	NONUM	14-22	961			
92G5190	25-	990	NONUM	14-30	961			
92G5192	25-	991	NONUM	14-33	963			
92G5193	25-	991	NONUM	14-37	965			
92G5194	25-	991	NONUM	14-5	957			
92G5195	25-	991	NONUM	15-20	967			
92G5196	25-	991	NONUM	15-21	967			
92G5197	25-	991	NONUM	16-2	969			
92X7518	25-	991	NONUM	16-45	971			
93X0185	24-	986	NONUM	16-46	971			
97H7316	14-32	961	NONUM	16-47	971			
97H7320	14-28	961	NONUM	16-56	971			
97H7389	24-	988	NONUM	16-60	971			
97H7390	24-	988	NONUM	17-5	973			
97H7391	24-	988	NONUM	18-1	975			
97H7469	23-	984	NONUM	19-	977			
97H7473	23-	984	NONUM	19-1	977			

Readers' Comments — We'd Like to Hear from You

AS/400e

AS/400e server 640, 650, 730, 740, S30, S40, and SB1 Problem Analysis, Repair and Parts

Version 4

Publication No. SY44-5956-05

Overall, how satisfied are you with the information in this book?

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Overall satisfaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How satisfied are you that the information in this book is:

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Accurate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Complete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to find	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to understand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Well organized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Applicable to your tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please tell us how we can improve this book:

Thank you for your responses. May we contact you? Yes No

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you.

Name

Address

Company or Organization

Phone No.



Fold and Tape

Please do not staple

Fold and Tape



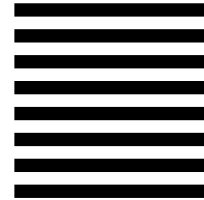
NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

IBM CORPORATION
ATTN DEPT 542 IDCLERK
3605 HWY 52 N
ROCHESTER MN 55901-7829



Fold and Tape

Please do not staple

Fold and Tape



Printed in the United States of America
on recycled paper containing 10%
recovered post-consumer fiber.

SY44-5956-05



Spine information:



AS/400e

AS/400e server 640, 650, 730, 740, S30, S40, and SB1
Problem Analysis, Repair and Parts V4R5

Version 4