

AS/400e



AS/400e server 170 and 250 Problem Analysis, Repair and Parts

Version 4

AS/400e



AS/400e server 170 and 250 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 vii and "Appendix G. Notices" on page 551.

Fourth Edition (July 2000)

This edition replaces SY44-5965-02. This edition applies only to reduced instruction set computer (RISC) systems.

© Copyright International Business Machines Corporation 1998, 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 vii

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

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	11
Safety	11
Special Tools and Equipment	12
How to Use This Intermittent Problem Section	12
Correcting Intermittent Problems	13
General Intermittent Problem Checklist	14
How to Analyze the Intermittent Problem	17
Intermittent Symptom Table	17
Failing Area INT-PIP Table	18
Analyzing IPL Problems	19
Start Analyzing IPL Problems Here	19
Cannot Perform IPL from the Control Panel (No SRC)	19
Cannot Perform IPL at a Specified Time (No SRC)	20
Cannot Perform IPL from a Remote Location (No SRC)	24
Cannot Automatically Perform an IPL after a Power Failure	33
Analyzing Power Problems	34
Start Analyzing Power Problems Here	34
Cannot Power On System Unit (No SRC)	35
System Cannot Become Powered Off	39

Chapter 2. Unit Reference Codes 41

How to Use This Section	41
List of SRC Tables	42
SRC Exception Table	43
(0000) Control Panel Reference Codes	44
(1xxx) SPCN Reference Codes	46
(2718, 2728, 2729, 2741, 2809, 2824, 6757, 675A) I/O Processor and I/O Adapter Reference Codes	54
(2720) Communications and Workstation Combined Function Reference Codes	62
(2722, 2746) Twinaxial Workstation Reference Codes	62
(2740, 2748, 2763) Reference Codes	63
(3490) Tape Unit Reference Codes	68
(3494) Tape Library Reference Codes	74

(3570) Tape Unit Reference Codes	76
(3590) Tape Unit Reference Codes	80
(3995) Optical Library Dataserver Reference Codes	83
(632x, 6330) Optical Storage Unit Reference Codes	84
(6385) Tape Unit Reference Codes	87
(6390) Tape Unit Reference Codes	90
(63A0) Tape Unit Reference Codes	96
(660x, 671x, 673x) Disk Unit Reference Codes	99
(6A58,6A59) Workstation Adapter Console Reference Codes	102
(7208) Tape Drive Reference Codes	104
(7208) Model 012 Tape Drive Reference Codes	108
(9348) Tape Unit Reference Codes	114
(9427) Tape Library Reference Codes	115
(A1xx, B1xx) Service Processor Reference Codes	121
(A6xx, B6xx) LIC Reference Codes	123
(A9xx, B9xx) OS/400 Reference Codes	143
(B003) Asynchronous Communications Reference Codes	143
(B006) Common Licensed Internal Code Reference Codes	150
(B070) Twinaxial Workstation Reference Codes	153
(B075) Workstation Adapter Console Reference Codes	162
(B423, B424, B425) System Processor Reference Codes	167

Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation 177

Failing Item (FI) Code Table	177
Type, Model, and Part Number List	193
Disk Unit Type, Model, and Part Number List	197
Symbolic FRUs	201
AIRMOVR	201
ANYBUS	202
AS4NTDD	202
BACKPLN	202
BACKPLx	203
BATRY	203
CACHBAT	203
CACHE	204
CBLALL	204
CDAWKLD	205
CDTRAY	205
CHECK	205
CLKCARD	205
CMPRES1	205
CRYPBAT	205
CTLPNL	205
DEVTERM	206
DISKDRV	206
DISKIMG	207
DISKTRY	207

DPAC	208
DRVSWCH	208
EACODE	209
EXTREMD	209
EXTSCSI	209
IOP	210
MEDIA	210
MEMORY	211
MFIOPBK	211
NOFRUS	211
NTDEVDR	211
NTLANDD	211
NTOPSYS	212
NTUSER	212
NTVSCSI	212
OPTLCBL	212
OPTLDRV	212
PCIBUS	212
PGDPART	212
PLUS	213
PROBACK	213
PROCCFG	214
PWRSPLY	214
QSYSOPR	217
REFER	217
SIGx	217
SNSDATA	217
SPNLCRD	217
STORIOA	217
SVCDOCS	218
TAPCLN	218
TAPCNFG	218
TOD	218
UAMR1	218
UC235	218
UC236	219
UG3AS	219
UJ0E7	219
UJ6P3	219
UJE34	220
UJE40	220
ULNZ3	220
ULNZ4	220
UNP20	221
UPLF1	221
UPSUNIT	221
USER	223
UX201	223
UX202	223
UY1Z1	223
UY1Z2	224
UY1Z3	224
UY1Z4	224
UY1Z5	224

Chapter 4. Problem Isolation Procedures (PIPs) 225

PIP Type List	225
Bus Problem Isolation Procedures	226
Communications Problem Isolation Procedures	242
Disk Unit Problem Isolation Procedures	244

Intermittent Problem Isolation Procedures	248
Licensed Internal Code (LIC) Problem Isolation Procedures	257
Logical Partition (LPAR) Problem Isolation Procedures	281
Power Problem Isolation Procedures	285
Remote Operations Console Problem Isolation Procedures	294
Storage Device I/O Processor (SDIOP) Problem Isolation Procedures	301
Service Processor Problem Isolation Procedures	341
System Power Control Network (SPCN) Problem Isolation Procedures	344
Tape Unit Problem Isolation Procedures	347
TU-PIP5	363
Tape Device Ready Conditions	365
Twinaxial Workstation I/O Processor Problem Isolation Procedures	367
Workstation Adapter Problem Isolation Procedures	375
Workstation Adapter Console Problem Isolation Procedures	379

Chapter 5. Locations, Addresses, and Service Reference Information 383

Locations and Addresses	384
Base System Unit	384
Expansion Unit	387
Power and Signal Cables	388
Backplane IOP/IOA Connection Diagrams	396
Processor and Main Storage	399
I/O Adapters	400
Tape and Optical Unit Address Jumpers	401
External Devices	403
SRC Address Formats	404
Hardware SRC Formats	408
Reclaim IOP Cache Storage	409
Storage I/O Card Modes and Jumpers	410
Determining and Setting the Mode of an I/O Card	410
Switching the Mode of an I/O Card	411
Mode Jumper has been Overridden	412
Mode Jumper is Missing	412
Manually Removing the Tape Cartridge	412
1/4 inch Tape Cartridge (Type 6335)	412
6383, 6385, 6386 Tape Cartridge	414
8-mm Tape Cartridge (6390)	416
Important Continuously Powered Main Storage (CPM) Information	421
Setting the System Date and Time	421
Hexadecimal Product Activity Log Data	422
Determining the Primary and Alternate Console	422
Determining the Load-Source Disk and Alternate IPL Device	423
Introduction	423
Finding the Load-Source Disk on Systems without Mirrored Protection	423
What You Should Know about Load-Source Disks on Systems with Mirrored Protection	423
Finding the Load-Source Disks on Systems with Mirrored Protection	423

Alternate IPL Device	424
Powering Off and Powering On the System	425
Powering Off the System	425
Powering On the System	428
Selecting IPL Type, Mode, and Speed	428
Verifying the Repair	430
Verify Dedicated Repair.	430
Verify Concurrent Repair.	431
Determining if the System Has Logical Partitions	432
Information About Logical Partitions	432
Procedures for systems with multiple partitions	433
Determining the Release Level of a Logical	
Partition	434
Locating a Secondary Partition's Console	434
Locating a Secondary Partition's Load Source	435
Locating a Secondary Partition's Load Source	
From the Secondary Partition's Console	435
Locating a Secondary Partition's Load Source	
From the Primary Partition's Console	436
Query of Logical Partition Time and Date	436
Conversion of Secondary Partition Time and	
Date to Primary Partition Time	437
Finding the SRC History List for a Secondary	
Partition	437
Closing Related Problems in Other Logical	
Partitions.	437
Accessing a Logical Partition's Panel Functions	438
Determining Which Logical Partition Owns a	
FRU or a System I/O Resource	438
Selecting IPL Type and Mode for a Secondary	
Partition	439
Missing or Non-reporting System Bus Resources	439

Part 2. Repair and Parts. 441

Chapter 6. Removal and Installation

Procedures	443
AMD 1 (B11) — Expansion Unit (Rear AMD).	443
Procedure	443
AMD 3 (B02)(Front AMD)	444
Procedure	444
AMD 4 (B01) — Base Unit (Rear AMD)	444
Procedure	444
BACKPLANES	444
DISK UNITS PLANAR/FRAME ASSEMBLY—	
EXPANSION UNIT (BACKPL6)	444
DISK UNITS PLANAR / FRAME ASSEMBLY —	
SYSTEM UNIT (BACKPL3x)	445
MFIOP PLANAR (BACKPL2)	446
MFIOP / PROCESSOR PLANAR (BACKPL7)	446
PCI PLANAR — EXPANSION UNIT	
(BACKPL5)	447
PROCESSOR PLANAR (BACKPL4)	448
Cache Battery Pack, For Type 2740, 2748, 2763	450
Procedure	450
Cache Directory Card, For Type 2740, 2748, 2763	452
Procedure	452
Cards-Cache, Type 4010	453
Parts Catalog References.	453
Procedure	453

Cards-PCI	454
Procedure	454
Cards-PCI Type 4758 Battery Replacement	
Procedure	455
Introduction:	455
Cards-PCI Type 4758 Disablement Procedure	456
Introduction:	456
Control Panel (BACKPL1) (SPNLCRD)	457
Procedure	457
Control Panel Battery.	458
Procedure	458
Covers	458
Procedure	458
Disk Unit — Dedicated and Concurrent	458
Procedure	459
Concurrent Maintenance-Removal and	
Installation	459
Dedicated Maintenance-Removal and	
installation	461
Disk Unit – Removal from holder	462
Parts Catalog References.	463
Procedure	463
Integrated Netfinity Server for AS/400 IOA	463
Procedure	463
Main Storage (M02)	465
Procedure	465
Power Supply — System Unit (A01).	466
Procedure	466
Power Supply — Expansion Unit.	467
Procedure	467
Regulator 1	468
Procedure	468
Regulator 2	468
Procedure	468
Removable Media	469
Procedure	469
Uninterruptible Power Supply.	469
Important UPS Information.	469
Procedure	470

Chapter 7. Recovery Procedures 473

Disk Service Support	473
Start Disk Service Here	473
Determining Storage Protection Status	474
Exchanging a Disk Unit with Device Parity	
Protection	475
Exchanging a Disk Unit with Mirrored Protection	477
Resuming Mirrored Protection.	483
Disk Unit Data Save and Initialize	483
Disk Unit Initialize and Disk to Disk Copy	492
DST Procedures	500
Recover Remote Loadsource	500
Copy the Contents of LIC Log.	501

Chapter 8. Parts Listing 503

How To Use This Parts Listing	503
Assemblies-System Unit and Expansion Unit.	504
Assembly 1: Cover Assemblies.	506
Assembly 2: Final Assembly — Base Unit	510
Assembly 3: Final Assembly — Expansion Unit	512
Assembly 4: Control Panel Assembly	514

Assembly 5: DASD/Holder Assembly	516
Part Numbers — Peripherals	517
Assembly 6: Internal Cable Assemblies	518
Assembly 7: External Cable Assemblies	519
Assembly 8: Miscellaneous	520
Power Cord Part Numbers and Receptacle Descriptions	521

Part 3. Appendixes 533

Appendix A. Problem Summary Form 535

Appendix B. System Safety Inspection 539

Introduction	539
Covers	539
AC Power Cord(s)	539
AC Safety Grounds	540
Safety Labels	540
Power Off and On (System Unit)	540
All Models	540
Internal Mechanical Inspection	540

**Appendix C. Preventive Maintenance
(PM) Checklist 541**

How to Record Your Time (Service Code–SC)	543
---	-----

**Appendix D. Working with
Electrostatic Discharge-Sensitive
Parts 545**

Appendix E. Service Log 547

Appendix F. OptiConnect Table 549

Appendix G. Notices 551
Trademarks 552

Glossary 553

Bibliography 557

Part Number Index 559

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

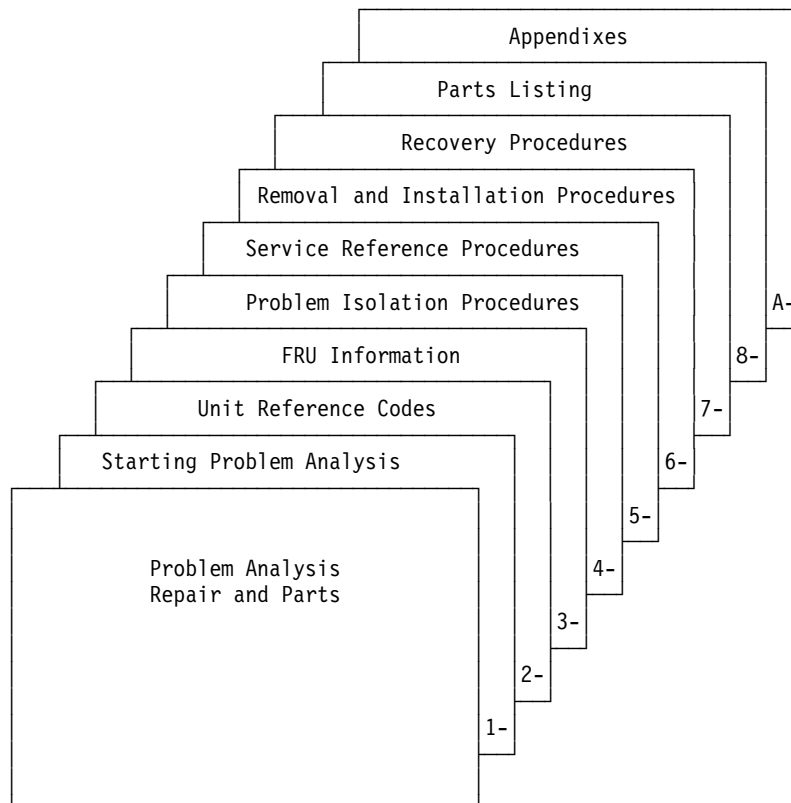
Starting Problem Analysis

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, you may want to 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 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.

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.

System configuration:

A process that specifies the machines and devices that form a specific data processing system.

Use the display hardware configuration service function to check for any missing or failed hardware. To display missing or failed hardware perform the following:

1. 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.

2. Select *Start a Service Tool*.
3. On the Start a Service Tool display, select the *Hardware Service Manager* (see the *AS/400 Service Functions*).
4. Select the *Logical hardware resources/System bus resources* option on the Hardware Service Manager display.
5. Select **F9** or **F10** for *failed* or *non-reporting* resources.

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 on what to do when a password is needed.
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*
- *System Problem Determination-SSP*

Then, continue with the next step of this procedure.

2. Record the IPL type and mode before starting this service call (see “Selecting IPL Type, Mode, and Speed” on page 428).

Note: Return the system to this IPL type and mode or to the IPL type and mode instructed by the customer when you complete this service call.

DANGER

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

3. Use the *Symptom* column of Table 1 and find the best description of the reason for this service action. Then follow the instructions in the *What You Should Do* column.

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 11.
DST/SST functions are available 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 6.
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 34.
The system is not operational and the symptom is:	

Start

Table 1. Start Table (continued)

Symptom	What You Should Do
You have a power problem or there is an SRC in function 5 (05-1xxx-xxxx).	Go to "Analyzing Power Problems" on page 34.
There is an SRC and the system attention light is on.	Go to "Chapter 2. Unit Reference Codes" on page 41.
There is an IPL problem (the system attention light is off)	Go to "Analyzing IPL Problems" on page 19.
There is a "Device Not Found" message during an install from an alternate installation device.	Go to "TU-PIP6" on page 361.
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 28.
There is a Time of Day Problem and this symptom is:	
System clock loses or gains more than 1 sec/day when the system is connected to utility power.	Replace the MFIOP (see "Chapter 6. Removal and Installation Procedures" on page 443).
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 MFIOP (see "Chapter 6. Removal and Installation Procedures" on page 443).
There is an obvious physical symptom	
A light or display on the system unit control panel is not working correctly.	Perform "SPCN-PIP20" on page 346.
The System Remote Control Panel is not working properly.	Perform "SPCN-PIP21" on page 347.
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 300.
The Operations Console session display is blank.	Perform "ROC-PIP3" on page 296.
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 539.
A part is broken or damaged.	<p>Go to "Chapter 8. Parts Listing" on page 503 to get the part number.</p> <p>Then go to "Chapter 6. Removal and Installation Procedures" on page 443 to exchange the part.</p>
You cannot find the symptom in this table	
You cannot find the symptom in this table.	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 10.

This ends the procedure.

3. Go to "Using the Problem Log" on page 8.

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 41. 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.

Start

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.

Notes:

- a. For Failing Items (FIs) and symbolic FRUs, go to “Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation” on page 177.
- b. When exchanging FRUs, go to “Chapter 6. Removal and Installation Procedures” on page 443. If you are exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 473. If location information is available, use it to locate the failing item in “Chapter 5. Locations, Addresses, and Service Reference Information” on page 383.
- 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 383.

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 10.

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 41.
- b. If the message on the display directs you to use SST (System Service Tools), go to “COMM-PIP1” on page 242.

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” on page 10.

- 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 10.

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 177.
- b. When exchanging FRUs, go to “Chapter 6. Removal and Installation Procedures” on page 443. If you are exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 473.
- c. After exchanging an item, go to “Verifying the Repair” on page 430.
9. Has the problem been resolved?

No **Yes**

↓ **This ends the procedure.**

10. Contact your next level of support.

This ends the procedure.

Using Problem Log

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.

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 41 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 41.

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 10 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:

Intermittent Problems

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.
- 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 14 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” on page 13 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 14. 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 17.
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

Intermittent Problems

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.
 - 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.

Intermittent Problems

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.

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.

Intermittent Problems

- 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.

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 535).
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 (DSPLOG)) 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

Intermittent Problems

- ↓ 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 541 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 41 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 18. 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 248.

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.

Intermittent Problems

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

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 252.	5, 9
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 17.

Note: Before performing any INT-PIPs in Table 2, first perform all of the steps in “General Intermittent Problem Checklist” on page 14 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 14
X	X			X		“INT-PIP5 External Noise on Twinaxial Cables” on page 249

Table 2. Failing Area INT-PIPs (continued)

	X	X	X	X	X	"INT-PIP7 Electromagnetic Interference (EMI)" on page 250
X						"INT-PIP9 Utility Power and Battery Power Units" on page 252
X						"INT-PIP14 Station Protectors" on page 255
		X				"INT-PIP16 Licensed Internal Code" on page 255
X	X	X	X	X	X	"INT-PIP18 PTFs Not Installed" on page 255
	X	X	X	X	X	"INT-PIP20 Performance Problems" on page 255

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 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 20
You cannot start an IPL from a remote location (no SRC).	Go to "Cannot Perform IPL from a Remote Location (No SRC)" on page 24
The IPL did not complete.	Go to "System Hangs or Loops (No SRC)" on page 28
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 33
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 IPL type A or B on the control panel (see "Selecting IPL Type, Mode, and Speed" on page 428).
 - b. Power on the system (see "Powering Off and Powering On the System" on page 425).

Does the IPL complete successfully?

No **Yes**

IPL Problems

- ↓ **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**
- ↓ Perform the following before exchanging any FRUs:
- a. **Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 421. Perform “SPCN-PIP5” on page 344. Then return here and continue with the next step of this procedure.
- Exchange the following FRUs one at a time (see “Chapter 6. Removal and Installation Procedures” on page 443):
- a. SPCN Panel Card (SPNLCRD)
b. Power Supply
- This ends the procedure.**
5. Go to “Chapter 2. Unit Reference Codes” on page 41 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” on page 425).
- 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

IPL Problems

- yy=year
- 3) Press the Enter key.
- b. To set the correct time, do the following:
 - 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('mmdyy 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 PWRDWN SYS *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" on page 425).
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/or 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 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 443).

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” on page 425).

- MFIOP 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 MFIOP 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 there a Y in the Isolated column)?

Yes **No**

IPL Problems

- ↓ Go to “Chapter 2. Unit Reference Codes” on page 41 and use the SRC indicated in the log.

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 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 177.
- b. When exchanging FRUs, go to “Chapter 6. Removal and Installation Procedures” on page 443. If you are exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 473.
- c. After exchanging an item, go to “Verifying the Repair” on page 430.

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” on page 425).
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 in.
 - The modem is powered on.
 - The modem cable is connected or plugged in.
 - 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 (see “Selecting IPL Type, Mode, and Speed” on page 428)?

No Yes

↓ Go to step 7 of this procedure.

6. Select Normal mode on the control panel.
7. Verify that the cable connecting the modem to the communications adapter card 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” on page 425).

Does the IPL complete successfully?

Yes No

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

This ends the procedure.

IPL Problems

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**

↓ 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:

- 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.
14. Start the communications verification function and run a cable wrap test on the suspected cable by doing the following:
- a. Enter VFYCMN (the Verify Communications command) on the command line to show the communications verification display.

Note: For more information on VFYCMN (the Verify Communications command), see “Verification Procedures” in the *AS/400 Service Functions* information.

- b. On the next display, enter the line description name for the communications line that has the remote power-on cable attached.
- c. Select the *Cable test* option from the display that shows a list of tests that can be performed on a communications line.
- d. Follow all instructions (such as run problem analysis or attach the wrap connector).

Did you find the communications problem using the above procedure?

No **Yes**

↓ Perform the following:

- a. Exchange the failing item indicated (see “Chapter 6. Removal and Installation Procedures” on page 443).
- b. 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/or 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/or resource that compares to the reported problem (see “Using the Product Activity Log” on page 10).

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 443):

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

IPL Problems

- Communications cable
- Communications adapter card
- Modem
- The MFIOP backplane, see “MFIOPBK” on page 211.

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 20

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 there a Y in the Isolated column)?

Yes **No**

- ↓ Go to “Chapter 2. Unit Reference Codes” on page 41 and use the SRC 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 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 177.
- b. When exchanging FRUs, go to “Chapter 6. Removal and Installation Procedures” on page 443. If you are exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 473.
- c. After exchanging an item, go to “Verifying the Repair” on page 430

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 428).
- 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.
 - 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.

IPL Problems

- 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 6.

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 41 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 6.

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 41 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 32 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 428).
- 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.

IPL Problems

- 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 31 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 6.

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 41 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 6.

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 41 and use the SRC information to correct the problem.

This ends the procedure.
12. Contact your next level of support.
This ends the procedure.

Cannot Automatically Perform an IPL after a Power Failure

1. Normal or Auto mode on the control panel must be selected when power is returned to the system.

IPL Problems

Is Normal or Auto mode on the control panel selected (see “Selecting IPL Type, Mode, and Speed” on page 428)?

Yes No

↓ 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” on page 425).

Exchange the following parts one at a time (see “Chapter 6. Removal and Installation Procedures” on page 443):

Attention: Before exchanging the following FRUs, perform the following:

- a. **Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 421.
Perform “SPCN-PIP5” on page 344. Then return here and continue with the next step of this procedure.
- a. SPCN panel card
- b. MFIOP card (BACKPL2)
- c. Power supply

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	
The system attention light is on, there may or may not be a 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) SPCN Reference Codes” on page 46 of this manual and find the reference code.
System unit does not become powered on.	Go to “Cannot Power On System Unit (No SRC)” on page 35.
The system does not become powered off.	Go to “System Cannot Become Powered Off” on page 39.

Table 4. Start Table (continued)

Symptom	What You Should Do
The system does not remain powered on during a loss of incoming ac voltage.	Go to <i>AS/400 CPM/UPS Safety Manual</i> and one of: <ul style="list-style-type: none"> • <i>AS/400 CPM/UPS User's Guide (English, French, German, Spanish, Italian)</i> • <i>AS/400 CPM/UPS User's Guide (Japanese, Korean, Chinese, Simplified Chinese)</i> • <i>AS/400 CPM/UPS User's Guide (Portuguese, Turkish, Danish, Dutch, Norwegian)</i>

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.

DANGER

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

Note: The uninterruptible power supply may take between 5–10 minutes for ac power output to return after an outage without manually pressing the UPS power on button.

1. Attempt to power on the system (see “Powering Off and Powering On the System” on page 425).

Does the system power on, and 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 one minute.

No Yes

↓ Go to 12 on page 37 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 10 on page 37 of this procedure.

3. Are the mainline ac power cables from the power supply or external uninterruptible power supply at the customer’s ac power outlet connected and seated correctly at both ends?

Yes No

↓ Connect the mainline ac power cables correctly at both ends and go to 1 of this procedure.

4. **DANGER**

Dangerous voltage being measured. (RSFTD005)

Note: Verify that the UPS is powered on before proceeding.

Power

Perform the following:

- a. Disconnect the ac power cable or ac power jumper cable from the system's ac power connector at the power supply.
- b. Use a multimeter to measure the ac voltage at the customer's ac power cable or ac power jumper cable at the system power supply end.

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

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

No **Yes**

↓ Go to 10 on page 37 of this procedure.

5. Does the system have an external uninterruptible power supply installed?

Yes **No**

↓ Go to 8 of this procedure.

6. Use a multimeter to measure the ac voltage at the external uninterruptible power supply outlets. Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

No **Yes**

↓ Exchange the AC power jumper cable--part 90H9135.

This ends the procedure.

7. **DANGER**

Dangerous voltage being measured. (RSFTD005)

Perform the following:

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

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

No **Yes**

↓ The uninterruptible power supply needs service: - For 9910 type UPS
Call IBM Service Support - For all other UPS call the UPS provider.
Go to 18 on page 38 to verify system.

8. **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 or from 100 V ac to 127 V ac?

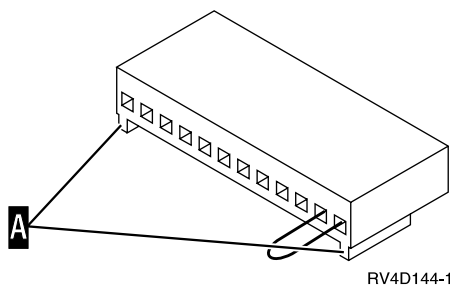
Yes No

↓ Inform the customer that the ac voltage at the power outlet is not correct and reconnect the mainline ac power cables to the power outlet when the ac voltage at the power outlet is correct.

This ends the procedure.

9. Perform the following:
 - a. Exchange the mainline ac power cable.
 - b. Go to 1 on page 35 of this procedure.
10. Perform the following:
 - a. Power off the system.
 - b. Disconnect the power cable.
 - c. Disconnect the power supply cable P3 from the system planar.
 - d. Connect a jumper at P3 on the power supply unit cable from pin 1 to 2.

Note: Pin 1 position is the far right pin with the connector facing you with the keys down. **A**



- e. Connect the power cable.

Does the power supply (internal) AMD power on? (This AMD is inside the power supply.)

No Yes

↓ Exchange the following parts in the system unit, one at time:

- a. SPNLCRD (See "SPNLCRD" on page 217).
- b. SIG1 (See "Locations and Addresses" on page 384 for signal cable information. See "Assembly 6: Internal Cable Assemblies" on page 518 for part number information.
- c. The MFIOP backplane. (See "MFIOPBK" on page 211).

This ends the procedure.

11. Exchange the System unit power supply (PWRSPLY).
This ends the procedure.
12. Display the selected IPL mode on the system unit control panel (see "Selecting IPL Type, Mode, and Speed" on page 428). Is the selected mode the same mode the customer was using when the power-on failure occurred?

No Yes

Power

↓ Go to 15 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?

No **Yes**

↓ Go to 16 of this procedure.

14. Exchange the system unit control panel card. (See "Chapter 6. Removal and Installation Procedures" on page 443).

This ends the procedure.

15. Is a function 11-x SRC displayed on the system unit control panel?

No **Yes**

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

This ends the procedure.

16. Continue the IPL. Does the IPL complete successfully?

No **Yes**

↓ **This ends the procedure.**

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

This ends the procedure.

18. Perform the following to bypass the UPS unit:

- a. Power Down your system and the UPS unit.
- b. Remove the 9-pin D-shell signal cable (p/n 17G1768) used between the CPM UPS and the AS/400.
- c. Remove the 26-pin D-shell signal cable (p/n 90H9136) used between the CPM UPS and the AS/400. (If installed, non-CPM UPS do not use this cable)
- d. Remove the power jumper cords used between the UPS and the attached devices (Model 080 and 140 use p/n 90H9135)
- e. Remove the the country specific power cord used from the CPM UPS to the wall outlet.
- f. Use the correct power cord:
 - **For Model 080:** Use the country specific power cord removed from the CPM UPS and connect it to the power inlet on the AS/400. Plug the country specific power cord into the same wall outlet used for the CPM UPS or another compatible wall outlet.
 - **For Model 140 and non-CPM UPS:** Use the original country specific power cord shipped with your AS/400 and connect it to the power inlet on the AS/400.

Note: Two power cords are shipped with the AS/400 server 170 and server 250 when ordered with the CPM UPS model 140. Use the power cord that is intended for use with the AS/400 server 170 and server 250.

Note: Plug the other end of this cord into a compatible wall outlet.

Note: If the AS/400 server 170 and server 250 have feature code #7101, System Expansion Unit (Sidecar), you need an additional wall outlet that is compatible with the power cord. You will also need an additional power cord shipped with the AS/400 server 170 and server 250. Connect this to the power inlet on the System Expansion Unit.

g. Attempt to power on the system.

Does the system power on?

No **Yes**

↓ Go to 12 on page 37 of this procedure.

19. Go to 4 on page 35 of this procedure.

System 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. Perform "Powering Off the System" on page 425. 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.

2. Perform the following:

a. **Be sure there are no jobs running on the system. After removing the external CPM cable, CPM is not available.**

b. Remove the system ac power cord from the external uninterruptible power supply or customer's ac power outlet if external uninterruptible power supply is not installed.

c. Disconnect the UPS CPM cable from the system unit.

d. Exchange the following FRUs in the system unit or expansion frame one at a time. See "Removal and Installation Procedures" in the *Repair and Parts* information for the system.:

If the system unit is failing:

- 1) System power control network (SPCN) panel card
- 2) Power supply
- 3) Control panel cable
- 4) The MFIOP backplane. See "MFIOPBK" on page 211.

If the expansion unit is failing:

- 1) SPCN panel card
- 2) Power supply
- 3) Expansion back plane to MFIOP backplane cable (SIG5)
- 4) Expansion unit back plane
- 5) The MFIOP backplane. See "MFIOPBK" on page 211.

Power

This ends the procedure.

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 6 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

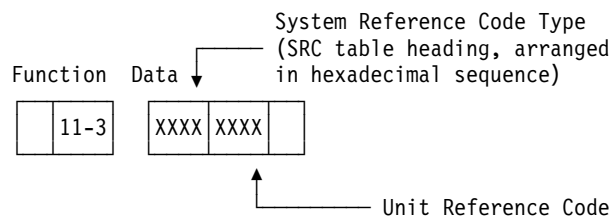


Figure 6. Determining the SRC and URC

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 443.
- b. When instructed to perform problem isolation procedures, go to “Chapter 4. Problem Isolation Procedures (PIPs)” on page 225.
- c. Any additional information you need to complete the procedure may be found in “Chapter 5. Locations, Addresses, and Service Reference Information” on page 383.

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 43 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 43, 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	43	(2722, 2746) Twinaxial Workstation Reference	
(0000) Control Panel Reference Codes.	44	Codes	62
Control Panel Failing Items	46	Workstation Failing Items.	63
(1xxx) SPCN Reference Codes	46	(2740, 2748, 2763) Reference Codes.	63
SPCN Failing Items.	53	Failing Items	67
(2718, 2728, 2729, 2741, 2809, 2824, 6757, 675A)		(3490) Tape Unit Reference Codes	68
I/O Processor and I/O Adapter Reference Codes. 54		Tape Unit Failing Items	73
I/O Processor and I/O Adapter Failing Items 61		(3494) Tape Library Reference Codes	74
(2720) Communications and Workstation		Tape Library Failing Items	75
Combined Function Reference Codes	62	(3570) Tape Unit Reference Codes	76
Communication or Workstation Failing Items 62		Tape Unit Failing Items	79
		(3590) Tape Unit Reference Codes	80

Reference Code Tables

Tape Unit Failing Items	83	(9427) Tape Library Reference Codes	115
(3995) Optical Library Dataserver Reference Codes	83	Tape Library Failing Items	120
(632x, 6330) Optical Storage Unit Reference Codes	84	(A1xx, B1xx) Service Processor Reference Codes	121
Optical Storage Unit Failing Items	86	Service Processor Failing Items	123
(6385) Tape Unit Reference Codes	87	(A6xx, B6xx) LIC Reference Codes	123
Tape Unit Failing Items	89	Licensed Internal Code (LIC) Failing Items	141
(6390) Tape Unit Reference Codes	90	(A9xx, B9xx) OS/400 Reference Codes	143
Tape Unit Failing Items	95	(B003) Asynchronous Communications Reference Codes	143
(63A0) Tape Unit Reference Codes	96	Asynchronous Communications Failing Items	149
Tape Unit Failing Items	99	(B006) Common Licensed Internal Code Reference Codes	150
(660x, 671x, 673x) Disk Unit Reference Codes	99	Common Licensed Internal Code Failing Items	153
Disk Unit Failing Items	102	(B070) Twinaxial Workstation Reference Codes	153
(6A58,6A59) Workstation Adapter Console Reference Codes	102	Twinaxial Workstation Failing Items	162
Workstation Adapter Console Failing Items	103	(B075) Workstation Adapter Console Reference Codes	162
(7208) Tape Drive Reference Codes	104	Workstation Adapter Console Failing Items	166
(7208) Model 002 Tape Drive Reference Codes	104	(B423, B424, B425) System Processor Reference Codes	167
Model 002 Tape Drive Failing Items	108	Server 170 and Server 250 System Processor Failing Items	175
(7208) Model 012 Tape Drive Reference Codes	108		
Model 012 Tape Drive Failing Items	114		
(9348) Tape Unit Reference Codes	114		

SRC Exception Table

Table 5. SRC exception table

First 4 characters of SRC	What You Should Do
2718, 2728, 2729, 2741, 2809, 2824	Go to "(2718, 2728, 2729, 2741, 2809, 2824, 6757, 675A) I/O Processor and I/O Adapter Reference Codes" on page 54 and follow the instructions in the SRC table.
2748, 2763	Go to "(2740, 2748, 2763) Reference Codes" on page 63 and follow the instructions in the SRC table.
6381, 6382	Go to "(63A0) Tape Unit Reference Codes" on page 96 and follow the instructions in the SRC table.
671x, 673x	Go to "(660x, 671x, 673x) Disk Unit Reference Codes" on page 99 and follow the instructions in the SRC table.
6757, 675A	Go to "(2718, 2728, 2729, 2741, 2809, 2824, 6757, 675A) I/O Processor and I/O Adapter Reference Codes" on page 54 and follow the instructions in the SRC table.
B1xx	Service Processor terminating SRC Go to "(A1xx, B1xx) Service Processor Reference Codes" on page 121 and follow the instructions in the SRC table. If the problem is not resolved, perform "SP-PIP40" on page 342.
B6xx	Go to "(A6xx, B6xx) LIC Reference Codes" on page 123 and follow the instructions in the SRC table.
B9xx	Go to "(A9xx, B9xx) OS/400 Reference Codes" on page 143.
C9xx	For information about these SRCs, see "Status SRCs" in the <i>AS/400 Service Functions</i> .

Reference Code Tables

Table 5. SRC exception table (continued)

First 4 characters of SRC	What You Should Do
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	<p>For information about these SRCs, see "Status SRCs" in the <i>AS/400 Service Functions</i>.</p>
D1xx 3xxx	<p>Service Processor Main Storage Dump Status</p> <p>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.</p>
D1xx xxxx	<p>Service Processor General Status SRCs</p> <p>If you suspect a problem, ask your next level of support for assistance.</p>

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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1110 to 111F	<p>Failure of CEC power supply not identified by SPCN.</p> <p>This reference code can be caused by something holding the system Power On Reset (POR) line active.</p>	SPNLCRD SIG1 ANYBUS IOP FI00010
2222	<p>Service processor failure caused machine check interrupt.</p> <p>Check that the SIG1 cable connectors are fully seated.</p>	ANYBUS IOP PWRSPPLY SPNLCRD SIG1
3333	<p>SPCN - control panel interface error.</p> <p>An attempt to communicate between the SPCN and the control panel failed.</p>	SPNLCRD
4444	<p>Power on request failure</p> <p>A power-on request was not completed successfully. A control panel-detected power-on failure occurred.</p>	SPNLCRD
5550 to 555F	<p>Incorrect key used or the key is not completely inserted</p> <p>The control panel hardware failed.</p>	SPNLCRD
AABB	<p>Remote power-on failure</p> <p>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.</p>	SPNLCRD SIG1 IOP FI00010
AACC	<p>Service processor power-on failure</p> <p>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.</p> <p>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.</p>	SPNLCRD SIG1 IOP FI00010
AADD	<p>Manual power-on failure</p> <p>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.</p>	SPNLCRD SIG1 IOP FI00010
AAEE	<p>SPCN - control panel interface error.</p> <p>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.</p>	SPNLCRD SIG1 IOP FI00010
BBBB	<p>Battery not working correctly</p> <p>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.</p> <p>Note: This is not a critical failure. However, if there is a power failure, the time of day will be lost.</p>	TOD SIG1 SPNLCRD IOP

0000

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
CCCC	Service processor error to or from control panel An attempt to communicate between the service processor and the control panel failed.	SPNLCRD SIG1 ANYBUS IOP FI00010
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 300 before replacing the failing items.	SPNLCRD SIG2
EEEE	IPL1 failed in the service processor Check that the SIG1 cable connectors are fully seated.	ANYBUS IOP SPNLCRD FI00010 SIG1
FFF0 to FFFF	Control panel self-test failed	SPNLCRD SIG1 IOP

Control Panel Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

Failing Item	Description	Document Description
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
IOP	Multiple function I/O processor card	Problem Analysis; Symbolic FRU Isolation
PWRSPPLY	Power Supply	Problem Analysis; Symbolic FRU Isolation
SIG1	Cable assembly	Problem Analysis; Symbolic FRU Isolation
SIG2	Contol Panel cable	Problem Analysis; Symbolic FRU Isolation
SPNLCRD	SPCN panel card	Problem Analysis; Symbolic FRU Isolation
TOD	Control panel battery	Problem Analysis; Symbolic FRU Isolation

(1xxx) SPCN 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 177 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 193 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 404. Use the address to find the location. See “Locations and Addresses” on page 384.
3. If the failing item is a symbolic FRU, go to “Symbolic FRUs” on page 201 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00AC	Detected AC loss If system powers on normally or stays powered on after AC power failure, no replacement of parts may be needed.	PWRSPLY UPSUNIT
00EF	Remote EPO switch is OFF	
2210	One of the CPM regulators has reported a fault A POW-PIP is required for identifying which load is at fault.	PWRSPLY SPNLCRD
2213	CPM Regulator 1 Fault A POW-PIP is required for identifying which load is at fault.	PWRSPLY SPNLCRD
2221	Power Good Fault	SPNLCRD CBLALL IOP
2251	Air Moving Device 1 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 SPNLCRD
2253	Air Moving Device 3 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 SPNLCRD
2254	Air Moving Device 4 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 SPNLCRD
2260	Timeout on Panel for Request of VPD	SPNLCRD
2311	Power Supply P01 error A fault detection failure occurred for Power Supply P01.	PWRSPLY SPNLCRD CBLALL
2314	Power Supply P04 error A fault detection failure occurred for Power Supply P04.	PWRSPLY SPNLCRD CBLALL
2321	Power Good Fault	SPNLCRD CBLALL PGDPART
2330	Power Supply P01 not installed	PWRSPLY SPNLCRD

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2331	Power Supply P01 ID is Invalid	PWRSPLY SPNLCRD
2334	Power Supply P04 ID is Invalid	PWRSPLY SPNLCRD
2400 to 2402	UPS Enable/Disable Failure	UPSUNIT SPNLCRD
2403	UPS CPM Failure	UPSUNIT SPNLCRD
2404	UPS Battery Failure	BATRY UPSUNIT
2405	UPS Unit Failure	UPSUNIT SPNLCRD
2406 to 2407	UPS Enable/Disable Failure	UPSUNIT SPNLCRD
2410	UPS Test Failure	UPSUNIT SPNLCRD
2413	UPS Interface Failure	UPSUNIT SPNLCRD
2541	Power Supply P01 Fault A POW-PIP is required for identifying which load is at fault, see failing item "PWRSPLY" for correct POW-PIP.	PWRSPLY SPNLCRD
2542	Power supply failure A fault has been detected for a power supply/processor backplane.	PWRSPLY SPNLCRD
2543	Power supply failure A fault has been detected for a power supply/processor backplane. A POW-PIP is required for identifying which load is at fault, see failing item "PWRSPLY" for correct POW-PIP.	PWRSPLY SPNLCRD
2544	Power Supply P04 Fault A POW-PIP is required for identifying which load is at fault, see failing item "PWRSPLY" for correct POW-PIP.	PWRSPLY SPNLCRD
2551	Power Supply P01 Fault A fault has been detected for Power Supply P01. A POW-PIP is required for identifying which load is at fault, see failing item "PWRSPLY" for correct POW-PIP.	PWRSPLY SPNLCRD
2552	Power supply failure A fault has been detected for a power supply/regulator 2.	PWRSPLY SPNLCRD
2553	Power supply failure A fault has been detected for a power supply/regulator 1. A POW-PIP is required for identifying which load is at fault, see failing item "PWRSPLY" for correct POW-PIP.	PWRSPLY SPNLCRD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2554	<p>Power Supply P04 Fault</p> <p>A fault has been detected for Power Supply P04.</p> <p>A POW-PIP is required for identifying which load is at fault, see failing item "PWRSPPLY" for correct POW-PIP.</p>	PWRSPPLY SPNLCRD
2561	<p>Power Supply P01 Fault</p> <p>A fault has been detected for Power Supply P01.</p> <p>A POW-PIP is required for identifying which load is at fault, see failing item "PWRSPPLY" for correct POW-PIP.</p>	PWRSPPLY SPNLCRD
2562	<p>Power supply failure</p> <p>A fault has been detected for a power supply/regulator 2.</p>	PWRSPPLY SPNLCRD
2563	<p>Power supply failure</p> <p>A fault has been detected for a power supply/regulator 1.</p> <p>A POW-PIP is required for identifying which load is at fault, see failing item "PWRSPPLY" for correct POW-PIP.</p>	PWRSPPLY SPNLCRD
2564	<p>Power Supply P04 Fault</p> <p>A fault has been detected for Power Supply P04.</p> <p>A POW-PIP is required for identifying which load is at fault, see failing item "PWRSPPLY" for correct POW-PIP.</p>	PWRSPPLY SPNLCRD
9012	<p>Address not valid.</p> <p>LIC command had a frame address that was not valid.</p>	FI00240 FI00235
9013	<p>Invalid Node Address.</p> <p>The address in the SPCN command does not match the secondary nodes assigned address.</p>	FI00240 FI00235
9014	<p>A command has an invalid address mode.</p> <p>A command from the system unit specified a unit address of D or E or had a frame address of 00.</p> <p>Exchange the failing items in the system unit.</p>	AJSDJ01 FI00200 FI00240
9021	<p>A command to an SPCN node was rejected.</p> <p>No action required. This reference code is logged for information only.</p>	
9022	<p>Addressed Unit not in frame.</p> <p>The addressed unit does not exist in the addressed frame.</p> <p>No action required. This reference code is logged for information only.</p>	
9023	<p>Addressed Unit exists, but the frame is powered off.</p> <p>The addressed unit is in a frame that is powered off.</p> <p>No action required. This reference code is logged for information only.</p>	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9024	<p>SPCN Licensed Internal Code not valid.</p> <p>The Licensed Internal Code in one of the secondary nodes is not valid. The code will be reloaded.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
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>	FI00240
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>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9033	<p>Unsupported Packet Size</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>	
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>	FI00230 FI00240
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>	FI00240
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>	FI00240
9046	<p>QDS Packet Sequence Error</p> <p>The Packet Sequence number is wrong. The download was stopped.</p>	FI00240
9047	<p>QDS Block Sequence Error</p> <p>The Block Sequence number is wrong. The download was stopped.</p>	FI00240
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>	FI00240 FI00230

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9080	<p>Undefined Status Code</p> <p>An SPCN node returned an unknown status code.</p> <p>Exchange the failing SPCN node.</p>	<p>FI00240</p> <p>FI00245</p>
90F0	<p>A frame was dropped from the SPCN configuration.</p> <p>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.</p>	<p>FI00240</p> <p>FI00235</p>
90F1	<p>A frame was added to the SPCN configuration.</p> <p>No action required. This reference code is logged for information only.</p>	
9100	<p>Battery capacity test completed.</p> <p>No action required. This reference code is logged for information only.</p>	
9101	<p>VLIC-SPCN Timeout</p> <p>A Licensed Internal Code timeout occurred. The SPCN failed to respond to a Licensed Internal Code command.</p>	<p>FI00200</p> <p>CTLPNL</p> <p>FI00131</p>
9102	<p>Assign Permanent Address command failure</p> <p>A node failed to perform an Assign Permanent Address command.</p>	<p>FI00240</p>
9103	<p>Download Initialize Timeout</p> <p>An SPCN node failed to enter the download state after an Initialize for Download command.</p> <p>Exchange the failing SPCN node.</p>	<p>FI00240</p>
9104	<p>Download Completion Timeout</p> <p>An SPCN node failed to leave the download state.</p> <p>Exchange the failing SPCN node.</p>	<p>FI00240</p>
9105	<p>Load Damaged Timeout</p> <p>An SPCN node failed to enter the operational state.</p> <p>Exchange the failing SPCN node.</p>	<p>FI00240</p>
9106	<p>An SPCN LID was not found.</p> <p>No action required. This reference code is logged for information only.</p>	
9107	<p>An SPCN microcode download is required.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9108	<p>A status change occurred in one of the SPCN nodes.</p> <p>No action required. This reference code is logged for information only.</p>	
9109	<p>Licensed Internal Code part number is not correct.</p> <p>The AROS part number field was not updated to the correct level after the system attempted to load new Licensed Internal Code.</p>	<p>FI00240</p>
9110	<p>Battery Power Unit capacity test failed.</p> <p>The battery power unit was not able to pass the capacity test.</p>	<p>FI00251</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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.	FI00200
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.	FI00240
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.	FI00240
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.	

SPCN Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

Failing Item	Description	Document Description
AIRMOVR	Fan assembly.	Problem Analysis; Symbolic FRU Isolation
BATRY	Battery Power Unit	Problem Analysis; Symbolic FRU Isolation
CBLALL	Cable Unit Part	Problem Analysis; Symbolic FRU Isolation
IOP	Multiple function I/O processor card	Problem Analysis; Symbolic FRU Isolation
PGDPART	Power Good Parts	Problem Analysis; Symbolic FRU Isolation
PWRSPLY	Power Supply	Problem Analysis; Symbolic FRU Isolation
SIG1	Cable assembly	Problem Analysis; Symbolic FRU Isolation
SPNLCRD	SPCN panel card	Problem Analysis; Symbolic FRU Isolation
UPSUNIT	UPS unit part	Problem Analysis; Symbolic FRU Isolation

2718, 2728, 2729, 2741, 2809, 2824, 6757, 675A

(2718, 2728, 2729, 2741, 2809, 2824, 6757, 675A) I/O Processor and I/O 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. 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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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
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 311.	FI01105 STORIOA FI01140 FI01141 FI01106

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 314. 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 314. 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 314. 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 308.	STORIOA FI01107 FI01140 BACKPLN
3101	I/O processor card detected interface error Error occurred on SCSI bus 1. Perform "SDIOP-PIP13" on page 308.	STORIOA FI01107 FI01140 BACKPLN
3102	I/O processor card detected interface error Error occurred on SCSI bus 2. Perform "SDIOP-PIP13" on page 308.	STORIOA FI01107 FI01140 BACKPLN
3109	I/O processor timed out a device command Perform "SDIOP-PIP16" on page 311.	FI01105 STORIOA FI01140 BACKPLN FI01106
3110	I/O processor card detected interface error Perform "SDIOP-PIP16" on page 311.	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

2718, 2728, 2729, 2741, 2809, 2824, 6757, 675A

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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 302.	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
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

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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
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 311.	FI01105 STORIOA FI01140 BACKPLN FI01106
9008	I/O card does not support functions expected by devices Perform "SDIOP-PIP25" on page 329.	SVCDOS

2718, 2728, 2729, 2741, 2809, 2824, 6757, 675A

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9010	Cache data associated with attached devices cannot be found Perform "SDIOP-PIP19" on page 319.	SVCDOCS
9011	Cache data belongs to devices other than those attached Perform "SDIOP-PIP19" on page 319.	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 336.	CACHE
9013	The IOP and attached cache adaptor card are not compatible. Perform "SDIOP-PIP19" on page 319.	SVCDOCS
9020 to 9021	Array not functional due to present hardware configuration. Perform "SDIOP-PIP20" on page 321.	SVCDOCS
9022 to 9024	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 325.	SVCDOCS
9025	Disk unit is not supported at its physical location. Perform "SDIOP-PIP21" on page 324.	SVCDOCS
9026 to 9027	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 325.	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 324.	SVCDOCS
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 326.	SVCDOCS
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 333.	SVCDOCS

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9052	Cache data exists for device that has been modified. Perform "SDIOP-PIP28" on page 335.	SVCDOS
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.	SVCDOS
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.	SVCDOS
9081	I/O processor card detected device error	FI01105 STORIOA
9082	I/O processor card detected device error Perform "SDIOP-PIP16" on page 311.	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 41 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.	SVCDOS
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 41 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.	SVCDOS
9092	Disk unit requires initialization before use. Perform "SDIOP-PIP26" on page 331.	SVCDOS
B300	A permanent I/O processor failure occurred	IOP
B3B1 to B3B6	A permanent I/O processor failure occurred 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 "Locations and Addresses" on page 384 and go to "Chapter 6. Removal and Installation Procedures" on page 443 to exchange the failing item.	IOP

2718, 2728, 2729, 2741, 2809, 2824, 6757, 675A

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B3B7 to B3B8	A permanent I/O processor failure occurred 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 "Locations and Addresses" on page 384 and go to "Chapter 6. Removal and Installation Procedures" on page 443 to exchange the failing item.	IOP STORIOA PCIBUS
B3B9	A permanent I/O processor failure occurred 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 "Locations and Addresses" on page 384 and go to "Chapter 6. Removal and Installation Procedures" on page 443 to exchange the failing item.	IOP
B3E0	I/O processor detected a fault condition. 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 "Locations and Addresses" on page 384 and go to "Chapter 6. Removal and Installation Procedures" on page 443 to exchange the failing item.	IOP
B3E1	I/O processor detected a fault condition. 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 "Locations and Addresses" on page 384 and go to "Chapter 6. Removal and Installation Procedures" on page 443 to exchange the failing item.	IOP STORIOA PCIBUS
B410 to B411	A permanent I/O processor failure occurred	STORIOA
B412	Tape/CD or disk bus interface error occurred Perform "SDIOP-PIP16" on page 311.	FI01107 FI01140 STORIOA DEVTERM
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 MFIOP is 0001-01-00. Find the MFIOP for this system in "Locations and Addresses" on page 384 and go to "Chapter 6. Removal and Installation Procedures" on page 443 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

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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

I/O Processor and I/O Adapter Failing Items

Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 177.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 193.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRUs” on page 201.

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
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
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
USER	Operator/User Error	Problem Analysis; Symbolic FRU Isolation

(2720) Communications and Workstation Combined Function Reference Codes

A communications or workstation 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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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

Communication or Workstation Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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

(2722, 2746) Twinaxial Workstation Reference Codes

A workstation 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 177 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 193 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 404. Use the address to find the location. See “Locations and Addresses” on page 384.
3. If the failing item is a symbolic FRU, go to “Symbolic FRUs” on page 201 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

Workstation Failing Items**Notes:**

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 177.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 193.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRUs” on page 201.

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

(2740, 2748, 2763) 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 177 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 193 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 404. Use the address to find the location. See “Locations and Addresses” on page 384.
3. If the failing item is a symbolic FRU, go to “Symbolic FRUs” on page 201 to determine the part number.

2740, 2748, 2763

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 314. 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 314. 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 314. 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 308.	STORIOA FI01107 FI01140 BACKPLN
3101	I/O processor card detected interface error Error occurred on SCSI bus 1. Perform "SDIOP-PIP13" on page 308.	STORIOA FI01107 FI01140 BACKPLN
3102	I/O processor card detected interface error Error occurred on SCSI bus 2. Perform "SDIOP-PIP13" on page 308.	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

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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
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 311.	FI01105 STORIOA FI01140 BACKPLN FI01106
9008	I/O card does not support functions expected by devices Perform "SDIOP-PIP25" on page 329.	SVCDOCS
9010	Cache data associated with attached devices cannot be found Perform "SDIOP-PIP31" on page 339.	SVCDOCS
9011	Cache data belongs to devices other than those attached Perform "SDIOP-PIP32" on page 340.	SVCDOCS
9014	Mode jumper overridden due to cache data in conflicting mode See "Mode Jumper has been Overridden" on page 412.	SVCDOCS
9015	Mode jumper missing See "Mode Jumper is Missing" on page 412.	SVCDOCS
9020 to 9021	Array not functional due to present hardware configuration. Perform "SDIOP-PIP20" on page 321.	SVCDOCS
9022 to 9024	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 325.	SVCDOCS
9025	Disk unit is not supported at its physical location. Perform "SDIOP-PIP21" on page 324.	SVCDOCS

2740, 2748, 2763

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9026 to 9027	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 325.	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
9029	Incorrect hardware configuration change has been detected. Contact your next level of support.	SVCDOS
9030	Array no longer protected due to missing or failed disk unit Perform "SDIOP-PIP21" on page 324.	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.	AJDGP01
9050	Required cache data cannot be located for a disk unit. Perform "SDIOP-PIP30" on page 338.	SVCDOS
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 333.	SVCDOS
9052	Cache data exists for device that has been modified. Contact your next level of support.	SVCDOS
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.	SVCDOS
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.	SVCDOS
9081	I/O processor card detected device error	FI01105 STORIOA
9082	I/O processor card detected device error Perform "SDIOP-PIP16" on page 311.	FI01105 STORIOA FI01140 BACKPLN FI01106

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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 41 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.	SVCDOCS
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 41 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.	SVCDOCS
9092	Disk unit requires initialization before use. Perform "SDIOP-PIP26" on page 331.	SVCDOCS
9093	Read cache device not in correct format Contact your next level of support.	SVCDOCS
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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
USER	Operator/User Error	Problem Analysis; Symbolic FRU Isolation

(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 355.

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:

- a. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 177 to determine which part number associated with the FI code is failing.
- b. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 193 to determine the part number.
- c. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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</i> , GA32-0124. 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</i> , GA32-0124. 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</i> , GA32-0124. 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</i> , GA32-0124. 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</i> , GA32-0124. 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 355 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 177.
- To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
- To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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 355.

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:

- a. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 177 to determine which part number associated with the FI code is failing.
- b. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 193 to determine the part number.
- c. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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 355.

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:

- a. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 177 to determine which part number associated with the FI code is failing.
- b. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 193 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 404. Use the address to find the location. See “Locations and Addresses” on page 384.

- c. If the failing item is a symbolic FRU, go to “Symbolic FRUs” on page 201 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 355 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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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 355.

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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.

3. If the failing item is a symbolic FRU, go to “Symbolic FRUs” on page 201 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 355 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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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 AS/400 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.

3. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
4. Go to the *3995 AS/400 Optical Library Dataserver Maintenance Information Manual* for the 3995 model installed on the system and find the unit reference code.

(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.

Note:

- If the system is available, use online diagnostic tests when possible.
 - 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.
 - 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 using 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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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
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

632x

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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.	
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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

Failing Item	Description	Document Description
CDTRAY	Flex cable	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Device terminator	Problem Analysis; Symbolic FRU Isolation

Failing Item	Description	Document Description
MMVMEDA	Optical media	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 355.

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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 to determine the part number.

6385

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 348.	FI00870 FI01112 FI01140 FI01106 DEVTERM FI01141
9200	I/O processor addressed the tape unit; no response Perform "TU-PIP1" on page 348.	FI00870 FI01112 FI01106 FI01140 DEVTERM FI01141
9201	Tape unit command timeout Perform "TU-PIP1" on page 348.	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 355.	FI00870 FI01112 FI01106 FI01141 DEVTERM FI01140
9210	Illegal or unsupported tape unit response	FI00870 FI00130
9300	Tape unit failure Perform "TU-PIP1" on page 348.	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 355 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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.

3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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 355.

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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.

3. If the failing item is a symbolic FRU, go to “Symbolic FRUs” on page 201 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 350.</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 350.</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 350.	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 350.	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 350.	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 348 2. "TU-PIP3" on page 353	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 355.	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 348 2. "TU-PIP3" on page 353 	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 348 2. "TU-PIP3" on page 353 	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 348 2. "TU-PIP2" on page 350 	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 355.</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 355 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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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 355.

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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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 355 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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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

(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 473.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 to determine the part number.

660x, 671x, 673x

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 STORIOA DISKTRY FI01106 FI01141 FI01140 BACKPLN DEVTERM
3010	Disk device returned wrong response to IOP	DISKDRV DISKTRY BACKPLN STORIOA FI01141 FI01140 DEVTERM
3020	Storage subsystem configuration error If an MES is being installed, verify the configuration.	DISKDRV DISKTRY FI01106 STORIOA BACKPLN FI01141 FI01140 DEVTERM
3029	A device replacement has occurred No action required. This reference code is logged for information only.	
3100	Tape/CD or disk bus interface error occurred Perform "DU-PIP3" on page 244.	STORIOA DISKDRV FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM
3109	IOP timed out a disk command	DISKDRV STORIOA FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM
3110	Disk bus interface error occurred Perform "DU-PIP3" on page 244.	STORIOA DISKDRV FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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, SC41-5304-04</i> .	CMPRES1
7052	Data compression warning The customer should perform the "Recovering From 6xxx7052 SRC" procedure in the <i>Backup and Recovery, SC41-5304-04</i> .	SVCDOCS
FFF2	Disk motor problem	DISKDRV
FFF3	Disk media format bad	DISKDRV
FFF4	Disk device problem	DISKDRV STORIOA
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

660x, 671x, 673x

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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 STORIOA 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 STORIOA 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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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
DEVTERM	Device terminator	Problem Analysis; Symbolic FRU Isolation
DISKDRV	Disk drive and logic card	Problem Analysis; Symbolic FRU Isolation
STORIOA	Active I/O processor	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation

(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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.

3. If the failing item is a symbolic FRU, go to “Symbolic FRUs” on page 201 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
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 177.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 193.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRUs” on page 201.

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 355.

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 Library Reference Codes" on page 115.

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 108 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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.

3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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

7208

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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
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

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FF4D	IOP to tape unit interface error; logged only No action required. This reference code is logged for information only.	
FF5D	Tape unit response error; logged only No action required. This reference code is logged for information only.	
FFF6	Volume statistics; logged only No action required. This reference code is logged for information only.	
FFFE	Read data error: tape path dirty 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. 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. If the data on the tape was not written by an AS/400 system, the format may not be correct. Do not use the cleaning cartridge more than 12 times. Each data cartridge must have a unique volume ID label. The user must assign a volume ID when the tape is initialized (INZTAP).	MLVTMED 91F0914
FFFF	Write data error: tape path dirty 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. 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. If the data on the tape was not written by an AS/400 system, the format may not be correct. Do not use the cleaning cartridge more than 12 times. Each data cartridge must have a unique volume ID label. The user must assign a volume ID when the tape is initialized (INZTAP).	MLVTMED 91F0914

Model 002 Tape Drive Failing Items

Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 177.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 193.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRUs” on page 201.

Failing Item	Description	Document Description
42F7300	Fan	7208 8mm Tape Drive service information
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 177 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 193 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 404. Use the address to find the location. See “Locations and Addresses” on page 384.
3. If the failing item is a symbolic FRU, go to “Symbolic FRUs” on page 201 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 350.</p>	46G2227 ML2TMED

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 350.</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

72x8

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 350.	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 348. 2. "TU-PIP3" on page 353.	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 355.	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 348. 2. TU-PIP3 in "Tape Unit Problem Isolation Procedures" on page 347	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 348. 2. "TU-PIP3" on page 353. 	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 348. 2. TU-PIP2 in "Tape Unit Problem Isolation Procedures" on page 347 	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

72x8

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 350.</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 355 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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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

(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 355.

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 Library 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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
03xx	<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>Do the following:</p> <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. <p>Refer to the 9427 8mm Tape Cartridge Library Service Guide for additional information.</p>	
04xx	<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>Refer to the 9427 8mm Tape Cartridge Library Service Guide.</p>	
3xxx	<p>Device or interface error.</p> <p>Refer to the 9427 8mm Tape Cartridge Library Service Guide.</p>	
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. 	ULYCNFG 86G9251 FI00130 86G9254
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. 	86G9251 FI00131 86G9254 EXTSCSI 86G9255 86G9274 17G1934 FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9200	I/O processor addressed the tape unit; no response Before exchanging any parts, do the following: 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: 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
9202	Tape unit failed after Licensed Internal Code was loaded Before exchanging any parts, do the following: 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	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 350.	86G9251 LIBDEV MLYTMED 86G9274 86G9255
9301	Tape device failure, redundancy lost The tape device detected a hardware failure that does not prevent the tape unit from completed the current operation. Refer to the Tape unit service information to determine the failing item.	86G9251 LIBDEV MLYTMED 86G9274 86G9255

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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
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>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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 355 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
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 AJSLOC1
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>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
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.	86G9251
FFFE	Tape unit detected a read error on the tape medium Perform the Action for reference code 030B.	MLYTMED 86G9251 86G9274
FFFF	Tape unit detected a write error on tape medium Perform the Action for reference code 030B.	MLYTMED 86G9251

Tape Library Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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

Failing Item	Description	Document Description
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 425.

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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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 MFIOIP	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

A1xx, B1xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4505	<p>Problem with load source device media</p> <p>Note: If the system has undergone a recent hardware upgrade, please check the installation procedures for required corresponding software upgrades.</p> <p>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 MFIOIP, do the following:</p> <p>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.</p>	FI00072
4506	Problem detected with control panel	FI00124
4507	<p>Tape or CD storage unit failure</p> <p>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 423)</p>	FI00092 FI00072 FI00050
4509	<p>Service Processor Problem Isolation Procedure</p> <p>Please refer to and follow the procedures defined in SP-PIP40.</p>	UCAPIP
4511	Multiple function IOP or system processor failure	FI00020 PROCARD
4512	<p>Clock card</p> <p>This reference code will only appear on models 530 and 53S.</p>	CLKCARD
4998	Operator/User Error	UCAUSER
4999	Service processor LIC problem	FI00099
6010	Any device attached to Bus 1	FI00050
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 177.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 193.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRUs” on page 201.

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 the following table 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 the following table 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.

Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 177 to determine which part number associated with the FI code is failing.

A6xx, B6xx

2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 to determine the part number.

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 258.</p>		
0104	<p>Terminate Immediate reference code is bad</p> <p>Perform "LIC-PIP8" on page 265.</p>	AJDG301	
0105	<p>More than one request to terminate the system was issued</p> <p>Perform "LIC-PIP8" on page 265.</p>	AJDG301	
0106	<p>Terminate Immediate data is not valid</p> <p>Perform "LIC-PIP8" on page 265.</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 278.</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 265.</p>	AJDG301	
0304	<p>Component specific exception handler return code not valid</p> <p>Perform "LIC-PIP8" on page 265.</p>	AJDG301	
0305	<p>Exception while storage management lock is held</p> <p>Perform "LIC-PIP8" on page 265.</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 265.</p>	AJDG301	
0317	<p>Traceback for code not found</p> <p>Perform "LIC-PIP8" on page 265.</p>	AJDG301	
0323 to 0329	<p>LIC exception code detected a problem</p> <p>Perform "LIC-PIP8" on page 265.</p>	AJDG301	
0333	<p>A branch to a bad address was attempted</p> <p>Perform "LIC-PIP8" on page 265.</p>	AJDG301	
0334	<p>Exception Handler could not be removed</p> <p>Perform "LIC-PIP8" on page 265.</p>	AJDG301	
0335	<p>Code resumed to not valid address following exception</p> <p>Perform "LIC-PIP8" on page 265.</p>	AJDG301	
0401	<p>A machine check occurred during IPL</p> <p>Perform "LIC-PIP8" on page 265.</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 265.	AJDG301	
0403	Unhandled exception during IPL or install Perform "LIC-PIP8" on page 265.	AJDG301	
0405	Unhandled exception in authority recovery Perform "LIC-PIP8" on page 265.	AJDG301	
0406	Unhandled exception in data base recovery Perform "LIC-PIP8" on page 265.	AJDG301	
0407	Unhandled exception in data base initialization Perform "LIC-PIP8" on page 265.	AJDG301	
0408	Unhandled exception in journal recovery Perform "LIC-PIP8" on page 265.	AJDG301	
0409	Unhandled exception in journal synchronization Perform "LIC-PIP8" on page 265.	AJDG301	
0410	Unhandled exception in journal clean up Perform "LIC-PIP8" on page 265.	AJDG301	
0411	Unhandled exception in commit recovery Perform "LIC-PIP8" on page 265.	AJDG301	
0412	Unhandled exception in commit initialization Perform "LIC-PIP8" on page 265.	AJDG301	
0413	Rebuild of recovery object index failed Perform "LIC-PIP8" on page 265.	AJDG301	
0414	Install of operating system failed on read from media Perform "LIC-PIP8" on page 265.	FI00300	
0415	Create user profile failed Perform "LIC-PIP8" on page 265.	AJDG301	
0417	Initiating the initial process failed Perform "LIC-PIP8" on page 265.	AJDG301	
0418 to 0419, 0420	The information loaded from the install media is not valid Perform "LIC-PIP8" on page 265.	AJDG301	
0421	Bad return code creating a queue or message Perform "LIC-PIP8" on page 265.	AJDG301	
0422	The Load/Dump command failed Perform "LIC-PIP8" on page 265.	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 265.	AJDG301	
0440	Termination code is not valid Perform "LIC-PIP8" on page 265.	AJDG301	
0441	Power off system command failed Perform "LIC-PIP8" on page 265.	AJDG301	
0443	Programmed IPL command failure Perform "LIC-PIP8" on page 265.	AJDG301	
0446	Error during machine termination Perform "LIC-PIP8" on page 265.	AJDG301	
0447	Failure to reach MI boundary Perform "LIC-PIP8" on page 265.	AJDG301	
0449	Exception in MI boundary manager Perform "LIC-PIP8" on page 265.	AJDG301	
0506	Attempt to destroy a task with critical flag on Perform "LIC-PIP8" on page 265.	AJDG301	
0607	Maximum stack size exceeded in process or task Perform "LIC-PIP8" on page 265.	AJDG301	
0620	Event management index is not usable Perform "LIC-PIP8" on page 265.	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 265.	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 265.</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 265.</p>	AJDG301	
1204	<p>Error in constraint enforcement</p> <p>Perform "LIC-PIP8" on page 265.</p>	AJDG301	
1210	<p>Object not found in the in-use table</p> <p>Perform "LIC-PIP8" on page 265.</p>	AJDG301	
1215	<p>Error in critical code sequence</p> <p>Perform "LIC-PIP8" on page 265.</p>	AJDG301	
1219	<p>A back leveled driver has been detected</p> <p>Perform "LIC-PIP8" on page 265.</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 265.</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 265. • 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-PCI" on page 454 and "Chapter 6. Removal and Installation Procedures" on page 443. 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 260.	AJDG301 FI00380	
5003	Service program failed The ASCII system console failed to respond. Perform "Part 2. Repair and Parts" on page 441.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5004	DST console failed to respond The system console failed to respond. Perform "TWSC-PIP1" on page 368.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5005	Service program failed The workstation adapter system console failed to respond. Perform "WSAC-PIP1" on page 380.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5007	Service program failed The workstation adapter console failed to respond. Perform "WSAC-PIP1" on page 380.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5010	IPL service function ended abnormally Perform "LIC-PIP4" on page 261.	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 "Part 2. Repair and Parts" on page 441.</p> <p>Do you have a twinaxial terminal for the console?</p> <p>No Yes</p> <p>↓ Perform "TWSC-PIP1" on page 368.</p> <p>Do you have a console on a 6054 or 917C adapter?</p> <p>No Yes</p> <p>↓ Perform "WS-PIP1" on page 376.</p> <p>Perform "WSAC-PIP1" on page 380.</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 368.</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 266. • For reference code B6005090, perform "LIC-PIP11" on page 266. 	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 260.</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 258 in "Licensed Internal Code (LIC) Problem Isolation Procedures" on page 257.</p>	AJDG301 FI00130	

A6xx, B6xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5121	<p>System LIC program exception occurred</p> <p>System LIC detected a programming problem for which a main storage dump may have been initiated.</p> <p>A problem log entry may be generated for this ref code.</p> <p>Perform "LIC-PIP1" on page 258.</p>	AJDG301	
5122	<p>System LIC program exception occurred</p> <p>System LIC detected an IOP programming problem for which an IOP dump may have been initiated.</p> <p>Perform "LIC-PIP1" on page 258.</p>	FI00130 AJDG301 FI00131	
5123	<p>System LIC program exception occurred</p> <p>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.</p> <p>Perform "LIC-PIP1" on page 258.</p>	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	<p>An IOP dump was initiated</p> <p>Copy the IOP dump entry and any related entries from the Product Activity Log to suitable media, and give to an IBM service representative.</p>		
512E	<p>System LIC program exception occurred</p> <p>The system was in a D IPL mode when the problem was detected. A main storage dump was not taken.</p> <p>Perform "LIC-PIP1" on page 258.</p>	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 258.</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 258.</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 258 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 281.</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 227.</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 227.</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 227.</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 227.</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 261.</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 227.	FI00187 AJDG301	
69C1	A failure occurred on another system Perform "BUS-PIP1" on page 227.	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 227.	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 227.	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 227.</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 227.</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 227.</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 227.</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 227.</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 258.</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) OS/400 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) Operating System/400 (OS/400) 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 OS/400 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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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) Twinaxial Workstation Reference Codes

The workstation 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.

B070

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 177 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 193 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 404. Use the address to find the location. See “Locations and Addresses” on page 384.
3. If the failing item is a symbolic FRU, go to “Symbolic FRUs” on page 201 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 249 2. “INT-PIP14 Station Protectors” on page 255 Perform “TWSC-PIP1” on page 368.	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 248: 1. “INT-PIP5 External Noise on Twinaxial Cables” on page 249 2. “INT-PIP14 Station Protectors” on page 255 Perform “TWSC-PIP1” on page 368.	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 249 2. “INT-PIP14 Station Protectors” on page 255 Perform “TWSC-PIP1” on page 368.	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 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</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 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</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 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</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 368.</p>	<p>GAUEEEE FI00601</p>
0009	<p>WS IOP detected wrong device response to start command</p> <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00601 FI00610</p>
0020	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00601 AJLYD01 FI00610</p>
0021	<p>Device detected not valid value from WS IOP</p> <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00601 AJLYD01 FI00610</p>
0022	<p>Device detected storage or data overrun</p> <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00601 AJLYD01 FI00610</p>
0023	<p>Device detected null or attribute exception error</p> <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00601 FI00610</p>
0024	<p>Device detected wrong start command from WS IOP</p> <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00601 AJLYD01 FI00610</p>
0025	<p>WS IOP detected wrong exception response from device</p> <p>Perform "TWSC-PIP1" on page 368.</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 368.	GAU9999 FI00610
0049	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 368.	FI00601 FI00610
0082	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 368.	FI00601
0090	WS IOP detected no status change from device Perform "TWSC-PIP1" on page 368.	FI00601 FI00610
0091	WS IOP detected busy time-out from device Perform "TWSC-PIP1" on page 368.	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 249 2. "INT-PIP14 Station Protectors" on page 255 Perform "TWSC-PIP1" on page 368.	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 249 2. "INT-PIP14 Station Protectors" on page 255 Perform "TWSC-PIP1" on page 368.	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 249 2. "INT-PIP14 Station Protectors" on page 255 Perform "TWSC-PIP1" on page 368.	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 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</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 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</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 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</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 368.</p>	<p>GAUEEEE FI00601</p>
0109	<p>WS IOP detected wrong device response to start command</p> <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00601 FI00610</p>
0111	<p>WS IOP detected wrong keyboard scan code from display</p> <p>Perform "TWSC-PIP1" on page 368.</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 368.</p>	<p>FI00601 AJLYD01 FI00610</p>
0121	<p>Device detected not valid value from WS IOP</p> <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00601 AJLYD01 FI00610</p>
0122	<p>Device detected storage or data overrun</p> <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00601 AJLYD01 FI00610</p>
0123	<p>Device detected null or attribute exception error</p> <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00601 FI00610</p>
0124	<p>Device detected wrong start command from WS IOP</p> <p>Perform "TWSC-PIP1" on page 368.</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 368.	FI00601 FI00610
0126	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 368.	GAU9999 FI00610
0149	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 368.	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 368.	FI00605 MAUFFFF FI00601 FI00610
0182	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 368.	FI00601
0183	WS IOP detected wrong display size value Perform "TWSC-PIP1" on page 368.	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 368.	FI00601
0189	Wrong magnetic stripe reader or light pen status Perform "TWSC-PIP1" on page 368.	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 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00601 FI00610 GAU7777</p>
0191	<p>WS IOP detected busy time-out from device</p> <p>Perform "TWSC-PIP1" on page 368.</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:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00602 FI00604 GAU7777 GAU8888 FI00610 FI00615</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:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00602 FI00604 GAU7777 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:</p> <ol style="list-style-type: none"> 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</p>	<p>FI00602 FI00604 GAU7777 FI00610</p>

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 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</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 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</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 249 2. "INT-PIP14 Station Protectors" on page 255 <p>Perform "TWSC-PIP1" on page 368.</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	<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>	GAUBBBB
B000	<p>WS IOP fails to report part, model and serial number</p> <p>Perform "TWSC-PIP1" on page 368.</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" on page 368.</p>	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	<p>WS IOP detected errors on some, but not all cables</p> <p>Perform "TWSC-PIP1" on page 368.</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

Twinaxial Workstation Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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 177 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 193 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 404. Use the address to find the location. See "Locations and Addresses" on page 384.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 201 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 380.	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 380.	FI00601 GXC7777 FI00631 FI00730
0104	Device detected parity error from WS IOP Perform "WSAC-PIP1" on page 380.	FI00601 GXC7777 FI00631 FI00730
0105	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 380.	FI00601 GXC7777 FI00631 FI00730
0106	WS IOP detected wrong data from device Perform "WSAC-PIP1" on page 380.	FI00601 FI00631 GXC7777 FI00730
0107	WS IOP detected wrong address from device Perform "WSAC-PIP1" on page 380.	FI00601 GXC7777 FI00730
0108	WS IOP detected device power turned off, and then on Perform "WSAC-PIP1" on page 380.	GXCEEEE FI00601
0109	WS IOP detected wrong device response to start command Perform "WSAC-PIP1" on page 380.	FI00601 FI00615
0111	WS IOP detected wrong keyboard scan code from display Perform "WSAC-PIP1" on page 380.	FI00601 FI00730
0120	Device detected wrong command or device ID from WS IOP Perform "WSAC-PIP1" on page 380.	FI00601 FI00730
0121	Device detected not valid value from WS IOP Perform "WSAC-PIP1" on page 380.	FI00601 FI00730
0122	Device detected storage or data overrun Perform "WSAC-PIP1" on page 380.	FI00601 FI00730
0123	Device detected null or attribute exception error Perform "WSAC-PIP1" on page 380.	FI00601 FI00730
0124	Device detected wrong start command from WS IOP Perform "WSAC-PIP1" on page 380.	FI00601 FI00730
0125	WS IOP detected wrong exception response from device Perform "WSAC-PIP1" on page 380.	FI00601 FI00730
0126	WS IOP detected not valid pass-through command Perform "WSAC-PIP1" on page 380.	GXC9999 FI00730
0149	WS IOP detected wrong request or response from device Perform "WSAC-PIP1" on page 380.	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 380.	FI00601 GXC7777 FI00730
0191	WS IOP detected busy time-out from device Perform "WSAC-PIP1" on page 380.	FI00601 FI00730
0201	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 380.	FI00604 GXC7777 FI00631 FI00730
0203	WS IOP detected parity error from device Perform "WSAC-PIP1" on page 380.	FI00604 GXC7777 FI00631 FI00730
0204	Device detected parity error from WS IOP Perform "WSAC-PIP1" on page 380.	FI00604 GXC7777 FI00631 FI00730
0205	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 380.	FI00604 GXC7777 FI00631 FI00730
0206	WS IOP detected wrong data from device Perform "WSAC-PIP1" on page 380.	FI00604 FI00631 FI00730
0207	WS IOP detected wrong address from device Perform "WSAC-PIP1" on page 380.	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 380.	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 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

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	IDLTMR 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	
GXCEEEE	Active device turned off	
GXCLINK	Communications network equipment	
UXCFF00	User believes there is a problem	

(B423, B424, B425) 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 unit 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 – B42x rrrr
- Word 14 – rrrr rrrr
- Word 15 – rrrr rrrr

This example show 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.

B423, B424, B425

If the unit reference code table shows a main storage card (FI0003x) or a system processor card (PROBACK) as a failing item and no replacement part is immediately available, performing an IPL may result in continued system operation with less performance.

See “Locations and Addresses” on page 384 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 177 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 193 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 404. Use the address to find the location. See “Locations and Addresses” on page 384.
3. If the failing item is a symbolic FRU, go to “Symbolic FRUs” on page 201 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.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4200	System processor card failure The failing item associated with this reference code has a high probability of resolving the problem.	PROBACK	M01
4201	System processor card failure The failing item associated with this reference code has a high probability of resolving the problem.	PROBACK	ANY
4210	Main storage expansion card The failing item associated with this reference code has a high probability of resolving the problem.	FI00030	M02
4211	Main storage expansion card The failing item associated with this reference code has a high probability of resolving the problem.	FI00030	ANY
4220	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-A
4221	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-B
4222	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-C

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4223	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-D
4224	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-E
4225	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-F
4226	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-G
4227	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-H
4228	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-J
4229	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-K
422A	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-L
422B	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-M
422C	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-N
422D	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-P
422E	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-Q
422F	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-R

B423, B424, B425

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4230	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-X
4231	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-AB
4232	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-CD
4233	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-EF
4234	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-GH
4235	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-JK
4236	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-LM
4237	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-NP
4238	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M02-QR
4239	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	ANY
4280	Card enclosure or backplane The failing item associated with this reference code has a high probability of resolving the problem.	PROBACK	M01
4281	Bus expansion card The failing item associated with this reference code has a high probability of resolving the problem.	BACKPL2	C01
4282	Card enclosure or backplane The failing item associated with this reference code has a high probability of resolving the problem.	BACKPL5	E01

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4283 to 4287	Card enclosure or backplane The failing item associated with this reference code has a high probability of resolving the problem.	PROBACK	M01
42C0	Service processor Licensed Internal Code The failing item associated with this reference code has a high probability of resolving the problem.	AJDGP01	
42C1	Licensed Internal Code error The failing item associated with this reference code has a high probability of resolving the problem.	AJDG301	
42C2	Service processor Licensed Internal Code The failing item associated with this reference code has a high probability of resolving the problem.	AJDGP01	
42D0	Control panel The failing item associated with this reference code has a high probability of resolving the problem.	FI00124	
42D1	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M01-A
42D2	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M01-B
42D3	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M01-C
42D4	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M01-D
42D5	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M01-E
42D6	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M01-F
42D7	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M01-G
42D8	Main storage failure The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M01-H

B423, B424, B425

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
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
6200	System processor card failure The failing item associated with this reference code has a low probability of resolving the problem.	PROBACK	M01
6201	System processor card failure The failing item associated with this reference code has a low probability of resolving the problem.	PROBACK	ANY
6210	Main storage expansion card The failing item associated with this reference code has a low probability of resolving the problem.	FI00030	M02
6211	Main storage expansion card The failing item associated with this reference code has a low probability of resolving the problem.	FI00030	ANY
6220	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-A
6221	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-B
6222	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-C
6223	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-D
6224	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-E
6225	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-F
6226	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-G

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6227	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-H
6228	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-J
6229	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-K
622A	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-L
622B	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-M
622C	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-N
622D	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-P
622E	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-Q
622F	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-R
6230	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-X
6231	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-AB
6232	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-CD
6233	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-EF

B423, B424, B425

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6234	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-GH
6235	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-JK
6236	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-LM
6237	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-NP
6238	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M02-QR
6239	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	ANY
6280	Card enclosure or backplane The failing item associated with this reference code has a low probability of resolving the problem.	PROBACK	M01
6281	Bus expansion card The failing item associated with this reference code has a low probability of resolving the problem.	BACKPL2	C01
6282	Card enclosure or backplane The failing item associated with this reference code has a low probability of resolving the problem.	BACKPL5	E01
6283 to 6287	Card enclosure or backplane The failing item associated with this reference code has a low probability of resolving the problem.	PROBACK	M01
62C0	Service processor Licensed Internal Code The failing item associated with this reference code has a low probability of resolving the problem.	AJDGP01	
62C1	Licensed Internal Code error The failing item associated with this reference code has a low probability of resolving the problem.	AJDG301	
62C2	Service processor Licensed Internal Code The failing item associated with this reference code has a low probability of resolving the problem.	AJDGP01	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
62D0	Control panel The failing item associated with this reference code has a low probability of resolving the problem.	FI00124	
62D1	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M01-A
62D2	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M01-B
62D3	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M01-C
62D4	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M01-D
62D5	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M01-E
62D6	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M01-F
62D7	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M01-G
62D8	Main storage failure The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M01-H
6A00	Call your next level of support for assistance Save all data for your next level of support.	0000000	ANY

Server 170 and Server 250 System Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 177.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 193.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 201.

Failing Item	Description	Document Description
0000000	Call your next level of support for assistance	Call your next level of support for assistance

B423, B424, B425

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code error	Repair and Parts; removal and installation procedures
AJDGP01	Service processor Licensed Internal Code	Repair and Parts; removal and installation procedures
AJDGP01	Licensed Internal Code error	Repair and Parts; removal and installation procedures
BACKPL2	Bus expansion card	Problem Analysis; Symbolic FRU Isolation
BACKPL5	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
PROBACK	System processor card	Problem Analysis; Symbolic FRU Isolation
PROBACK	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
PROBACK	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
PROBACK	System processor card	Problem Analysis; Symbolic FRU Isolation
PROBACK	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
PROCCFG	Not valid system configuration detected	Problem Analysis; Symbolic FRU Isolation

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 193 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 193 to determine the part number.
FI00010	FI00010 indicates that a system processor card is the failing item. See the symbolic FRU "PROBACK" on page 213.
FI00015	FI00015 indicates that a bus expansion adapter card in the system unit is the failing item. 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 bus expansion adapters. See "Locations and Addresses" on page 384 for the bus expansion adapter card locations. Use the bus expansion adapter type for all models: 6757 (91H4105)
FI00020	See FI00120.
FI00021	FI00021 indicates that the multiple function I/O processor (MFIOP) is the failing item. Use the MFIOP type to determine the part number.
FI00022	FI00022 indicates that the Licensed Internal Code for the service processor may be the failing item. Ask your next level of support for assistance.
FI00030	FI00030 indicates that a main storage carrier card is the failing item. 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. The main storage carrier card may be of type 2839, 284A. Read "Important Continuously Powered Main Storage (CPM) Information" on page 421 before removing or replacing any main storage card.
FI00037	FI00037 indicates that a main storage card in any slot or a main storage expansion pair is the failing item. Look in the <i>Location</i> column of the reference code table. The physical slot and letter of the card is given as M0X-S. The X represents the physical slot and the S represents the expansion card letter. Use the system configuration list printout to identify the failing main storage card. The Main Storage Expansion card may be of type 3001, 3002, 3003, or 3004. Read "Important Continuously Powered Main Storage (CPM) Information" on page 421 before removing or replacing any main storage card.
FI00040	See the symbolic FRU "BACKPLN" on page 202.

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 193 to determine the part number.
FI00045	FI00045 indicates that the processor backplane is the failing item. See the symbolic FRU "PROBACK" on page 213.
FI00050	See FI00060
FI00055	FI00055 indicates that a primary optical link cable is the failing item. This is either the optical bus cable for the bus you are working with or its paired bus cable on the optical link card.
FI00056	FI00056 indicates that any optical bus cable or a missing optical bus wrap connector is the failing item.
FI00057	FI00057 indicates that the secondary optical link cable is the failing item. This is the optical cable that runs between the bus expansion adapter cards in two separate expansion units.
FI00060, FI00062, FI00065	FI00060, FI00062, and FI00065 indicate that any card, cable, or card enclosure connected to the failing bus may be the failing item. Perform "BUS-PIP1" on page 227 to determine the failing item.
FI00070	FI00070 indicates that a storage device attached to the IPL device IOP is the failing item. Determine the IPL device that is failing by doing the following: <ol style="list-style-type: none"> 1. Select function 01 (Select IPL) on the control panel to display the active IPL type. 2. If the IPL type is A or B, the IPL disk device is failing. 3. If the IPL type is D, the removable media unit for an alternate IPL is failing. (See "Determining the Load-Source Disk and Alternate IPL Device" on page 423.) 4. Use the service information supplied with the specific IPL device to analyze the device failure. 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.
FI00071	FI00071 indicates that the cable from the magnetic storage IOP to the IPL device is the failing item. The following list shows the lengths and the part numbers of this cable: <ul style="list-style-type: none"> • 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

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 193 to determine the part number.
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 DASD, exchange the DASD.</p> <p>If replacing the media does not work, try replacing the drive.</p>
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 432, 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 423). 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: • 3490 • 3490E • 632x • 6378 • 6379 • 6380 • 6381 • 6382 • 63A0 • 6385 • 6390 • 7208 • 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 432, 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 423. 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 423. To locate the alternate IPL load-source for a secondary partition see "Locating a Secondary Partition's Load Source" on page 435.</p> <p>Use the device type to determine the part.</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 193 to determine the part number.
FI00096	<p>FI00096 indicates that the IOP attached to the load-source device is the failing item. Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 432, before continuing with this procedure.</p> <ol style="list-style-type: none"> Verify that the IPL type is correct: <ul style="list-style-type: none"> Select function 01 on the control panel and press the Enter key to display the present IPL mode. If the IPL type is A or B, the IPL is from a disk device. If the IPL type is D, the IPL is from a tape or optical storage unit. Note: If the load source is from an optical storage unit, you may need to perform function 3 to IPL the system again. This will make the unit ready. If the IPL type is not correct, use function 02 to select the correct IPL type and attempt the IPL again. 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 423. 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 423. To locate the load-source for a secondary partition see "Locating a Secondary Partition's Load Source" on page 435.
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 432, 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 193).</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 423. 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 423. To locate the load-source for a secondary partition see "Locating a Secondary Partition's Load Source" on page 435.</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> <ul style="list-style-type: none"> MFIOP backplane, see "MFIOPBK" on page 211.
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 206.</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 193 to determine the part number.
FI00124	<p>FI00124 indicates that the control panel is the failing item.</p> <p>For part number information, see "Assembly 4: Control Panel Assembly" on page 514.</p>
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 404).</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>
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 404).</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" in topic 1.5.13 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 is the failing item.</p> <ol style="list-style-type: none"> 1. Determine the IOP address (see "SRC Address Formats" on page 404). 2. Identify the type of IOA cards installed in the IOP in the location you found in the preceding step. <p>Use the IOA type to determine the part.</p> <p>Perform "BUS-PIP5" on page 234 to isolate the failing IOA.</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>
FI00182	<p>FI00182 indicates that the local optical link card is the failing item.</p> <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	<p>FI00185 indicates that the 12-port ASCII workstation attachment cable is the failing item.</p>
FI00186	<p>FI00186 indicates that the optical cable in the top position (even bus) of the optical link card is the failing item.</p>
FI00187	<p>FI00187 indicates that the optical cable configuration is the failing item.</p> <p>Perform "BUS-PIP1" on page 227 to correct the problem.</p>
FI00189	<p>FI00189 indicates that the bus extension card configuration is the failing item.</p> <p>Perform "BUS-PIP1" on page 227 to correct the problem.</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 193 to determine the part number.
FI00200	<p>FI00200 indicates that the ac module or the removable power cable is the failing item.</p> <p>Attention: Read "Important Continuously Powered Main Storage (CPM) Information" on page 421.</p> <p>Perform "SPCN-PIP5" on page 344. Then return here and continue.</p> <p>The following list shows the possible failing ac modules:</p> <ul style="list-style-type: none"> • System Unit — part SPNLCRD • 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 <p>See "Power Cord Part Numbers and Receptacle Descriptions" on page 521 to determine the power cable part number for systems in your country.</p>
FI00203	<p>FI00203 indicates that the remote bus expansion adapter card in the bus expansion unit is the failing item.</p> <p>Use the adapter card type in the bus expansion unit to determine the part.</p>
FI00204	<p>FI00204 indicates that the bus cable between the system unit and the bus expansion unit is the failing item.</p>
FI00205	<p>FI00205 indicates that the remote bus expansion adapter for the paired bus is the failing item.</p> <p>Use the adapter card type in the bus expansion unit to determine the part.</p>
FI00206	<p>FI00206 indicates that a type 2685 remote bus expansion adapter is the failing item.</p> <p>Perform "BUS-PIP1" on page 227.</p>
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. This FI is applicable only if a SPCN cable is installed.</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

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 193 to determine the part number.
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 SPCNLCRD • SPCN unit—part 21H6961 (if installed) • Secondary ac module—part 87G6300 (if installed) • For 9251 Base I/O —part 21H7697 (if installed) • Power control compartment—part 21F9008
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 202.</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, Extension Units, Storage Expansion Units and the Base I/O tower (9251) use the following: <ul style="list-style-type: none"> – For 9910 type UPS call IBM Service Support. For all other UPS units call the UPS provider. – 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 frame with SPCN (FC 9171)—part 21F9380
FI00300	<p>FI00300 indicates that media is the failing item.</p> <p>If the load source is:</p> <ul style="list-style-type: none"> • Tape, exchange the tape in the alternate IPL tape unit. • An optical storage unit, exchange the compact disk. • DASD, exchange the DASD. <p>If installing from:</p> <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	<p>FI00301 indicates that the magnetic storage I/O processor (MSIOP) or the multiple function I/O processor (MFIOP) is the failing item.</p> <p>Use the IOP type to determine the part.</p>
FI00302	<p>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.</p> <p>Ask your next level of support for assistance.</p>
FI00310	<p>FI00310 indicates that an I/O processor card or an I/O adapter card is the failing item.</p> <p>Perform "BUS-PIP1" on page 227.</p>
FI00315	<p>FI00315 indicates that the battery power unit install time life has been exceeded.</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 193 to determine the part number.
FI00316	<p>FI00316 indicates that no I/O processors were found on the bus.</p> <p>Verify the configuration information for the system. If a bus is configured to be empty, there is no problem.</p>
FI00317	<p>FI00317 indicates that the I/O processor cards at consecutive direct select addresses appear to be failing.</p> <p>The I/O processor cards or a damaged backplane could cause this problem.</p>
FI00318	<p>FI00318 indicates that an I/O adapter card attached to an I/O processor card on the failing bus is the failing item.</p>
FI00319	<p>FI00319 indicates that the Licensed Internal Code on an I/O processor is the failing item. Install a PTF to correct the problem.</p> <p>Ask your next level of support for assistance.</p>
FI00320	<p>FI00320 indicates that the display station used as the console is the failing item.</p>
FI00330	<p>FI00330 indicates that cryptographic hardware is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> • Cryptographic I/O processor • Security Interface Unit • AS/400 system to Security Interface Unit cable
FI00350	<p>FI00350 indicates that the alternate IPL device is the failing item.</p> <p>See the service information for the specific device type and model installed on the system to determine the part.</p>
FI00360	<p>FI00360 indicates that the IPL disk device is the failing item.</p>
FI00380	<p>FI00380 indicates that the first workstation IOP card on bus 1 or the workstation IOA is the failing item.</p> <p>Use the IOP or IOA type to determine the part.</p>
FI00500	<p>See "FI01140" on page 192</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	<p>FI00602 indicates that the cable between the workstation attachment and the device is the failing item.</p>
FI00603	<p>FI00603 indicates that the 5299 Multiconnector is the failing item.</p>
FI00604	<p>FI00604 indicates that a printer is the failing item.</p> <p>Use the printer device information to analyze the problem.</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 193 to determine the part number.
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>
FI00613	FI00613 indicates that the display station used as the console is the failing item.
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	FI00631 indicates that a cable other than the cable from the workstation IOA to the first device is the failing item.
FI00632	FI00632 indicates that the cable from the workstation IOA to the first device is the failing item.
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	FI00703 indicates that the automatic call unit is the failing item.
FI00704	FI00704 indicates that the local data circuit-terminating equipment (DCE) is the failing item.
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>

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 193 to determine the part number.
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>
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>
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 234 to isolate the failing IOA.</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 193 to determine the part number.
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>
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 the 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 209 for cable part numbers.</p>
FI00832	<p>FI00832 indicates that the external signal cable is the failing item.</p> <p>See “EXTSCSI” on page 209 for cable part numbers.</p>
FI00840	<p>FI00840 indicates that the device controller for the attached device is the failing item.</p> <ul style="list-style-type: none"> • Type 7208—see FI00882 • Type 9427—see FI00882
FI00841	<p>FI00841 indicates that the terminating plug for the attached device is the failing item.</p> <ul style="list-style-type: none"> • For tape devices—see FI00880
FI00842	<p>FI00842 indicates that the external signal cable for the attached device is the failing item.</p> <ul style="list-style-type: none"> • For tape devices—see FI00830
FI00844	<p>FI00844 indicates that the device controller for the attached device is the failing item.</p> <ul style="list-style-type: none"> • For tape devices—see FI00882
FI00845	<p>FI00845 indicates that the external signal cable is the failing item.</p> <p>See EXTSCSI</p>
FI00850	<p>FI00850 indicates that the interface cables attached to the tape IOP are the failing items.</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 193 to determine the part number.		
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.		
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.		
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.		
FI00871	FI00871 indicates that the attached tape device is the failing item. <ul style="list-style-type: none"> • 6381 – Internal 1/4 inch cartridge drive with QIC-2GB (DC) on the door, P/N 59H2742. • 6382 – Internal 1/4 inch cartridge drive with QIC-4GB (DC) on the door, P/N 59H3745. • 6383 - Internal 1/4 Inch cartridge drive with MLR1-S on the front cover, PN 59H4533. • 6386 – Internal 1/4 inch cartridge drive with MLR3 on the front cover, P/N 59H4130. • 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, see the device service information to determine the part to replace. • 9348 – External 1/2 inch reel tape unit. Is one of the following status codes displayed anywhere on the 9348 control panel? (x = any number) <ul style="list-style-type: none"> – Exxx – Fxxx – ***xx – ***** <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">No</td> <td style="width: 50%;">Yes</td> </tr> </table> <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 <p>Refer to the device Service Information to determine the part number(s) that need to be replaced.</p>	No	Yes
No	Yes		
FI00872	FI00872 indicates that the interface is the failing item. <ul style="list-style-type: none"> • Internal Device See "FI01140" on page 192. • External device See "EXTSCSI" on page 209. 		

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 193 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 9427, an internal terminating plug is used (see the service information for the specific device).</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 • Terminator for 637x, 638x, and 6390 Tape Units — Terminator is part of the DASD Backplane. Use the IOA type and see the Symbolic FRU "DEVTERM" on page 206 to determine the correct part. • 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 • 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>
FI01040	<p>FI01040 indicates that you have an OptiConnect/400 system, and the error is on an AS/400 system that is connected to it.</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 193 to determine the part number.				
FI01101	FI01101 indicates that the addressed IOA card on the I/O processor is the failing item. Perform the following: <ol style="list-style-type: none"> 1. Determine the address of the IOA card (see "SRC Address Formats" on page 404). 2. Determine the location of the IOA card (see "Locations and Addresses" on page 384). 3. Exchange the failing device. Use the device type to determine the part. 				
FI01103, FI01104	FI01103 and FI01104 indicate that an attached IOA card is the failing item. <ol style="list-style-type: none"> 1. Find the IOP address (see "SRC Address Formats" on page 404). 2. To determine the location of the I/O processor card, see "Locations and Addresses" on page 384. 3. The failing item may be any one of the IOA cards attached to the IOP card. 				
FI01105	FI01105 indicates that the addressed storage device is the failing item. Perform the following: <ol style="list-style-type: none"> 1. 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 473. Use the device type to determine the part number to use in the "Type, Model, and Part Number List" on page 193.</td> </tr> </table> <p style="text-align: center;">This ends the procedure.</p> 2. Find the IOP address and the device address (see "SRC Address Formats" on page 404). 3. To determine the location of the I/O processor card, see "Locations and Addresses" on page 384 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. 	No	Yes	↓	Exchange the failing item. See "Chapter 7. Recovery Procedures" on page 473. Use the device type to determine the part number to use in the "Type, Model, and Part Number List" on page 193.
No	Yes				
↓	Exchange the failing item. See "Chapter 7. Recovery Procedures" on page 473. Use the device type to determine the part number to use in the "Type, Model, and Part Number List" on page 193.				
FI01106	FI01106 indicates that a storage device other than the addressed storage device is the failing item. See FI01105 to find the addressed device. The failing item could be any device with the same IOP address and I/O (SCSI) bus number but with a different device unit number. If the reference code that called out this FI does not have a problem analysis procedure, perform "SDIOP-PIP16" on page 311 to isolate the possible failing device.				

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 193 to determine the part number.
FI01107	<p>FI01107 indicates that any storage device attached to the I/O (SCSI) bus of this IOP may be the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> Find the IOP address (see "SRC Address Formats" on page 404). To determine the location of the I/O processor card, see "Locations and Addresses" on page 384. 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 See "Locations and Addresses" on page 384 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 (SCSI) bus. Note: The I/O (SCSI) bus number is the first character of the device unit address. Exchange the failing device. Use the device type to determine the part: If the reference code that called out this FI does not have a problem analysis procedure, perform "SDIOP-PIP16" on page 311 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 202.</p>
FI01110	<p>FI01110 indicates that the diskette unit is the failing item.</p> <p>Use the diskette device type to determine the part.</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"> Find the IOP address (see "SRC Address Formats" on page 404). To determine the location of the I/O processor card, see "Locations and Addresses" on page 384. 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"> Find the IOP address (see "SRC Address Formats" on page 404). To determine the location of the I/O processor card, see "Locations and Addresses" on page 384. Identify the IOAs, cards, cables, and devices attached to the IOP found in the preceding steps. 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 202.</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 193 to determine 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 193 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 193 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 207 to determine the part number.</p>
FI01140	<p>FI01140 indicates that the I/O (SCSI) bus cable is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. Are there external devices attached? <ul style="list-style-type: none"> No Yes ↓ See "EXTSCSI" on page 209. 2. Find the IOP address (see "SRC Address Formats" on page 404). 3. To determine the location of the I/O processor card, see "Locations and Addresses" on page 384. 4. Exchange the failing item associated with the IOP address. <p>Note:</p> <p>Any of the SCSI cables or backplanes between the IOA and the device could be the failing item. See "Power and Signal Cables" on page 388.</p>
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? <ul style="list-style-type: none"> No Yes ↓ Go to "Chapter 2. Unit Reference Codes" on page 41 and use the SRC displayed on the control panel. 2. Did the SRC that directed you to this FI code involve an externally attached device or an IOP with an externally attached device? <ul style="list-style-type: none"> 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. 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 "Power and Signal Cables" on page 388. • For part numbers, see "Chapter 8. Parts Listing" on page 503.
FI02092	See FI00092.

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? <ul style="list-style-type: none"> No Yes ↓ Exchange the failing item. See "Chapter 7. Recovery Procedures" on page 473. Use the device type to determine the part number to use in the "Type, Model, and Part Number List". <p style="text-align: center;">This ends the procedure.</p> Find the IOP address and the device address (see "SRC Address Formats" on page 404). To determine the location of the I/O processor card, see "Locations and Addresses" on page 384 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>

Type, Model, and Part Number List

Table 6. Type, Model, and Part Number List

Type	Description	Part Number
2159	System Processor	97H7828
2160	System Processor	91H4099
2164	System Processor	91H4094
2176	System Processor	97H5968
2183	System Processor	97H7825
2289	System Processor	(see 675A)
2290	System Processor	(see 675A)
2291	System Processor	(see 675A)
2292	System Processor	(see 675A)
2295	System Processor	(see 675A)
2296	System Processor	(see 675A)
2385	System Processor (242F) and Interactive Card	43L6068 and 97H7858
2386	System Processor (242F) and Interactive Card	43L6068 and 97H7857
2388	System Processor (242E) and Interactive Card	97H9163 and 97H7855
2407	System Processor	(see 675A)
2408	System Processor (242F) and Interactive Card	43L6068 and 99H5280
2409	System Processor (242E) and Interactive Card	97H9163 and 24L1994
242E	System Processor (ordered only with an Interactive Capacity Card)	
242F	System Processor (ordered only with an Interactive Capacity Card)	
266C	Twinaxial/RVX IOA	90H9192

Type, Model, Part Number List

Table 6. Type, Model, and Part Number List (continued)

Type	Description	Part Number
2718	Storage IOA (External removable media)	91H3974
2720	Twinaxial/RVX IOA	90H9192
2721	2-line RVX IOA	21H5388
2722	Twinaxial	21H5394
2723	Ethernet IOA	21H9201
2724	Token Ring IOA	44H7571
2726	Storage IOA	44H6303
2728	Storage IOA	21H9207
2729	Storage IOA (External removable media)	21H9249
2740	Storage IOA Card Card Cache Battery Pack Cache Battery Pack	44H6442 (Non-Japan) 23L2845 (Japan) 44L0305 (Non-Japan) 44L0304 (Japan)
2741	Storage IOA	91H0271
2745	2-line RVX IOA	21H5490
2746	Twinaxial IOA	21H5497
2748	Storage IOA Card Card Cache Battery Pack Cache Battery Pack Mode Jumper	91H3987 (Non-Japan) 23L2841 (Japan) 44L0302 (Non-Japan) 44L0301 (Japan) 23L3442
2750	ISDN Communications adapter	97H7674
2751	ISDN Communications IOA	97H7675
2761	Integrated modem IOA United States Europe Germany Australia Spain Czechoslovakia	97H7678 97H7679 97H7680 97H7681 97H7682 97H7683
2763	Storage IOA Card Cache Battery Pack	91H4082 44L0313
2771	V.90/RVX IOA Europe, North America, International Australia, New Zealand	04N4519 04N4520
2809	Combined function IOP	21H5312

Table 6. Type, Model, and Part Number List (continued)

Type	Description	Part Number
2811	ATM 25 Mb/sec copper UTP IOA	21H7976
2812	ATM 45 Mb/sec copper Coax IOA	21H7979
2815	ATM 155 Mb/sec copper UTP IOA	21H7977
2816	ATM 155 Mb/sec fiber MMF IOA	21H7909
2818	ATM 155 Mb/sec fiber SMF IOA	21H7975
2819	ATM 34 Mb/sec copper Coax IOA	21H7980
2824	Combined Function IOP	91H4023
2838	Ethernet 10/100 Mb/sec IOA	21H5460
2839	Riser card for DIMMs	97H7840
284A	Riser card for DIMMs	97H6385
2850	Integrated Netfinity Server for AS/400 Model 001 Model 002 Model 011 Model 012	61H0115 61H0116 61H0127 23L4210
285A	Bridge Card (PCI to PCI) Model 001 Model 002 Model 003	90H8952 90H8994 90H9212
2861	32MB Integrated Netfinity Server for AS/400 memory module	44H7558
2862	128MB Integrated Netfinity Server for AS/400 memory module	90H9075
2867	256MB Integrated Netfinity Server for AS/400 memory module	97H7725
3001	Main storage expansion; 32MB DIMM	21H6481
3002	Main storage expansion; 128MB DIMM	21H6512
3003	Main storage expansion; 256MB DIMM	90H9586
3004	Main storage expansion; 256MB DIMM	90H9359
3480	Magnetic Tape Unit. See 3480 <i>Magnetic Tape Subsystem Maintenance Information</i>	
3490	Magnetic Tape Unit. See 3490 <i>Magnetic Tape Subsystem Maintenance Information</i>	
3490E	Magnetic Tape Unit. See 3490 <i>Magnetic Tape Subsystem Maintenance Information</i>	
3494	External 1/2-inch Library. See 3494 <i>Magnetic Tape Library Maintenance Information</i>	
3570	Magnetic Tape Unit. See 3570 <i>Magnetic Tape Subsystem Maintenance Information</i>	
3590	Magnetic Tape Unit. See 3590 <i>Magnetic Tape Subsystem Maintenance Information</i>	
3995	External Optical Library. See 3995 <i>Optical Library Dataserver Maintenance Information Manual</i>	
4010	2726/2741 Storage IOA Cache Adapter	44H6330
4758	PCI Cryptographic Coprocessor	10J0053

Type, Model, Part Number List

Table 6. Type, Model, and Part Number List (continued)

Type	Description	Part Number
6321	Optical Storage Unit (CD-ROM)	93H8055
6330	Optical Storage Unit (DVD)	04N5272
6381	1/4-inch Magnetic Tape Unit, QIC 2.5GB	59H2742
6382	1/4-inch Magnetic Tape Unit, QIC 4GB with compression	59H3745
6383	Internal 1/4-inch Magnetic Tape Unit with MLR1-S on the front cover	59H4533
6385	1/4-inch Magnetic Tape Unit, QIC 5010	59H4533
6386	1/4-inch Magnetic Tape Unit, MLR3	59H4130
63A0	Magnetic Tape Unit. See "FI00871" on page 188 to determine type.	Use the device type to determine the part
6607 6713 6714 6716 6717	Disk unit. See "Disk Unit Type, Model, and Part Number List" on page 197.	
6731	Disk unit. See "Disk Unit Type, Model, and Part Number List" on page 197.	
6757	Multiple Function IOP	91H4105
675A	Multiple Function IOP and System Processor 2289 System Processor 2290 System Processor 2291 System Processor 2292 System Processor 2295 System Processor 2296 System Processor 2407 System Processor	97H9158 75G2740 97H7834 97H7849 04N3688 04N3695 99H5270
7207	External 1/4-inch Cartridge Drive with QIC-4GB-DC on the door	59H4434
7208	External 8-mm Magnetic Tape (Cartridge). See <i>7208 Tape Drive Service Guide</i>	
7210	External Optical Storage Drive 7210 <i>Optical Storage Service Information</i>	
9348	External 1/2-inch Magnetic Tape (Reel). See <i>9348 Tape Unit Service Information</i>	
9427	8-mm Tape Cartridge Library. See <i>9427 8-mm Tape Cartridge Library Service Guide</i>	
	Tape/Optical address jumper	1675209

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 7. Disk Unit Type, Model, and Part Number List

Type	Description	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 Holder Disk Unit Level 1 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder 	Level 0 <ul style="list-style-type: none"> • 45G9470 • 45G9463 • 44H8995 Level 1 <ul style="list-style-type: none"> • 45G9509 • 45G9501 • 44H8974
6603	Disk Unit Level 0 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder Disk Unit Level 1 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder 	Level 0 <ul style="list-style-type: none"> • 86F0110 • 86F0100 • 44H8996 Level 1 <ul style="list-style-type: none"> • 86F0112 • 86F0103 • 44H8998

Type, Model, Part Number List

Table 7. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	Part Number
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 Holder <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 Holder 	<p>Level 1</p> <ul style="list-style-type: none"> • 74G7014 • 74G6977* • 05G3988 • 44H8999 <p>Level 4</p> <ul style="list-style-type: none"> • 86G9130 • 86G9123* • 05G3988 • 44H8999
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 Holder <p>Disk Unit Level 3</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder <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 Holder <p>Disk Unit Level 5</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Drive and Logic Card • Disk Unit Holder 	<p>Level 1</p> <ul style="list-style-type: none"> • 74G7014 • 74G6978* • 05G3989 • 44H8999 <p>Level 3</p> <ul style="list-style-type: none"> • N/A • 74G8821* • 44H8999 <p>Level 4</p> <ul style="list-style-type: none"> • 86G9130 • 86G9124* • 05G3989 • 44H8999 <p>Level 5</p> <ul style="list-style-type: none"> • 27H0253 • 27H1712* • 05G3989 • 44H8999

Table 7. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	Part Number
6607	Disk Unit Level 1	Level 1
	• Disk Drive Logic Card	• 74G7014
	• Disk Drive and Logic Card	• 74G6979*
	• Disk Drive and Logic Card	• 05G3990
	• Disk Unit Holder	• 44H8999
	Disk Unit Level 3	Level 3
	• Disk Drive Logic Card	• N/A
	• Disk Drive and Logic Card	• 74G8822*
	• Disk Unit Holder	• 44H8999
	Disk Unit Level 4	Level 4
	• Disk Drive Logic Card	• 86G9130
	• Disk Drive and Logic Card	• 86G9125*
• Disk Drive and Logic Card	• 05G3990	
• Disk Unit Holder	• 44H8999	
Disk Unit Level 5	Level 5	
• Disk Drive Logic Card	• 27H0253	
• Disk Drive and Logic Card	• 27H1711*	
• Disk Drive and Logic Card	• 05G3990	
• Disk Unit Holder	• 44H8999	
Disk Unit Level 6	Level 6	
• Disk Drive Logic Card	• N/A	
• Disk Drive and Logic Card	• 59H6612	
• Disk Unit Holder	• 44H8999	
Disk Unit Level 7	Level 7	
• Disk Drive Logic Card	• N/A	
• Disk Drive and Logic Card	• 74G8703	
• Disk Unit Holder	• 44H8999	
Disk Unit Level 8	Level 8	
• Disk Drive Logic Card	• N/A	
• Disk Drive and Logic Card	• 59H7001*	
• Disk Unit Holder	• 44H8999	
Disk Unit Level 9	Level 9	
• Disk Drive Logic Card	• N/A	
• Disk Drive and Logic Card	• 25L3130	
• Disk Unit Holder	• 44H8999	

Type, Model, Part Number List

Table 7. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	Part Number
6713	<p>Disk Unit Level 2</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder <p>Disk Unit Level 3</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder <p>Disk Unit Level 4</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder <p>Disk Unit Level 5</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder <p>Disk Unit Level 6</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder <p>Disk Unit Level 9</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder 	<p>Level 2</p> <ul style="list-style-type: none"> • N/A • 74G8823* • 44H8999 <p>Level 3</p> <ul style="list-style-type: none"> • 27H1830 • 27H1710* • 44H8999 <p>Level 4</p> <ul style="list-style-type: none"> • N/A • 59H6611 • 44H8999 <p>Level 5</p> <ul style="list-style-type: none"> • N/A • 74G8704 • 44H8999 <p>Level 6</p> <ul style="list-style-type: none"> • N/A • 25L3131 • 44H8999 <p>Level 9</p> <ul style="list-style-type: none"> • N/A • 07N3681 • 44H8999
6714	<p>Disk Unit Level 1</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder <p>Disk Unit Level 2</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder <p>Disk Unit Level 3</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder 	<p>Level 1</p> <ul style="list-style-type: none"> • N/A • 59H6613 • 44H8999 <p>Level 2</p> <ul style="list-style-type: none"> • N/A • 74G8705 • 44H8999 <p>Level 3</p> <ul style="list-style-type: none"> • N/A • 25L3132 • 44H8999
6716	<p>Disk Unit Level 1</p> <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder 	<p>Level 1</p> <ul style="list-style-type: none"> • N/A • 07N3690 • 44H4644

Table 7. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	Part Number
6717	Disk Unit Level 2 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder Disk Unit Level 3 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder Disk Unit Level 4 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder 	Level 2 <ul style="list-style-type: none"> • N/A • 34L2279 • 44H4644 Level 3 <ul style="list-style-type: none"> • N/A • 09L4044 • 44H4644 Level 4 <ul style="list-style-type: none"> • N/A • 07N3685 • 44H4644
6718	Disk Unit Level 2 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder Disk Unit Level 3 <ul style="list-style-type: none"> • Disk Drive Logic Card • Disk Drive and Logic Card • Disk Unit Holder 	Level 2 <ul style="list-style-type: none"> • N/A • 09L3932 • 44H4644 Level 3 <ul style="list-style-type: none"> • N/A • 07N3686 • 44H4644
6731	Read Cache Level 1 <ul style="list-style-type: none"> • Read Cache • Read Cache Holder 	Level 1 <ul style="list-style-type: none"> • 74G8715 • 44H4644

Symbolic FRUs

AIRMOVR

An air-moving device may be failing.

Perform the following to determine the part number for the failing air-moving device.

1. If the air moving device is a fault 2253 or 2254, use the following table to find the failing part. Otherwise continue with the next step in this procedure.

Reference Code	FRU	Part Number
2253	Air Moving Device 3, for MFIOP	75G2699
2254 (on processor FC 2159, 2160, 2164, 2176, 2183, 2385, 2386, 2388, 2408, 2409)	Air Moving Device 4, for Processor	90H4559
2254 (on processor FC 2289, 2290, 2291, 2292, 2295, 2296, 2407)	Air Moving Device 4, for Processor	74G6331

2. An air moving device or power supply fault has occurred in the expansion frame. Check that ac power exists at the expansion power supply, then

Symbolic FRUs

exchange the following parts one at a time:

Reference Code	FRU	Part Number
2251	Air Moving Device 1 (Exp. Unit)	75G2692
2251	Power supply, 350-Watt (Exp. Unit)	97H5881

See “Locations and Addresses” on page 384. Look for the diagram for the unit you are working on. See “Chapter 6. Removal and Installation Procedures” on page 443 for removal instructions.

This ends the procedure.

ANYBUS

Any cable, card, or card enclosure may be causing an IOP-detected bus error. The IOP that is reporting the problem may not be causing the problem.

1. Is SRC 0000 xxxx displayed?

No **Yes**

↓ Go to step “BUS-PIP2” on page 231.

2. Go to “BUS-PIP1” on page 227.

Note: To determine FRU part numbers, compare the labels on the cards and cables with the “Chapter 8. Parts Listing” on page 503.

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 exchanging 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.

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 404. Use the address to find the location. See “Locations and Addresses” on page 384.
 - If the location is M01, see “PROBACK” on page 213.
2. Use “Power and Signal Cables” on page 388 to locate the device, cable, and backplane. Any backplane connection, device, or I/O processor may be the cause of the problem.

This ends the procedure.

BACKPLx

A backplane may be the failing item.

Use the following table to determine the backplane part number.

Type	Description	Part Number
BACKPL1	Control Panel Backplane	97H9108
BACKPL2	MFIOP Backplane	91H4105
BACKPL3A	DASD Backplane without concurrent repair	97H5946
BACKPL3B	DASD Backplane with concurrent repair	97H9230
BACKPL4	System Processor Backplane See "PROBACK" on page 213.	See "PROBACK" on page 213.
BACKPL5	Expansion Unit PCI Backplane	97H5996
BACKPL6	Expansion Unit DASD Backplane (concurrent repair)	97H9232
BACKPL7	MFIOP and System Processor Backplane See "PROBACK" on page 213.	See "PROBACK" on page 213.

Exchange the failing item (see "BACKPLANES" on page 444).

This ends the procedure.

BATRY

The battery may be the failing item.

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 421.
2. Perform "SPCN-PIP5" on page 344. Then return here and continue with the next step of this procedure.
3. The Battery pack(s) in the External UPS needs to be replaced. For UPS type 9910 call IBM Service Support.

For all other UPS types call your UPS service provider.

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 404. Use the address to find the location. See "Locations and Addresses" on page 384

Using the type number of the storage IOA, go to "Type, Model, and Part Number List" on page 193 to determine the cache battery pack part number.

Power the system down normally prior to replacing the cache battery pack.

Symbolic FRUs

To exchange the cache battery pack, see “Cache Battery Pack, For Type 2740, 2748, 2763” on page 450.

This ends the procedure.

CACHE

The cache adapter card on the IOP may be failing.

- For the 2741 IOA, the failing item is the 4010 cache adapter card (part number 44H6330).
- For the 2740, 2748, and 2763 IOAs, the failing item 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 443.

This ends the procedure.

CBLALL

A power cable may be the failing item.

Perform the following to determine the part number for the failing power supply:

1. Read “Important Continuously Powered Main Storage (CPM) Information” on page 421.
2. Perform “SPCN-PIP5” on page 344. Then return here and continue with the next step of this procedure.
3. Is the SRC 1xxx 2221 or 2311?

No Yes

↓ The failing item is the power cable, exchange the following part:

- MFIOP to control panel
 - SIG1— part 97H5913

4. Is the SRC 1xxx 2314?

No Yes

↓ The failing item is the power cables, exchange the following part:

- MFIOP to expansion unit cable
 - SIG5 — part 8193226

5. Is the SRC 1xxx 2321?

No Yes

↓ The failing item is the power cables, exchange the following parts one at a time:

- MFIOP to control panel
 - SIG1— part 97H5913
- MFIOP to expansion unit card
 - SIG5 — part 8193226

6. 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 for the server 170 and server 250.

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.
- 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

This symbolic FRU is not supported for the server 170 and server 250.

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 455 for additional information.

This ends the procedure.

CTLPNL

A control panel or control panel cable may be failing. See “SPNLCRD” on page 217 for the failing part number.

Symbolic FRUs

DEVTERM

The device terminating plug may be failing.

Perform the following:

1. Find the IOA type:
 - a. Find the IOA location information in the Service Action Log if it is available. If the location is not available, find the address of the IOA. See "SRC Address Formats" on page 404. Use the address to find the location. See "Locations and Addresses" on page 384.
 - b. Find the IOA card in the system and read the type number of the card at that location.
2. Use the information in the following list to determine the failing terminating plug:

Storage IOA Type	Action
2718	For device type 7207, use part 52G9907.
2728, 675A	Replace BACKPL3A. See "BACKPLx" on page 203.
2740, 2741, 2748, 2763	If the device is located in the system unit, replace BACKPL3B. If the device is located in the expansion unit, replace BACKPL6. See "BACKPLx" on page 203.
2729	For device types 3490, 3570, and 3590, use part 61G8324. For device type 3995, see F100880 in the "Failing Item (FI) Code Table" on page 177. For all other devices, use part 85F7887.

3. Exchange the failing item.

Note: If the terminating plug is located on a backplane, go to "BACKPLN" on page 202. 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 473.
This ends the procedure.
3. Find the IOP address and the device address (see "SRC Address Formats" on page 404).

4. See "Locations and Addresses" on page 384 and find the diagram of the system unit or the diagram of the expansion unit; now find:
 - The IOP card location that is identified by the direct select address.
 - The addressed disk location location that is 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 that contains 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 that is called out in the reference code table for this SRC.

Physically locate the disk/device by using "Locations and Addresses" on page 384.

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 473.

This ends the procedure.

9. Using the type and level information, go to "Disk Unit Type, Model, and Part Number List" on page 197 to determine the part number. If you do not know the type and level, remove the disk unit to determine the part number.

To exchange the disk drive and logic card, see "Chapter 7. Recovery Procedures" on page 473.

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

A disk unit tray or a disk unit holder may be failing.

Note: A disk unit holder is used for disk units in the system unit. A disk unit tray is used for disk units in a tower.

Perform the following:

1. Were you sent here from a power SRC (1xxx xxxx)?

No **Yes**

↓ Go to step 7 of this procedure.

Symbolic FRUs

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 473.

This ends the procedure.

3. Find the IOP address and the device address (see “SRC Address Formats” on page 404).

4. See “Locations and Addresses” on page 384, locate the diagram of the system unit or the expansion unit; now find:

- The IOP card location that is identified by the direct select address.
- The addressed disk location that is 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 that contains 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 that is called out in the reference code table for this SRC.

Physically locate the disk/device by using “Locations and Addresses” on page 384.

8. Remove the disk unit to determine the part number.

To exchange the failing item, see “Chapter 7. Recovery Procedures” on page 473.

This ends the procedure.

9. Using the type and level information, go to “Disk Unit Type, Model, and Part Number List” on page 197 to determine the part number. If you do not know the type and level, remove the disk unit to determine the part number.

To exchange the failing item, see “Chapter 7. Recovery Procedures” on page 473.

This ends the procedure.

DPAC

This symbolic FRU does not apply to this system model.

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.

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 205 for more information prior to removing or replacing any parts. Return here if "CHECK" doesn't reveal any problems.

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 "Type 2718 IOA, 2729 IOA, and 6534 IOP Addressing" on page 403.

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 404).
 - b. See "Locations and Addresses" on page 384 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.

Symbolic FRUs

IOP Type	Device	Lengths	Part Number
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, 9427, 7208/342	0.5 meters	49G6456
		4.5 meters	49G6457
		12.0 meters	49G6458
		18.0 meters	49G6459
	7208/012, 7208/222	1.5 meters	52G0174
		4.0 meters	59H3462
		12.0 meters	59H3463
	7208/232, 7208/234, 3995 or 9348	0.5 meters	06H6037
		4.0 meters	59H3460
		12.0 meters	59H3461
63A0		See device documentation to determine cable length and Part Number	
2809/2824 with 2718 IOA	7207/122, 7210/020	2.4 meters	67G1260

Notes:

- a. All cables for the 9427 tape library must include an interposer, part 05H3834, on the device end of the cable.

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 404. Use the address to find the location. See "Locations and Addresses" on page 384.

- For MFIOP, see "MFIOPBK" on page 211.
- For System Processor, see "PROBACK" on page 213.
- For CFIOPI, see "Cards-PCI" on page 454.

Note: To determine FRU part numbers, see "Type, Model, and Part Number List" on page 193.

This ends the procedure.

MEDIA

Defective media. See the I/O device service information.

This ends the procedure.

MEMORY

The memory module may be the failing item.

Feature	Size	Part Number
2861	32MB	44H7558
2862	128MB	90H9075
2867	256MB	97H7725

This ends the procedure.

MFIOPBK

This symbolic FRU indicates the MFIOPBK backplane is the failing item. Use the system processor feature code to determine which MFIOPBK backplane, BACKPL2 or BACKPL7 is used in the machine.

Note: The system processor feature code is the last 4 digits of function 20-3.

System Processor Feature Code	Part Number	Remove and Install Procedure	Description
2159, 2160, 2164, 2176, 2183, 2385, 2386, 2388, 2408, 2409	See "Type, Model, and Part Number List" on page 193.	See "MFIOPBK PLANAR (BACKPL2)" on page 446.	The MFIOPBK planar is separate from the system processor planar.
2289, 2290, 2291, 2292, 2295, 2296, 2407	See "Type, Model, and Part Number List" on page 193.	See "MFIOPBK / PROCESSOR PLANAR (BACKPL7)" on page 446.	The MFIOPBK is integrated into the system processor backplane.

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 user problem may be caused by:

- user-initiated action
- a Windows NT user application
- no keyboard or mouse attached to the Integrated Netfinity Server

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

Any PCI card on the PCI bus may be the failing item.

This ends the procedure.

PGDPART

Perform the following to determine the part number for the failing PGDPART:

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 421.
2. Perform "SPCN-PIP5" on page 344. Then return here and continue with the next step of this procedure.
3. Is the SRC 1xxx 2321?

No Yes

↓ The MFIOP or processor planar may be the failing item.

Exchange the following parts, one at a time:

- The MFIOP planar. See “MFIOPBK” on page 211.
- The processor planar. See “PROBACK”.

This ends the procedure.

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

This ends the procedure.

PLUS

The list of possible failing items that are displayed on-line 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 41.

This ends the procedure.

PROBACK

This symbolic FRU indicates that the system processor backplane (possibly MFIOP) is the failing item.

1. Access function 20-3. The last four characters indicate the feature code of the failing item.
2. If the indicated feature code is 2385, 2386, 2388, 2408 or 2409 see the section headed “Dual Piece Processors” below.
3. If the indicated feature code is not one of the five numbers listed in step 2, see “Locations and Addresses” on page 384 for location information. Obtain the part number from the “Type, Model, and Part Number List” on page 193.
4. If the system feature code is 2289, 2290, 2291 2292, 2295, 2296 or 2407 go to “MFIOP / PROCESSOR PLANAR (BACKPL7)” on page 446 for removal and installation instructions. For all other feature codes, go to “PROCESSOR PLANAR (BACKPL4)” on page 448.

This ends the procedure.

Dual Piece Processors

1. Read the slot number in the *Location* column of the reference code table.
2. Use the following table to determine the type numbers for the replacement parts:

Feature Code	Processor Card	Interactive Card (IC)
2385	242F	2385
2386	242F	2386
2388	242E	2388
2408	242F	2408
2409	242E	2409

3. You will need to replace both the processor card and the Interactive card (IC). Use the “Type, Model, and Part Number List” on page 193 to obtain the part number for both.

Symbolic FRUs

- When you have obtained the processor card and the IC, **do not assemble them.** Go to "PROCESSOR PLANAR (BACKPL4)" on page 448.

PROCCFG

The system has encountered an invalid configuration.

Use Function 20 to access the system model and system feature information.

Access Function 16 and record the last four characters of the information.

Use the following table to identify the FRU to replace.

System Model	System Feature	Right half of Function 16	FRU Location	FRU Feature Code
170	2159	03xx	M01	2159
170	2160	03xx	M01	2160
170	2164	03xx	M01	2164
170	2176	03xx	M01	2176
170	2183	03xx	M01	2183
170	2289	03xx	M01	2289
170	2290	03xx	M01	2290
170	2291	03xx	M01	2291
170	2292	03xx	M01	2292
250	2295	03xx	M01	2295
250	2296	03xx	M01	2296
170	2385 ¹	03xx	M01	2385
170	2386 ¹	03xx	M01	2386
170	2388 ¹	03xx	M01	2388
170	2407	03xx	M01	2407
170	2408 ¹	03xx	M01	2408
170	2409 ¹	03xx	M01	2409

Notes:

- This is a dual-piece processor and you will need to order and replace the processor card and the Interactive card.

PWRSPLY

A power supply may be the failing item.

Note: BEFORE REPLACING ANY PARTS DO THE FOLLOWING:

- Attempt to RE-IPL the system.
- Did the system power up?

Yes **No**

↓ Go to 1 on page 215 to replace the power supply.

DO NOT REPLACE THE POWER SUPPLY — IT IS NOT THE FAILING ITEM.

3. Do you have a UPS SRC on the panel?

No Yes

↓ Go to “UPSUNIT” on page 221 to replace the UPS.

This ends this procedure.

The initial power problem may have been caused by the AC input. As this maybe an intermittent problem, track the frequency of occurrence. Prior to replacing the Power Supply after a re-occurrence, verify that the AC input is not the problem by monitoring the input power.

This ends this procedure.

Perform the following to determine the part number for the failing power supply:

1. Read “Important Continuously Powered Main Storage (CPM) Information” on page 421.
2. Is the SRC 2210, 2213, 2541, 2543, 2551, 2553, 2561, 2563, 2544, 2554 or 2564?

Note: A LOAD ON THE BUS MAY BE CAUSING THE FAILURE. THE CORRECT POW-PIP FOR THE SRC MUST BE PERFORMED. THIS IS NECESSARY FOR ISOLATING THE LOAD ON THE BUS TO DETERMINE THE CORRECT FRU REPLACEMENT. DO NOT REPLACE THE POWER SUPPLIES UNLESS ALL COMPONENTS ON THE BUS HAVE BEEN ELIMINATED FROM THE LIST OF POSSIBLE REPLACEMENT FRUs AS DOCUMENTED IN THE POW-PIPs.

Yes No

↓ Go to step 5.

3. Is the SRC 2210, 2213, 2541, 2543, 2551, 2553, 2561, 2563?

No Yes

↓ A load on the system bus may be causing a failure. Perform “POW-PIP1” on page 286 to exchange the appropriate part.

4. Is the SRC 2544, 2554 or 2564?

No Yes

↓ A load on the expansion bus may be causing a failure. Perform “POW-PIP2” on page 290 to exchange the appropriate part.

This ends the procedure.

5. Is the SRC 1xxx 00AC or 0000 2222?

Yes No

↓ Go to step 7 on page 216.

6. Power on the system. Does the system power on normally and stay powered on?

No Yes

↓ There is a high probability that an AC loss occurred at the AC input to the system. (Do not replace the power supply)

This ends the procedure.

Exchange the following system unit parts one at a time:

- Power Supply (replace with same type as is installed):

Symbolic FRUs

- System feature 2159, 2160, 2164, 2176, and 2183 uses Power Supply FRU 97H5881
- System feature 2289, 2290, 2291, 2292, 2295, 2296, and 2407 uses Power Supply FRU 90H8983
- System feature 2385, 2386, 2388, 2408, and 2409 uses Power Supply FRU 75G2727
- Control Panel Backplane – see “SPNLCRD” on page 217.
- Control Panel Cable (SIG1) – part 97H5913.
- UPS Electronics Unit:
 - For 9910 type UPS Call IBM Service Support
 - For all other UPS call the UPS provider

This ends the procedure.

7. Is the SRC 1xxx 2542, 2552, or 2562?

No Yes

↓ Exchange the following parts one at a time:

For system feature 2159, 2160, 2164, 2176, and 2183:

- regulator 2 – part 12J2698
- System Processor (“PROBACK” on page 213)
- Control Panel Backplane see “SPNLCRD” on page 217.
- The MFIO backplane, see “MFIOBPBK” on page 211.
- Control Panel Cable (SIG1) – part 97H5913

For all other system features (Except 2159, 2160, 2164, 2176, and 2183):

- System Processor (“PROBACK” on page 213)
- Control Panel Backplane, see “SPNLCRD” on page 217.
- The MFIO backplane, see “MFIOBPBK” on page 211.
- Control Panel Cable (SIG1) – part 97H5913

This ends the procedure.

8. Do you have a SRC 1xxx 2311, 2330 or 2331?

No Yes

↓ Exchange the following parts one at a time:

- Power Supply (replace with same type as is installed):
 - System feature 2159, 2160, 2164, 2176, and 2183 uses Power Supply FRU 97H5881
 - System feature 2289, 2290, 2291, 2292, 2295, 2296, and 2407 uses Power Supply FRU 90H8983
 - System feature 2385, 2386, 2388, 2408, and 2409 uses Power Supply FRU 75G2727
- Control Panel Backplane see “SPNLCRD” on page 217.
- Control Panel Cable (SIG1) – part 97H5913

9. Is the SRC 1xxx 2314 or 2334?

No Yes

↓ Exchange the following parts one at a time:

- Power Supply P04 (350 watt) – part 97H5881

- Control Panel Backplane – part 97H9108
 - Control Panel Cable (SIG1) – part 97H5913
10. Go to “Starting Point for All Problems” on page 4.

This ends this 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.

SIGx

The failing item may be a signal cable. Check “Locations and Addresses” on page 384 for signal cable information. Check “Assembly 6: Internal Cable Assemblies” on page 518 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.

SPNLCRD

The control panel electronics card may be the failing item.

1. Read “Important Continuously Powered Main Storage (CPM) Information” on page 421.
2. Perform “SPCN-PIP5” on page 344. Then return here and continue with the next step of this procedure.
3. Exchange the following items one at a time:
 - Control panel backplane (BACKPL1) — part 97H9108
 - Control panel cable to MFIOP (SIG1) — part 97H5913
 - Control panel cable to MI, UPS, RPO, CPM (SIG 2) — part 97H5914

See “Locations and Addresses” on page 384.

See “Chapter 6. Removal and Installation Procedures” on page 443.

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

Symbolic FRUs

address. See "SRC Address Formats" on page 404. Use the address to find the location. See "Locations and Addresses" on page 384.

The 6757, 675A, 2809, and 2824 IOPs have the following removable storage IOAs: 2718, 2728, 2729, 2740, 2741, 2748, and 2763. Replace the storage IOA (see "Cards-PCI" on page 454). If the 675A does not have a card in slot C07, then the IOA is integrated into the IOP. In this instance, replace the IOP.

For all other IOPs, replace the IOP (see "Cards-PCI" on page 454).

This ends the procedure.

SVCDOS

See the *Description/Action* column in the "Chapter 2. Unit Reference Codes" on page 41 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.

TOD

The 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 421.
2. Perform "SPCN-PIP5" on page 344. Then return here and continue with the next step of this procedure.
3. Exchange the time of day battery on the MFIOP card —part 16G8095

UAMR1

The LAN Server/400 configuration may be causing the problem.

See *OS/2 Warp Server for AS/400 Administration*, SC41-5423-00 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.

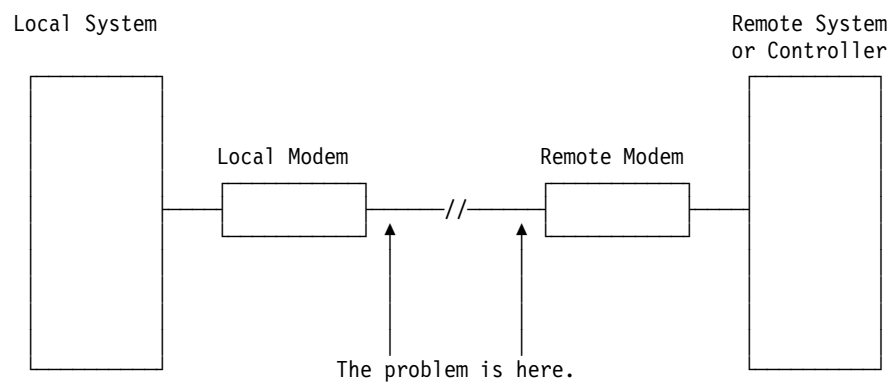
UG3AS

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.

Symbolic FRUs

You can find additional information on Facsimile Support/400 in the *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.

Perform the following:

- 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.

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) that is 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.

UPSUNIT

The external UPS may be the failing item.

Note: The UPS electronics unit battery is located in the external UPS. See the UPS manual before exchanging the battery.

Perform the following:

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 421 and "Important UPS Information" on page 469.
2. Perform "SPCN-PIP5" on page 344. Then return here and continue with the next step of this procedure.
3. Before proceeding, make sure that the batteries are installed properly and that a battery test time span has been allowed after proper installation.
4. Bypass the UPS using the following procedure:

Note: If you are unable to bypass the UPS at this time, go to step 6 of this procedure.

PROCEDURE FOR BYPASSING THE CPM UPS:

- a. Power Down your system and the UPS unit.
- b. Remove the following:
 - The 9-pin D-shell signal cable (p/n 17G1768) used between the CPM UPS and the AS/400
 - The 26-pin D-shell signal cable (p/n 90H9136) used between the CPM UPS and the AS/400

Symbolic FRUs

- The power jumper cords (p/n 90H9135) used between the CPM UPS and the attached devices
 - The the country specific power cord used from the CPM UPS to the wall outlet
- c. Use the correct power cord:

For Model 080:

Use the country specific power cord removed from the CPM UPS and connect it to the power inlet on the AS/400. Plug the country specific power cord into the same wall outlet used for the CPM UPS or another compatible wall outlet.

For Model 140 and non-CPM UPS:

Use the original country specific power cord shipped with your AS/400 and connect it to the power inlet on the AS/400.

Note: Two power cords are shipped with the AS/400 server 170 and server 250 when ordered with the CPM UPS model 140. Use the power cord that is intended for use with the AS/400 server 170 and server 250. You will also need the additional power cord shipped with the AS/400 server 170 and server 250. Connect this to the power inlet on the system expansion unit. Plug the other end of this cord into a compatible wall outlet.

Note: If the AS/400 server 170 and server 250 have feature code #7101, System Expansion Unit (Sidecar), you need an additional wall outlet that is compatible with the power cord. You will also need the additional power cord shipped with the AS/400 server 170 and server 250. Connect this to the power inlet on the system expansion unit.

- d. Power On your AS/400.

This ends the BYPASS Procedure.

5. Do you have an SRC?

Yes No

↓ Go to step 8 of this procedure.

6. Is the SRC 1xxx 00AC, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2410, 2413?

No Yes

↓ Go to step 9 of this procedure.

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

Note: Do not reconnect your UPS until problem is resolved. At that point reconnect the UPS using the above BYPASS procedure in reverse. After reconnecting the UPS, run a battery test to reset the 90 day timer.

This ends the procedure.

8. The uninterruptible power supply needs service:
- For 9910 type UPS Call IBM Service Support
 - For all other UPS call the UPS provider.

This ends the procedure.

9. Exchange the following one at a time:

- SPNLCRD (see “SPNLCRD” on page 217)
 - SIG2 — part 97H5914
 - Processor back plane — see BACKPL4 under “BACKPLx” on page 203 for the part number.
10. Re-connect your CPM UPS by reversing the Bypass Procedure above.
 11. Power On the System.
 12. Run a Battery Test to reset the 90 day battery test timer.

Note: If the UPS Bypass was not done, this will also clear the SRC from the panel.

Refer to “Important UPS Information” in the UPS section of the Removal and Installation Instructions.

This ends the procedure.

USER

System operator error or user error. See the system operator information.

This ends the procedure.

UX201

The printer definition table may be causing the problem.

Perform the following:

- 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.

Perform the following:

- 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 that are associated with noise can cause a workstation to fail or lose communication with the system for various lengths of time. A motor or any device that is a source of electrical radiation can cause noise or electrical interference. 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.

Symbolic FRUs

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 that is 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 that is connected to the port.

Perform the following:

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 that causes the problem is the one that is turned off when the others are working correctly.

If you did not find the problem, continue to 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 that causes 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.

A failure in the Licensed Internal Code in the workstation or the Licensed Internal Code in the workstation controller causes this type of error.

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.

Chapter 4. Problem Isolation Procedures (PIPs)

PIP Type List

Bus Problem Isolation Procedures	226	SDIOP-PIP1	302
Overview.	226	SDIOP-PIP3	305
BUS-PIP1	227	SDIOP-PIP13	308
BUS-PIP2	231	SDIOP-PIP16	311
BUS-PIP5	234	SDIOP-PIP17	314
BUS-PIP8	240	SDIOP-PIP18	317
Communications Problem Isolation Procedures	242	SDIOP-PIP19	319
Overview.	242	SDIOP-PIP20	321
COMM-PIP1	242	SDIOP-PIP21	324
Disk Unit Problem Isolation Procedures	244	SDIOP-PIP22	325
Overview.	244	SDIOP-PIP23	326
DU-PIP3	244	SDIOP-PIP25	329
Intermittent Problem Isolation Procedures	248	SDIOP-PIP26	331
Introduction	248	SDIOP-PIP27	333
INT-PIP3 External Noise on AC Voltage Lines	248	SDIOP-PIP28	335
INT-PIP5 External Noise on Twinaxial Cables	249	SDIOP-PIP29	336
INT-PIP7 Electromagnetic Interference (EMI)	250	SDIOP-PIP30	338
INT-PIP8 Grounding	250	SDIOP-PIP31	339
INT-PIP9 Utility Power and Battery Power		SDIOP-PIP32	340
Units	252	Storage Device I/O Card FRU Locations	341
INT-PIP14 Station Protectors	255	Service Processor Problem Isolation Procedures	341
INT-PIP16 Licensed Internal Code	255	Overview.	341
INT-PIP18 PTFs Not Installed	255	SP-PIP40	342
INT-PIP20 Performance Problems.	255	System Power Control Network (SPCN)	
INT-PIP24 Service Processor Data Collection	256	Problem Isolation Procedures	344
Licensed Internal Code (LIC) Problem Isolation		Overview.	344
Procedures	257	SPCN-PIP5	344
Introduction	257	SPCN-PIP20	346
LIC-PIP1	258	SPCN-PIP21	347
LIC-PIP3	260	Tape Unit Problem Isolation Procedures	347
LIC-PIP4	261	Overview.	347
LIC-PIP7	261	TU-PIP1	348
LIC-PIP8	265	TU-PIP2	350
LIC-PIP11	266	TU-PIP3	353
LIC-PIP13	278	TU-PIP4	355
Logical Partition (LPAR) Problem Isolation		TU-PIP6	361
Procedures	281	TU-PIP5	363
LPAR-PIP01	281	Introduction	363
Power Problem Isolation Procedures.	285	Tape Device Ready Conditions	365
Overview.	285	Introduction	365
POW-PIP1	286	Twinaxial Workstation I/O Processor Problem	
POW-PIP2	290	Isolation Procedures	367
POW-PIP3	293	TWSC-PIP1	368
Remote Operations Console Problem Isolation		Workstation Adapter Problem Isolation	
Procedures	294	Procedures	375
Overview.	294	Overview.	375
ROC-PIP3	296	WS-PIP1	376
ROC-PIP5	298	Workstation Adapter Console Problem Isolation	
ROC-PIP7	300	Procedures	379
Storage Device I/O Processor (SDIOP) Problem		Overview.	379
Isolation Procedures	301	WSAC-PIP1	380
Overview.	301		

Bus Problem Isolation Procedures

Overview

Note:

Reference Materials:

- “Locations and Addresses” on page 384.
- “Powering Off and Powering On the System” on page 425.
- “Chapter 6. Removal and Installation Procedures” on page 443.
- “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).

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)

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 would be displayed by the corresponding control panel function for the same SRC.

Table 8. SRC Word and Control Panel Function Descriptions

SRC Word	Panel Function	Format	Description
1	11	B600 uuuu	uuuu = unit reference code (69xx)

Table 8. SRC Word and Control Panel Function Descriptions (continued)

SRC Word	Panel Function	Format	Description
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 bus.

1. Were you sent here by a power SRC (1xxx xxxx)?
 - No** **Yes**
 - ↓ Go to “BUS-PIP2” on page 231.
2. Does an SRC appear on the control panel?
 - Yes** **No**
 - ↓ Go to step 9 of this procedure.
3. Power off the system (see “Powering Off and Powering On the System” on page 425).
4. Verify the I/O bus SRC by performing the following:
 - a. Select Manual mode on the control panel.
 - b. Power on the system.
5. Does an SRC appear on the control panel?
 - Yes** **No**
 - ↓ Go to step 8 of this procedure.
6. Is the SRC B600 69xx?

Bus PIPs

Yes **No**

↓ Go to step 24 of this procedure.

7. Perform the following:

- a. Select control panel function 17.
- b. Record the last 4 digits of function 17. This is the direct select address.

Note: The first 2 characters of the direct select address are the bus number.
The third character is the card address.

Go to step 22 of this procedure.

8. Does the IPL complete successfully to the IPL or Install the System display?

Yes **No**

↓ Go to step 15 of this procedure.

9. Use the full-authority password to sign on to DST and then 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?

Yes **No**

↓ Go to step 19 of this procedure.

10. Is only one I/O processor not operational?

Yes **No**

↓ Go to step 14 of this procedure.

11. Use the packaging resource information in the hardware service manager function to determine the card position of the I/O processor.

Power off the system and exchange the I/O processor that is not operational.

12. Power on the system and return to the hardware service manager function.

Is the status of the I/O processor card operational?

No **Yes**

↓ You have corrected the problem. Go to "BUS-PIP8" on page 240 to verify the repair.

This ends the procedure.

13. Perform the following:

- a. Power off the system.
- b. Remove the I/O processor card you installed in step 11 of this procedure.
- c. Reinstall the original I/O processor card.
- d. Power on the system.

14. 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.

Use Table 9 to determine your next action.

Table 9. 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 231.

This ends the procedure.

15. 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 18 of this procedure.

16. 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.

17. 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.

18. Press the Enter key.

The Use Dedicated Service Tools (DST) display appears.

Use the full-authority password to sign on to DST.

19. 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 6 and "Using the Product Activity Log" on page 10).

Notes:

- a. Search only for SRCs that occurred during the last IPL. You may ignore informational and statistical log entries.
- b. If there are multiple entries for 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 6 and "Using the Product Activity Log" on page 10). If the B600 xxxx SRCs identify the same I/O processor, this

Bus PIPs

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.

20. Is the SRC that sent you to this procedure B600 xxxx?

Yes No

↓ Go to step 24 of this procedure.

21. From the product activity log information, record the bus number, card position, frame ID, and board number.

22. 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.

23. Is the SRC that sent you to this procedure B600 69xx?

No Yes

↓ 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 26 of this procedure.

24. Is the SRC that sent you to this procedure B4xx xxxx?

Yes No

↓ Go to step 28 of this procedure.

25. Go to "Chapter 2. Unit Reference Codes" on page 41.

This ends the procedure.

26. Record the bus number. Use the SRC as the Entry Point SRC or error in the bus isolation procedure.

Is the direct select address 01xx, or is the bus number system bus 1?

No Yes

↓ Go to "BUS-PIP2" on page 231.

27. Ask your next level of support for assistance.

This ends the procedure.

28. 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 41.

This ends the procedure.

29. 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" on page 231.

This ends the procedure.

BUS-PIP2

Introduction: This procedure isolates a solid failure on the system bus. Throughout this procedure, use the system configuration list to verify the configuration information.

Read the “Overview” on page 226 before continuing with this procedure.

1. Power off the system (see “Powering Off and Powering On the System” on page 425).
Check the power cables to ensure that they are connected and seated correctly.
Does the system have an expansion unit?

Yes **No**

↓ Go to step 15 of this procedure.

2. Disconnect the cable SIG5 that connects the expansion unit to the system unit at the expansion unit end. See “Locations and Addresses” on page 384 for the location of the SIG5 cable.
3. Power on the system.

Note: Ignore any system configuration or console not found errors that appear during the IPL sequence.

Does the SRC or failure that sent you to this procedure occur?

No **Yes**

↓ Go to step 13 of this procedure.

4. The problem is in the expansion unit.
Reconnect the cable SIG5 that was disconnected in step 2 of this procedure.
5. Disconnect the cards in positions E02 through E14 (if installed). See “Chapter 6. Removal and Installation Procedures” on page 443.
6. Power on the system.

Note: Ignore any system configuration or console not found errors that appear during the IPL sequence.

Does the SRC or failure that sent you to this procedure occur?

No **Yes**

↓ Go to step 10 of this procedure.

7. Perform the following:
 - a. Power off the system (before installing each card).
 - b. Install the cards you removed in step 5 of this procedure, one at a time in the following order: E10, E09, E08, E13, E14, E03, E07, E12, E11, E06, E02, E04, E05.
 - c. Power on the system after you install each card.

Does the SRC or failure that sent you to this procedure occur?

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.

Bus PIPs

This ends the procedure.

8. Perform the following:
 - a. Power off the system.
 - b. Exchange the last card you reinstalled (see “Chapter 6. Removal and Installation Procedures” on page 443).
 - c. Power on the system.
9. Does the Entry Point SRC or error occur?

Yes No

- ↓ The card you just exchanged is the failing item.
Go to “BUS-PIP8” on page 240 to verify the repair.

This ends the procedure.

10. Perform the following:
 - a. Power off the system.
 - b. Remove the card you just exchanged.
 - c. Install the original card.
 - d. Exchange BACKPL5 (see “Symbolic FRUs” on page 201).
 - e. Power on the system.

Note: Ignore any system configuration errors that may appear during the IPL sequence.

Does the SRC or failure that sent you to this procedure occur?

Yes No

- ↓ You have corrected the problem.
Go to “BUS-PIP8” on page 240 to verify the repair.

This ends the procedure.

11. Perform the following:
 - a. Power off the system.
 - b. Remove the BACKPL5 FRU you just exchanged and install the original.
 - c. Reconnect all cards and cables you disconnected during this procedure.
 - d. Exchange the MFIOP backplane. See “MFIOPBK” on page 211.
 - e. Power on the system.

Notes:

- a. You are prompted for the system serial number because you exchanged the MFIOP.
- b. Ignore any system configuration errors that may appear during the IPL sequence.

Does the SRC or failure that sent you to this procedure occur?

Yes No

- ↓ You have corrected the problem.
Go to “BUS-PIP8” on page 240 to verify the repair.

This ends the procedure.

12. Perform the following:
 - a. Power off the system.

- b. Remove the MFIOP backplane you just exchanged and install the original.
- c. Reconnect all cards and cables you disconnected during this procedure.
- d. Power on the system.
- e. You have exchanged or eliminated all the I/O bus parts.
Ask your next level of support for assistance.

This ends the procedure.

13.

- a. Power off the system.
- b. Remove SIG5 cable from the system end.
- c. Depending on the processor type (see "MFIOPBK" on page 211), check the MFIOP backplane for damaged pins.

Are there any damaged pins?

No Yes

- ↓ Repair the pins or replace the MFIOP backplane.
Go to "BUS-PIP8" on page 240 to verify the repair.

This ends the procedure.

14. Power on the system.

Note: Ignore any system configuration or console not found errors that appear during the IPL sequence.

Does the SRC or failure that sent you to this procedure occur?

Yes No

- ↓ Replace the SIG5 cable.
Go to "BUS-PIP8" on page 240 to verify the repair.

This ends the procedure.

15. Disconnect the cards in positions C02 through C09 (if installed). See "Chapter 6. Removal and Installation Procedures" on page 443

16. Power on the system.

Note: Ignore any system configuration or console not found errors that appear during the IPL sequence.

Does the SRC or failure that sent you to this procedure occur?

No Yes

- ↓ Go to step 21 of this procedure.

17. Perform the following:

- a. Power off the system (before installing each card).
- b. Install the cards you removed in step 15 of this procedure, one at a time in the following order: C07, C08, C09, C03, C02, C04, C05, C06.
- c. Power on the system after you install each card.

Does the SRC or failure that sent you to this procedure occur?

Yes No

- ↓ Repeat this step until the SRC or failure that sent you to this procedure occurs.

Bus PIPs

If the error does not occur, the problem may be intermittent. Ask your next level of support for assistance.

This ends the procedure.

18. Perform the following:
 - a. Power off the system.
 - b. Exchange the last card you reinstalled (see “Chapter 6. Removal and Installation Procedures” on page 443).
 - c. Power on the system.
19. Does the Entry Point SRC or error occur?

Yes No

- ↓ The card you just exchanged is the failing item.
Go to “BUS-PIP8” on page 240 to verify the repair.

This ends the procedure.

20. Perform the following:
 - a. Power off the system.
 - b. Remove the card you just exchanged.
 - c. Install the original card.
21. Ensure the system is powered off and perform the following:
 - a. Exchange the MFIOP backplane. See “MFIOPBK” on page 211.
 - b. Power on the system.

Notes:

- a. You are prompted for the system serial number because you exchanged the MFIOP.
- b. Ignore any system configuration errors that may appear during the IPL sequence.

Does the SRC or failure that sent you to this procedure occur?

Yes No

- ↓ You have corrected the problem.
Go to “BUS-PIP8” on page 240 to verify the repair.

This ends the procedure.

22. Perform the following:
 - a. Power off the system.
 - b. Remove the MFIOP backplane you just exchanged and install the original.
 - c. Reconnect all cards and cables you disconnected during this procedure.
 - d. Power on the system.
 - e. You have exchanged or eliminated all the I/O bus parts.
Ask your next level of support for assistance.

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, 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 226 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 432, 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 438.

To locate the console of a secondary partition see “Locating a Secondary Partition’s Console” on page 434.

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 237.
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” on page 425.)

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” on page 425.)

2. Disconnect the I/O processor card and check the backplane for bent or broken pins.

Are any pins damaged?

Yes No

Bus PIPs

- ↓ Go to step 4 of this procedure.
3. Exchange the backplane (see “Chapter 6. Removal and Installation Procedures” on page 443).
Go to “BUS-PIP8” on page 240 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 “Locations and Addresses” on page 384 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 240 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 41.

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 41.

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 240 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 240 to verify the repair.

This ends the procedure.

Backplane-Attached:

Bus PIPs

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" on page 425.)

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" on page 425.)

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 443).

Go to "BUS-PIP8" on page 240 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 "Locations and Addresses" on page 384 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 443.

Reconnect all the I/O adapter cards you disconnected.

Go to "BUS-PIP8" on page 240 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.

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 41.

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.
- 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. 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 41.

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 443.

Reconnect all the I/O adapter cards you disconnected.

Go to “BUS-PIP8” on page 240 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.

Bus PIPs

14. Reconnect all of the I/O adapter cards you disconnected during this procedure.

Go to "BUS-PIP8" to verify the repair.

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 438.

To locate the console of a secondary partition see "Locating a Secondary Partition's Console" on page 434.

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 41 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.

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 41 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 240 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 41 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 242.

Bus PIPs

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 439.)

- 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 437.)

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 432, 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 *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 443).

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 244 of this procedure.

Verify the external cable by running the cable wrap test.

Communications PIPs

Note: Wrap plug part numbers can be found in the “Chapter 8. Parts Listing” on page 503.

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” on page 425) 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 473.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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?

- 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 266 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 41). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 177 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 535).

Disk Unit PIPs

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” on page 425).
 - b. See “Failing Item (FI) Code Table” on page 177 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 473).

This ends the procedure.

12. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 535).

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
- 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 443.

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 41). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 177 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 41). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 177 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" on page 425) 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.

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.

Intermittent PIPs

- 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:
 - 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

Intermittent PIPs

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
 - 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 252.

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.

Intermittent PIPs

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:

Intermittent PIPs

- 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.

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.

Intermittent PIPs

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 535).
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" on page 425).
 - 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.

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 11 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

Introduction

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” on page 425) before removing, exchanging, or installing a field-replaceable unit (FRU).

LIC PIPs

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)

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System” on page 425
- “Selecting IPL Type, Mode, and Speed” on page 428

LIC-PIP1

Introduction:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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 6). Use the new SRC and go to “Chapter 2. Unit Reference Codes” on page 41.
- If there are no new SRCs in the Service Action Log, go to “BUS-PIP1” on page 227.

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 41.

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 432, 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 "Introduction" on page 257 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 227. 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 443). 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 434.
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.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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 “Introduction” on page 257 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. 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 432, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

LIC PIPs

Read the "Introduction" on page 257 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" on page 425).
- b. Select manual mode on the control panel (see "Selecting IPL Type, Mode, and Speed" on page 428).
- 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 6).
- 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 266.

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 41 and use the new SRC to correct the problem.

This ends the procedure.

9. 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. Search *All logs* in the product activity log looking for the SRC that sent you to this procedure **and** that occurred during the last IPL. Do not use informational or statistical entries (for more information, see “Product Activity Log” in the *AS/400 Service Functions* information).

Did you find the same SRC that sent you to this procedure?

No **Yes**

↓ Go to step 12.

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 of reference code to correct the problem. See “Chapter 2. Unit Reference Codes” on page 41.

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

LIC PIPs

CC Card direct select address

bb board address

14. Use the BBBBCCbb information and refer to "Locations and Addresses" on page 384 to determine the failing IOP and its location.
15. Go to "BUS-PIP5" on page 234 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 16.
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 443).

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 227

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 41 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 6) and the Product Activity Log in *AS/400 Service Functions*, SY44-5902-03 .

Did you find the same SRC that sent you to this procedure?

Yes No

↓ Go to “BUS-PIP8” on page 240.

This ends the procedure.

22. Perform the following:
- Power off the system.
 - Remove the IOP card you just exchanged and install the original card.
 - Go to “BUS-PIP1” on page 227.

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 432, 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 “Introduction” on page 257 before continuing with this procedure.

- 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.

- Does the same URC appear on the console?

No Yes

↓ Go to step 5 of this procedure.

- 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 41). If the procedure for the new SRC sends you back to this procedure, go to step 5.

This ends the procedure.

- Select the *Perform an IPL* option on the IPL or Install the System display to complete the IPL.

Is the problem intermittent?

Yes No

↓ **This ends the procedure.**

LIC PIPs

5. Copy the main storage dump to removable media (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
6. 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 432, 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 “Introduction” on page 257 before continuing with this procedure.

How to Find the Cause Code:

1. 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.
2. 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**.

3. If the **cause code** is:

0001: Disk configuration is missing.

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 IPL completed successfully.

This ends the procedure.

2. Is Missing Disk Configuration information displayed?

Yes **No**

↓ Go to step 1 on page 267 for cause code 0002.

3. Select option 5 on the *Missing Disk Configuration* display.

Select the *Display Detailed Report* option and follow the instructions to:

- a. Select the *Work with disk units* option.
- b. Select the *Work with disk unit recovery* option.

- c. 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 473).

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.

LIC PIPs

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:

- a. Select System Service Tools (SST).
- b. Select the *Work with disk units* option.
- c. Select the *Display disk configuration* option.
- d. 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 6).

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 41.

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

↓ 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 41. 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 41. 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?

LIC PIPs

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 99 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 443).

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 177 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).
 - 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 41).

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.

LIC PIPs

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 473).

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 41 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 409).

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*).
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 428). 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 428). 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 443). For the location of the card, see "Locations and Addresses" on page 384.

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.

LIC PIPs

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.
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 500.

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 473.

This ends the procedure.

001F: Licensed Internal Code was installed on the wrong disk unit of the load-source mirrored pair.

LIC PIPs

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).
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 41 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.

LIC PIPs

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 41 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 473 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 432, 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 “Introduction” on page 257 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.
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 10 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.

8. 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 41. Perform problem analysis for the disk unit reference code.

This ends the procedure.

LIC PIPs

9. Find the table for the IOP type (the 4 leftmost characters of function 19) in “Chapter 2. Unit Reference Codes” on page 41. Perform problem analysis for the unit reference code found in function 19.

This ends the procedure.

10. Are the 2 rightmost characters of function 12 on the Problem Summary Form equal to 27?

Yes No

↓ Go to step 14 of this procedure.

11. Use the function 11 through function 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 disk unit address.
- Function 15 contains the disk unit type, level, and model number.
- Function 18 contains the disk unit serial number.
- Function 19 four rightmost characters contain the disk unit reference code.

12. Is the disk unit reference code 0000?

Yes No

↓ Using the information from step 11, find the table for the indicated disk unit type in “Chapter 2. Unit Reference Codes” on page 41. Perform problem analysis for the disk unit reference code.

This ends the procedure.

13. Find the table for the indicated disk unit type in “Chapter 2. Unit Reference Codes” on page 41.

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.

14. 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 41. Use the information in function 19 instead of the information in function 11 for the reference code.

This ends the procedure.

15. Is function 13 equal to 00010004?

Yes No

↓ Go to step 19 of this procedure.

16. Are the 4 rightmost characters of function 15 equal to 0000?

No Yes

↓ Go to step 20 of this procedure.

17. 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.
18. Find the table for the disk unit type (the 4 leftmost characters of function 18) in “Chapter 2. Unit Reference Codes” on page 41 and use the 4 rightmost characters of function 15 as the unit reference code.

This ends the procedure.

19. Is function 13 equal to 0002000D?

Yes No

- ↓ Use the information in function 19 and go to “Chapter 2. Unit Reference Codes” on page 41. 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.

20. 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.
21. Find the table for the disk unit type (the 4 leftmost characters of function 18) in “Chapter 2. Unit Reference Codes” on page 41 and use 3002 as the unit reference code. Exchange the FRUs for URC 3002 one at a time.

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 282 of this procedure.

2. Is the reporting partition the Primary partition?

Yes No

- ↓ Go to step 6 on page 282 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?

LPAR PIPs

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 284 of this procedure.

10. Is the partition that is reporting the error the **Primary** partition?

Yes No

↓ Go to step 14 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*".

LPAR PIPs

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.
- Go to SST/DST in the partition and select option "*Work with system partitions*".
 - From "*Work with system partitions*" screen select "*Recover configuration data*".
 - From the "*Recover configuration data*" screen select option "*Clear non-configured disk unit configuration data*".
 - Select each unit in the list which is new to the system. Press enter.
 - 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 on page 285 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).
- Go to SST/DST in the partition, select option "*Work with system partitions*".
 - From the "*Work with system partitions*" screen select option "*Recover configuration data*".
 - 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.

- 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.

Power Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure in the system power.

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 PIPs

power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System” on page 425) 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)

POW-PIP1

Introduction: This procedure isolates a power problem in the system unit.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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.

Read the “Overview” on page 285 before continuing with this procedure.

Read the “Important Continuously Powered Main Storage (CPM) Information” on page 421 before continuing with this procedure.

1. Is the SRC 1xxx 2210, 2213, 2543, 2553, or 2563?

Yes No

↓ Go to step 5 of this procedure.

2. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System” on page 425).
- b. Disconnect the power cord.
- c. Remove the system covers (“Covers” on page 458).
- d. Disconnect the memory card from the processor backplane.
- e. Connect the power cord.
- f. Power on the system.

3. Does a power SRC occur in 30 seconds?

Yes No

↓ Exchange the system memory card.

4. Exchange the following parts in the system unit one at a time:

System feature 2159, 2160, 2164, 2176, and 2183:

- Regulator 1 – part 90H4493 (if installed)
- System Processor (PROCCFG)
- Control Panel Backplane (see “SPNLCRD” on page 217)
- The MFIOP backplane (see “MFIOPBK” on page 211)
- Control Panel Cable (SIG1) – part 97H5913

For all other system feature codes:

- Power supply 1 — Part number 90H8983 for system feature codes 2289, 2290, 2291, 2292, 2295, 2296, and 2407. Part number 75G2727 for system feature codes 2385, 2386, 2388, 2408, and 2409.
- Control Panel Backplane (see “SPNLCRD” on page 217)
- System Processor (see “PROCCFG” on page 214)
- The MFIOP backplane (see “MFIOPBK” on page 211)
- Control Panel Cable (SIG1) — part 97H5913

This ends the procedure.

5. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System” on page 425).
- b. Disconnect the power cable.
- c. Remove the system covers (see “Covers” on page 458).
- d. Remove power cables P5 and P6 from the disk unit backplane as a group and the tape or optical unit installed in the system (see “Power and Signal Cables” on page 388).
- e. Connect the power cable.
- f. Power on the system.

6. Does a power SRC occur in 30 seconds?

Yes No

↓ Go to step 19 of this procedure.

7. Perform the following:

- a. Power off the system.
- b. Disconnect the power cable.
- c. **Attention:** This part may be sensitive to electrostatic discharge (ESD). See “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 545.
Remove all cards from the MFIOP planar board (see “Cards-PCI” on page 454).
- d. Connect the power cable.
- e. Power on the system.

8. Does a power SRC occur in 30 seconds?

No Yes

↓ Go to step 13 of this procedure.

9. Perform the following:

- a. Power off the system.
- b. Install one of the cards you removed in step 7.

Power PIPs

- c. Power on the system.
10. Does a power SRC occur in 30 seconds?
No Yes
↓ Exchange the last card you installed in this step.
This ends the procedure.
11. Have you installed all of the cards you removed in step 7 of this procedure?
No Yes
↓ **This ends the procedure.**
12. Go to step 9 of this procedure.
13. Perform the following:
 - a. Power off the system (“Powering Off and Powering On the System” on page 425).
 - b. Disconnect the power cable.
 - c. Remove the system covers (see “Covers” on page 458).
 - d. Disconnect the memory card from the processor backplane.
 - e. Connect the power cable.
 - f. Power on the system.Does a power SRC occur in 30 seconds?
Yes No
↓ Exchange the system memory card.
14. Is the front air moving device installed in the system?
Yes No
↓ Go to 16.
15. Perform the following:
 - a. Power off the system.
 - b. Disconnect the power cable.
 - c. Remove the front air moving device from the system unit to disconnect it from the MFIOF card planar.
 - d. Connect the power cable.
 - e. Power on the system.Does a power SRC other than an air moving device SRC occur in 30 seconds?
Yes No
↓ Exchange the air moving device disconnected in this step.
This ends the procedure.
16. Perform the following:
 - a. Power off the system.
 - b. Disconnect the power cable.
 - c. Remove the rear air moving device from the system unit to disconnect it from the processor card planar.
 - d. Connect the power cable.
 - e. Power on the system.Does a power SRC other than an air moving device occur in 30 seconds?

Yes No

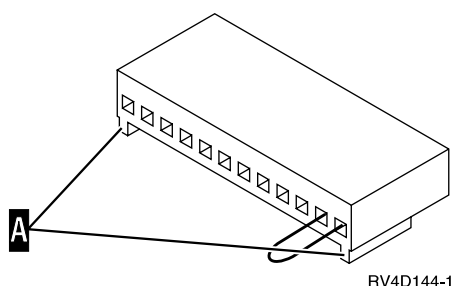
- ↓ Exchange the air moving device disconnected in this step. If problem still exists exchange cable PWR2 --part 97H5917.

This ends the procedure.

17. Perform the following:

- a. Power off the system.
- b. Disconnect the power cable.
- c. Remove the power supply cables P1, P2, P3, P4 (if installed), P5, P6 (3x), P7, P8 and P9 (if installed) from the planar boards and devices.
- d. Connect a jumper from pin 1 to pin 2 at the P3 cable. See "Power and Signal Cables" on page 388.

Note: Pin 1 position is the far right pin with the connector facing you with the keys down. **A**



- e. Connect the power cable.

Does the power supply (internal) AMD rotate (or turn)? (This AMD is inside the power supply.)

No Yes

- ↓ Exchange the following parts in the system one at a time (see "Symbolic FRUs" on page 201):
- a. Control panel (see "SPNLCRD" on page 217)
 - b. Regulator 1 — part 90H4493 (if installed)
 - c. Regulator 2 — part 12J2698 (if installed)
 - d. SIG1 — part 97H5913
 - e. System MFIOPlanar board (see "MFIOPlanar" on page 211)
 - f. System processor planar board BACLPLx (BACKPL4)

This ends the procedure.

18. Exchange power supply (use same power supply as is already installed):

- Part number 97H5881 for system feature codes 2159, 2160, 2164, 2176, and 2183.
- Part number 90H8983 for system feature codes 2289, 2290, 2291, 2292, 2295, 2296, and 2407.
- Part number 75G2727 for system feature codes 2385, 2386, 2388, 2408, and 2409.

This ends the procedure.

19. Perform the following:

- a. Power off the system.

Power PIPs

- b. Reconnect the power supply cables P6 as a group to the disk unit backplane you removed it from.
- c. Remove the disk unit from the disk unit backplane.
- d. Power on the system.

Does a power SRC occur in 30 seconds?

No **Yes**

↓ Exchange the disk unit backplane.

This ends the procedure.

20. Perform the following:
 - a. Power off the system.
 - b. Reconnect one of the disk units to the disk unit backplane you removed it from.
 - c. Power on the system.

Does a power SRC occur in 30 seconds?

No **Yes**

↓ Exchange the last disk unit reconnected.

This ends the procedure.

21. Have you reconnected all the disk units to the disk unit backplane?

Yes **No**

↓ Go to step 20 of this procedure.

22. Perform the following:
 - a. Power off the system.
 - b. Reconnect the power supply cables P5 and P6 to the tape or optical units you removed it from.
 - c. Power on the system.

Does a power SRC occur in 30 seconds?

No **Yes**

↓ Exchange the last tape or optical unit reconnected.

This ends the procedure.

23. Have you reconnected the power cables P5 and P6 to all the tape or optical units that were disconnected in step 5 of this procedure?

Yes **No**

↓ Go to step 22 of this procedure.

This ends the procedure.

POW-PIP2

Introduction: This procedure isolates a power problem in the expansion unit.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 432, 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: Parts may be sensitive to electrostatic discharge (ESD). See “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 545.

1. Is the power SRC 2314?

Yes **No**

↓ Go to 3.

2.

Check the expansion frame AC power cable for correct seating, and power on the system.

Does a power SRC 2314 occur?

No **Yes**

↓ Exchange the expansion power supply — part 97H5881.

This ends the procedure.

3. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System” on page 425).
- b. Disconnect the power cable.
- c. Remove the system covers (see “Covers” on page 458).
- d. Remove power cables P6 from the disk unit backplane (as a group). See “Power and Signal Cables” on page 388.
- e. Power on the system.

Does a power SRC occur in 30 seconds?

No **Yes**

↓ Go to step 8 of this procedure.

4. Perform the following:

- a. Power off the system.
- b. Reconnect the power supply cables P6 (as a group) to the disk unit backplane.
- c. Remove the disk unit(s) from the disk unit backplane.
- d. Power on the system.

Does a power SRC occur in 30 seconds?

No **Yes**

↓ Exchange the disk unit backplane.

This ends the procedure.

5. Perform the following:

- a. Power off the system.
- b. Reconnect one of the disk units to the disk unit backplane you removed it from.
- c. Power on the system.

Does a power SRC occur in 30 seconds?

No **Yes**

↓ Exchange the last disk unit reconnected.

This ends the procedure.

Power PIPs

6. Have you reconnected all the disk units to the disk unit backplane?

Yes No

↓ Go to step 5 of this procedure.

7. **This ends the procedure.**

8. Perform the following:

- Power off the system.
- Remove the power cable.
- Disconnect the rear air moving device 1 from the expansion unit card planar.
- Connect the power cable.
- Power on the system.

Does a power SRC other than an air moving device SRC occur in 30 seconds?

Yes No

↓ Exchange the air moving device disconnected in the step.

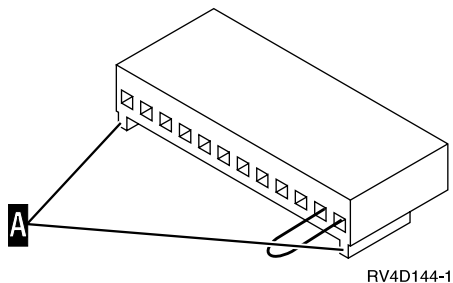
This ends the procedure.

9. Reconnect the air moving device and go to step 10 of this procedure.

10. Perform the following:

- Power off the system.
- Disconnect the power cable.
- Remove the power supply cable P1, P2 and P3 from the expansion planar board.
- Connect a jumper from pin 1 to pin 2 at P3 on the expansion unit power supply. See "Power and Signal Cables" on page 388.

Note: Pin 1 position is the far right pin with the connector facing you with the keys down. **A**



- Connect the power cable.

11. Does the power supply (internal) AMD power on? (This AMD is inside the power supply.)

Yes No

↓ Exchange PWRSPPLY — part 97H5881.

This ends the procedure.

12. **Attention:** The connector group P1 and P2 should be removed from the expansion planar (as a group) in one step and installed (as a group) in one step to avoid high current damage to the pins and planar.

Perform the following:

- a. Power off the system.
- b. Reconnect cables P3, P1 and P2 to the expansion unit PCI backplane (BACKPL5).
- c. Remove all the cards from the expansion unit PCI backplane (BACKPL5).
- d. Power on the system.

Does a power SRC occur in 30 seconds?

No **Yes**

- ↓ Exchange the following parts, one at a time.
- Expansion unit PCI backplane (BACKPL5)
 - Cable (SIG5)
 - Cable (SIG1)
 - SPNLCRD (see “BACKPLx” on page 203 for part number)
 - The MFIOP backplane (see “MFIOPBK” on page 211)

13. Perform the following:
 - a. Power off the system.
 - b. Disconnect the power cable.
 - c. Reinstall one of the cards you removed from the expansion planar.
 - d. Connect the power cable.
 - e. Power on the system.

Does a power SRC occur in 30 seconds?

No **Yes**

- ↓ Exchange the last card you installed in this step.

This ends the procedure.

14. Have you reinstalled all the cards in the expansion card planar?

No **Yes**

- ↓ **This ends the procedure.**

15. Go to step 13 of this procedure.

POW-PIP3

Introduction: This procedure tests the uninterruptible power supply for correct operation.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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 uninterruptible power supply 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:

Power PIPs

- 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. 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 *Repair and Parts* information for the system):

- a. Uninterruptible power supply (see UPS Unit in *AS/400 CPM/UPS User's Guide (English, French, German, Spanish, Italian)*).
- b. Exchange the SPNLCRD.
- c. SIG2
- d. SIG1
- e. MFIOF
- f. Processor backplane (see BACKPL4 under the symbolic fru "BACKPLx" on page 203.)

This ends the procedure.

9. Approximately 24 hours from now, the system will perform a battery capacity test. When the battery capacity test completes successfully, the uninterruptible power supply 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.

The following AS/400 Operations Console Status screen messages can be caused by not powering on the AS/400:

- Connecting Console/Remote...
- Remote Control Panel connection to xxxx xx 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" on page 425) 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.

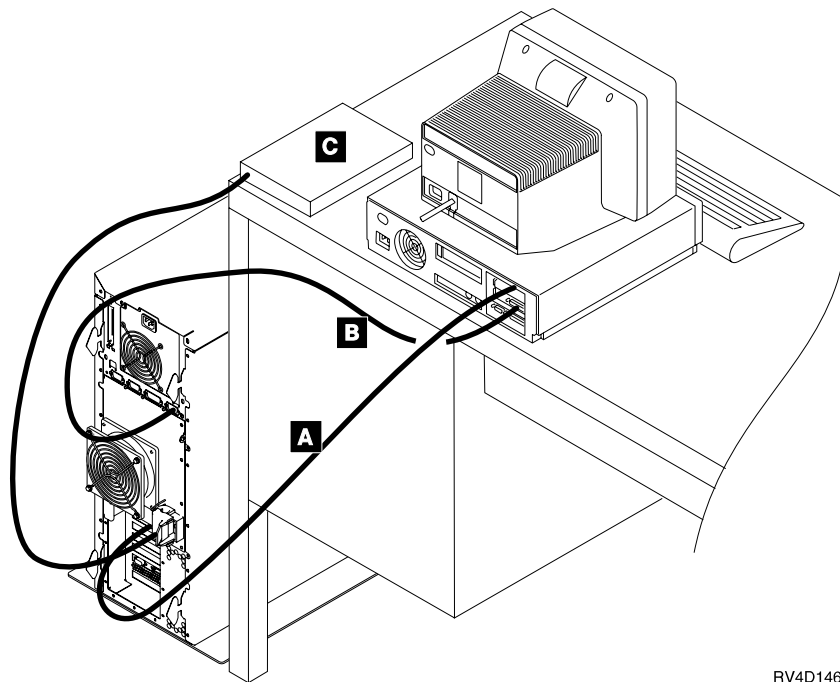
The following symptoms can be caused by a defective Operations Console cable:

- 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: If the system has logical partitions, then refer to “Information About Logical Partitions” on page 432.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Procedure:



RV4D146-1

A is the Operations Console cable, P/N 97H7557, from the system unit to the system unit console.

B is the Remote Control Panel cable, P/N 97H7591.

1. Ensure that the 2721 IOA is installed into position C08.
2. Ensure the cable **A** is connected to **port 0** (left connector) on the adapter card in position C08. 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 97H7591, ensure it is connected 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).
5. Are the PC and AS/400 powered on?

No	Yes
↓	
<ol style="list-style-type: none"> 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 14. 	
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 13.	
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 13.	
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 <i>Basic System Operation, Administration, and Problem Handling</i> , which was shipped with the system. Then return here and continue.	
12. Does a SRC of **x6xx500x** appear on the Function/Data display?

Yes	No
↓	
Go to the "Handling and Reporting System Problems" section of the <i>Basic System Operation, Administration, and Problem Handling</i> , 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 298 to determine if the cable is defective. If the cable is not defective, call your next level of support.	

ROC PIPs

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 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 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 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.

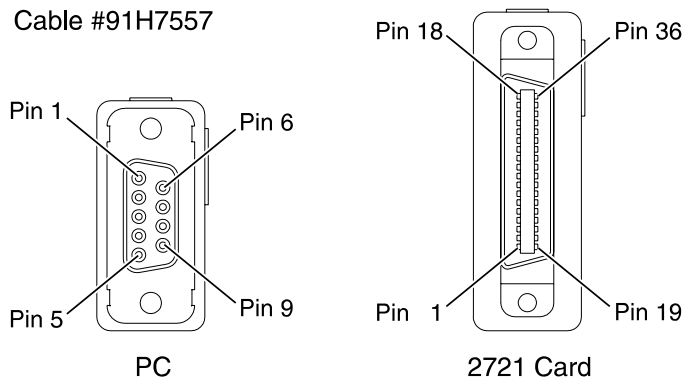
Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

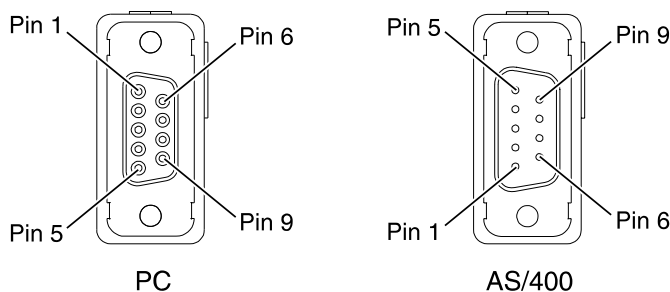
Procedure: Use the following tables and diagrams to check the pins on the Operations Console cable or the Remote Control Panel cable. Replace the defective cables. The part numbers are:

- Operations Console cable — 97H7557
- Remote Control Panel cable — 97H7591

Cable #91H7557



Cable #91H7591



RV4B515-0

Table 10. 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	13	RD - TD
Red	2	3	6	TD - RD
White	3	6	4	DSR - DTR
Green	4	8	2	CTS - RTS
Orange	5	7	33	RTS - CTS
Blue	6	1, 4	15	DTR/CD - DSR
Drain Wires		5	7, 10, 27	Signal Ground
Jacket, Foil, Braid				Frame Ground

Table 11. 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

ROC PIPs

Table 11. Pin out for the Remote Control Panel cable (continued)

Body Color	Lead Number	"From" end Data Set Connection	"To" end I/O Connection	Signal Name
		Position Number	Position Number	
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...
- Remote Control Panel connection to xxxx xx 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: If the system has logical partitions, then refer to "Information About Logical Partitions" on page 432.

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 97H7591, 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 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 298 to determine if the cable is defective. If the cable is not defective, call your next level of support.

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.

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.

SDIOP PIPs

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" on page 425) 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" on page 425
- "Initial Program Load (IPL) Information" in the *AS/400 Service Functions* information.
- "Determining the Load-Source Disk and Alternate IPL Device" on page 423.

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 432, 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 41). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 177 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

↓ 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 266 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 41 and “Chapter 6. Removal and Installation Procedures” on page 443). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 177 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 266 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 535).

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 41).

This ends the procedure.

12. Perform the following:

- a. Power off the system.
- b. 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 41 and “Chapter 6. Removal and Installation Procedures” on page 443). 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 266 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 443 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 535).

Is the SRC the same one that sent you to this procedure?

No **Yes**

↓ 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 41).

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 443 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.

SDIOP PIPs

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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 266 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 41). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 177 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 535).

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” on page 425).
 - b. Disconnect one of the devices that are identified by FI code FI01107 (see “Failing Item (FI) Code Table” on page 177).
 - 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 473.

This ends the procedure.

9. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 535).

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)

SDIOP PIPs

- 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 473.
 - 2) The parts listed in FI00096 (see “Failing Item (FI) Code Table” on page 177).
 - 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 432, 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 266 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 41). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 177 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 535). Then go to “Chapter 2. Unit Reference Codes” on page 41 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” on page 425).
- 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 443). 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**

SDIOP PIPs

↓ 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 266 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 535). Then go to “Chapter 2. Unit Reference Codes” on page 41 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 312 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.

Note: If the system has logical partitions, then refer to “Information About Logical Partitions” on page 432.

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.

SDIOP PIPs

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 266 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 41). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 177 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 41 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" on page 425).
 - b. Go to "Failing Item (FI) Code Table" on page 177 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 473 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 443).

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 41)

SDIOP PIPs

on page 41). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 177 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 41 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 443).

Note: Before exchanging a disk drive, you should attempt to save customer data. Go to “Start Disk Service Here” on page 473 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 41). 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 177 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 432, 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.

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 266 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 41). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 177 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 535).

Is the SRC the same one that sent you to this procedure?

SDIOP PIPs

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 “Locations and Addresses” on page 384).

- 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 “Locations and Addresses” on page 384.

- 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 311.

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 404). 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:

- a. Exchange the device.
- b. 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:

- a. Remove the device.
- b. 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 432, 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.

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 266 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 41). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 177 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 535).

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 311.

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:

a. Exchange the device.

b. 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:

a. Remove the device.

b. 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.**

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 432, 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, 2763) Reference Codes” on page 63 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.

SDIOP PIPs

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 41)

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 “Locations and Addresses” on page 384 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” on page 425).
- b. Install the correct cache adapter card that you found (see “Chapter 6. Removal and Installation Procedures” on page 443).
- c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 428)
- 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.

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 409).

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 432, before continuing with this procedure.

SDIOP PIPs

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 41)

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.
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 443).

- b. Power on the system (see “Powering Off and Powering On the System” on page 425).

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.

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:

SDIOP PIPs

- 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 432, 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 "Locations and Addresses" on page 384 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 473).

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 432, 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*.

SDIOP PIPs

- 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 432, 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 41)

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” on page 425).

- 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 443).
- c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 428).
- 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* 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 “Locations and Addresses” on page 384 and find the diagram of the system unit, or the expansion unit. Then find the following:

SDIOP PIPs

- 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 409).
- 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:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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 41).
- This ends the procedure.**
2. Has the I/O card, or have the devices been repaired or reconfigured recently?
- Yes No**

SDIOP PIPs

- ↓ 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 “Locations and Addresses” on page 384 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 410.

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 473).

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 473).

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.

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 432, 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.

SDIOP PIPs

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 41).

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 “Locations and Addresses” on page 384 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 473).

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.
- 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 432, 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.

SDIOP PIPs

- 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 "Locations and Addresses" on page 384 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 409).
 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 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 432, before continuing with this procedure.

SDIOP PIPs

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” on page 425).
 - 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 443).

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 432, 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 “Locations and Addresses” on page 384 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” on page 425).
 - b. Install the correct cache adapter card you found in step 2 (see “Chapter 6. Removal and Installation Procedures” on page 443).
 - c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 428).
 - 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 409).

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 432, 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 326.

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” on page 425).
- 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, 2763” on page 452).
- 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 409).

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” on page 425).
- 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. (See “Cache Directory Card, For Type 2740, 2748, 2763” on page 452.)

- c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 428).
 - 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 432, 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 of this procedure.

2. Reclaim the cache storage (see “Reclaim IOP Cache Storage” on page 409).

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

↓ 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” on page 425).
- 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, 2763” on page 452).
- c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 428).
- 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

SDIOP PIPs

- ↓ Go to step 9 of this procedure.
- 7. Perform the following:
 - a. Power off the system (see “Powering Off and Powering On the System” on page 425).
 - 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 428).
 - 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 409).
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 432, 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 on page 341 of this procedure.
- 2. You have just exchanged a storage I/O adapter.
Reclaim the cache storage (see “Reclaim IOP Cache Storage” on page 409).
- 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” on page 425).

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 428).

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 12 to find FRU locations. If only a type number is listed, go to the “Type, Model, and Part Number List” on page 193 to determine the part number. If the failing item is an FI code, see “Failing Item (FI) Code Table” on page 177.

Note: See “Locations and Addresses” on page 384 to help find FRUs that are not in this table.

Table 12. 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 404. Use the address to find the location. See “Locations and Addresses” on page 384.
Terminating plug	See the symbolic FRU “DEVTERM” in “Symbolic FRUs” on page 201 for more information. Also see “Locations and Addresses” on page 384.

Service Processor Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure that is 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

Service Processor PIPs

- Information needed to perform a removable media or a disk IPL from the control panel

Note: Select the Manual mode on the control panel before performing these procedures.

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” on page 425) 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)

Attention: When removing or installing the service processor card, failure to follow the Cards-PCI procedure in “Chapter 6. Removal and Installation Procedures” on page 443 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” on page 425
- “Cards-PCI” on page 454
- “Hardware Service Manager” in the *AS/400 Service Functions* information

SP-PIP40

Introduction: 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 432, 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 226.
 - This ends the procedure.**
- 4. Perform the following:
 - a. Exchange the MFIOP card (see "Chapter 6. Removal and Installation Procedures" on page 443).
 - 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.

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 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 443).
 - 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 that all the connection of all control panel cables.

Does this correct the problem?

 - No Yes**
 - ↓ **This ends the procedure.**

Service Processor PIPs

10. Exchange the control panel (see "Chapter 6. Removal and Installation Procedures" on page 443).
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).

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" on page 425) 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)

SPCN-PIP5

Introduction: This procedure prepares a system with the Continuously Powered Main Storage (CPM) feature for hardware maintenance procedures. The CPM feature requires that the IBM 9910 Model 080 and 140 (or equivalent) UPS be installed. If this UPS is not installed return to the procedure that sent you here.

Read the "Important Continuously Powered Main Storage (CPM) Information" on page 421 before continuing with this procedure.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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. 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

↓ Perform the following:

- a. 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

↓ 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” on page 425).
- 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 the 26 pin communications cable (90H9136) that runs between UPS and the AS/400.

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.

Scroll function 06 and select D to disable the CPM feature. Scroll function 06 again and ensure that it was 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 UPS from the system unit disables the CPM feature. Tell the customer that the next IPL will take longer than usual.
Disconnect the 26 pin communications cable (90H9136) that runs between the UPS and the AS/400.

You may continue with any hardware maintenance procedures. Return to the procedure that sent you here.

This ends the procedure.

SPCN-PIP20

Introduction: This procedure verifies that the lights and display on the System Unit are operating correctly.

Read the "Overview" on page 344 before continuing with this procedure.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 432, 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. Perform the following:
 - a. Select function 04 (Lamp Test) on the control panel (see "Selecting IPL Type, Mode, and Speed" on page 428).
 - b. Press the Enter key.
2. Look at the display panels on the System Unit.
Are all of the following lights on?
 - Power-on light
 - Attention light
 - A five-by-seven dot pattern for the 8-character display

No Yes

↓ These control panel lights are working correctly.

This ends the procedure.

3. Exchange the following FRU in the failing unit (see "Chapter 6. Removal and Installation Procedures" on page 443):

- a. Control panel electronics card (SPNLCRD).
- b. Control Panel Cable (SIG1)

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 432, 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 ↑ 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

↓ The control panel lights are working correctly.

This ends the procedure.

3. Exchange the following FRU in the failing unit
 - Remote Control Panel cable – 97H7591
 - Operations Console Configuration cable — 97H7557

This ends the procedure.

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.

Tape Unit PIPs

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" on page 425) 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" on page 425
- "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 432, 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 347 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 353.

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 353.

Note: If the tape unit is an 8-mm tape drive, perform the following:

- a. Go to "Manually Removing the Tape Cartridge" on page 412.
- b. Go to "TU-PIP3" on page 353.

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 363.

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.

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 13 on page 350).

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 432, before continuing with this procedure.

Tape Unit PIPs

Table 13. 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 13).

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 353.

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 353.

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 353.

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 432, 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 353.

Read the "Overview" on page 347 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 412. After removing the data cartridge, exchange the tape drive (see Removable Media in “Chapter 6. Removal and Installation Procedures” on page 443).
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 353.
This ends the procedure.
4. Is the Disturbance light blinking?
- No Yes**
- ↓
- 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 353.
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.

Tape Unit PIPs

- 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 412. After removing the diagnostic cartridge, exchange the tape drive (see Removable Media in “Chapter 6. Removal and Installation Procedures” on page 443).

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 353.

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” on page 353.

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:

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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 347 before continuing with this procedure.

Tape Unit PIPs

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 443.
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 443). 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 428).
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” on page 425).
 - 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 535).

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 41).

This ends the procedure.

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 432, 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.

Tape Unit PIPs

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.
- 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

Tape Unit PIPs

- ↓ 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 350 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" on page 425).
- 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.

17. Verify that automatic configuration is On by entering

DSPSYSVAL 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.

Tape Unit PIPs

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" on page 425).
- 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.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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 347 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?

Tape Unit PIPs

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 41 to correct the problem.

This ends the procedure.

12. Contact your next level of support.

TU-PIP5

Introduction

This procedure verifies that the tape unit is operating correctly.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

If you are instructed to exchange a part, see the “Chapter 6. Removal and Installation Procedures” on page 443 for checking, removal and installation procedures, and part number information.

Read the “Overview” on page 347 before continuing with this procedure.

1. Perform the following to run the hardware verification serviceability tests:
 - a. Go to the Use Dedicated Service Tools (DST) display (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* information).
 - 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.
 - f. On the Logical Hardware Resources on System Bus display, find the IOP that this tape unit is connected to and type a 9 in the *Opt* field. This retrieves resources associated with this IOP.
 - g. On the Logical Hardware Resources Associated with IOP display, find the tape unit you want to test and type a 7 in the *Opt* field.
 - h. Follow the instructions that appear on the display and press Enter to run the test.

Does the test complete successfully?

No Yes

- ↓ **This ends the procedure.**

2. Perform the following:
 - a. Record any messages that appear at the bottom of the display.
 - b. Return to the Use Dedicated Service Tools (DST) display.
 - c. Select the *Start a Service Tool* option.

Tape Unit PIPs

- d. Select the *Product Activity Log* option.
- e. Search the product activity log for a new entry that was entered while the test was running.

Note: Use the time period that the test ran and take all other default parameters.

Did you find a new entry?

No **Yes**

↓ Perform the following:

- a. Record the error information (SRC) from the product activity log entry.
- b. Go to “Chapter 2. Unit Reference Codes” on page 41 and start at step 4 to correct the problem.

This ends the procedure.

3. Return to the Use Dedicated Service Tools (DST) display.
4. Was the message you recorded in step 2 of this procedure “The tape is write-protected”?

Yes **No**

↓ Go to step 8 of this procedure.

5. Is the tape write-protected?

Yes **No**

↓ Go to step 7 of this procedure.

6. This is the expected result.

Make the tape write-enabled and go to step 1b of this procedure.

7. The tape unit is failing.

Exchange the tape unit (see “Chapter 6. Removal and Installation Procedures” on page 443).

This ends the procedure.

8. Was the message you recorded in step 2 of this procedure “The device is not ready, make the device ready and run the test again”?

Yes **No**

↓ Go to step 11 of this procedure.

9. The reason for this failure could be one of the following:

- The data cartridge was removed before the test completed.
- No data cartridge was inserted into the tape unit.

Was one of these conditions present?

Yes **No**

↓ Go to step 17 of this procedure.

10. This is the expected result.

Insert the data cartridge and go to step 1b of this procedure.

11. Was the message you recorded in step 2 of this procedure “The media type is incompatible” or “The tape format is incompatible”?

Yes **No**

↓ Go to step 14 of this procedure.

12. Is the tape not compatible with the tape unit (see the system operations information)?

Yes No

↓ Go to step 16 of this procedure.

13. This is the expected result.

Insert a compatible data cartridge and go to step 1b of this procedure.

14. Was the message you recorded in step 2 of this procedure "The test timed out"?

Yes No

↓ Go to step 17 of this procedure.

15. Exchange the following parts, one at a time (see "Chapter 6. Removal and Installation Procedures" on page 443):

- a. IOP for the tape unit
- b. Tape unit
- c. SCSI cable

This ends the procedure.

16. Insert a data cartridge that is formatted correctly for this system and go to step 1b of this procedure.

If "The tape format is incompatible" message continues to occur, exchange the tape unit (see "Chapter 6. Removal and Installation Procedures" on page 443).

This ends the procedure.

17. Perform the following:

- a. Power off the system.
- b. Power on the system.

Does an SRC appear on the control panel or in a system message?

Yes No

↓ Go to step 19 of this procedure.

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

This ends the procedure.

19. Is the problem still present?

Yes No

↓ **This ends the procedure.**

20. Exchange the tape unit (see "Chapter 6. Removal and Installation Procedures" on page 443).

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 432, before continuing with this procedure.

All the conditions that are listed for the device must be correct for the device to be ready.

Tape Unit PIPs

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 14. 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.
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 350.

Table 14. Tape Device Ready Conditions (continued)

Storage Device	Ready Description	Action
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” on page 425) 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)

Twinaxial Workstation PIPs

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” on page 425
- “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information

TWSC-PIP1

Introduction: 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 296 before using this procedure.

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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 by using a console cable feature is known as a workstation adapter console. The cable (part number 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 380.

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 428).
- 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:

- a. Power off the system.
- b. Reconnect one device.

Note: Ensure that you terminate the device you just reconnected and remove the termination from the device previously terminated.

- c. Power on the system.

Twinaxial Workstation PIPs

- d. If a reference code appears on the control panel, go to step 8 of this procedure.
- e. If no reference code appears, repeat steps a through d of this step until you have checked all devices disconnected previously.
- f. 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:
 - a. Ensure that Manual mode on the control panel is selected (see “Selecting IPL Type, Mode, and Speed” on page 428).
 - 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 console displays?

No Yes

↓ If you disconnected any devices after the console in step 3 of this procedure, perform the following:

- a. Power off the system.
- b. Reconnect one device.

Note: Ensure that you terminate the device you just reconnected and remove the termination from the previously terminated device.

- c. Power on the system.
- d. If a reference code appears on the control panel, go to step 8 of this procedure.
- e. 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.
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 there are 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 “BACKPLx” on page 203.)

This ends the procedure.

14. The console, cables, or the workstation IOP card is 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:

Twinaxial Workstation PIPs

- a. Console
- b. Workstation IOA
- c. BACKPL2 (see "BACKPLx" on page 203)
- 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**

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

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:
- 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.

Twinaxial Workstation PIPs

- 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 "BACKPLx" on page 203)
 - 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. Then 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 that is 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
 - 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 “BACKPLx” on page 203)
 - 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 did not correct the problem and the reference code was a 5002, 5082, or 50FF, there may be a Licensed Internal Code problem. Go to “LIC-PIP3” on page 260.
 - The problem may be caused by devices that are 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” on page 425) 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)

Workstation Adapter PIPs

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” on page 425
- “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 432, 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 375 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)?

No Yes

↓ Go to “WSAC-PIP1” on page 380.

This ends the procedure.

2. Perform the following:

Workstation Adapter PIPs

- 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?

Workstation Adapter PIPs

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 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” on page 425) 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” on page 425

Workstation Adapter Console PIPs

- “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 443.
- “Locations and Addresses” on page 384

WSAC-PIP1

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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 379 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.
- b. Ensure that Manual mode on the control panel is selected (see “Selecting IPL Type, Mode, and Speed” on page 428).
- 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.

Workstation Adapter Console PIPs

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.

6. This is a new problem. Use the new reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 41) 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

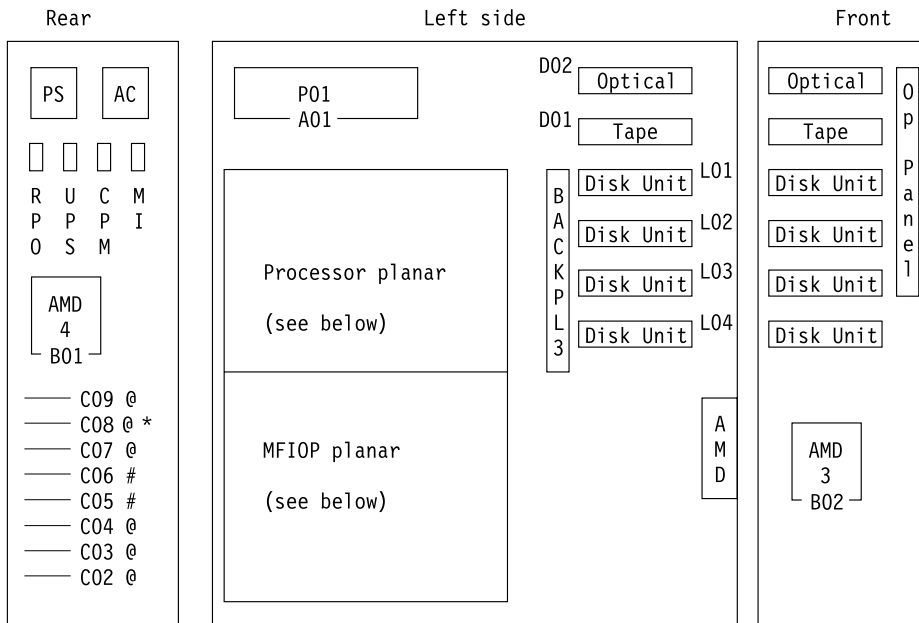
Locations and Addresses	384	What You Should Know about Load-Source Disks on Systems with Mirrored Protection . . .	423
Base System Unit	384	Finding the Load-Source Disks on Systems with Mirrored Protection	423
Expansion Unit.	387	Alternate IPL Device	424
Power and Signal Cables	388	Search Sequence for the Alternate IPL Device	424
Power Cables	388	Internal Devices	424
Signal Cables	392	External Devices	425
Backplane IOP/IOA Connection Diagrams . . .	396	Powering Off and Powering On the System . . .	425
Base System Unit	396	Powering Off the System	425
Expansion Unit.	398	Control Panel Power Button	425
Processor and Main Storage	399	Powering Off a System With Logical Partitions.	426
Processor	399	Powering Off a Logical Partition System Using the Control Panel or Primary Partition.	427
I/O Adapters	400	Powering Off a Secondary Partition	427
High and Low Speed PCI IOAs	400	Powering On the System	428
2750/2751 and 2761 Adapter Card Port Connector Locations	400	Powering On a Secondary Partition	428
Integrated Netfinity Server for AS/400 (2850)	401	Selecting IPL Type, Mode, and Speed	428
Integrated Netfinity Server for AS/400 (2850) Switch Settings	401	Verifying the Repair	430
Tape and Optical Unit Address Jumpers . . .	401	Verify Dedicated Repair.	430
Optical Unit.	402	Verify Concurrent Repair.	431
Tape Units	402	Determining if the System Has Logical Partitions	432
External Devices	403	Information About Logical Partitions	432
Type 2718 IOA, 2729 IOA, and 6534 IOP Addressing	403	Procedures for systems with multiple partitions	433
SRC Address Formats	404	Determining the Release Level of a Logical Partition	434
Hardware SRC Formats	408	Locating a Secondary Partition's Console . . .	434
Reclaim IOP Cache Storage.	409	Locating a Secondary Partition's Load Source	435
Storage I/O Card Modes and Jumpers	410	Locating a Secondary Partition's Load Source From the Secondary Partition's Console . . .	435
Determining and Setting the Mode of an I/O Card	410	Locating a Secondary Partition's Load Source From the Primary Partition's Console	436
Switching the Mode of an I/O Card	411	Query of Logical Partition Time and Date . . .	436
Mode Jumper has been Overridden	412	Conversion of Secondary Partition Time and Date to Primary Partition Time	437
Mode Jumper is Missing	412	Finding the SRC History List for a Secondary Partition	437
Manually Removing the Tape Cartridge . . .	412	Closing Related Problems in Other Logical Partitions.	437
1/4 inch Tape Cartridge (Type 6335). . . .	412	Accessing a Logical Partition's Panel Functions	438
6383, 6385, 6386 Tape Cartridge	414	Determining Which Logical Partition Owns a FRU or a System I/O Resource	438
Locked Position	415	Selecting IPL Type and Mode for a Secondary Partition	439
Standby Position	415	Missing or Non-reporting System Bus Resources	439
8-mm Tape Cartridge (6390)	416		
Important Continuously Powered Main Storage (CPM) Information	421		
Setting the System Date and Time	421		
Hexadecimal Product Activity Log Data	422		
Determining the Primary and Alternate Console	422		
Determining the Load-Source Disk and Alternate IPL Device	423		
Introduction.	423		
Finding the Load-Source Disk on Systems without Mirrored Protection	423		

Locations and Addresses

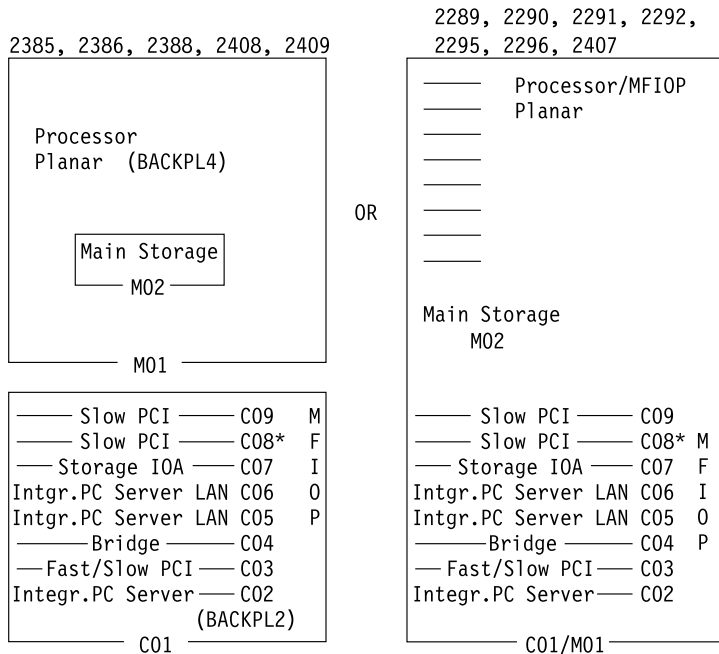
Base System Unit

Figure 7 is the physical block diagrams of the base system unit and processor.

Base system unit with processor FC 2289, 2290, 2291, 2292, 2295, 2296, 2385, 2386, 2388, 2407, 2408 and 2409.



-----PROCESSOR TYPES-----



AMD3 is not used on systems with processor types 2289, 2290, 2291, 2292, 2407, 2295, and 2296

RZAGM503-4

Figure 7. PCI Card Addresses — System Unit

Locations and Addresses

IOP, IOA, and Integrated Netfinity Server for AS/400 Card Positions

* = ECS

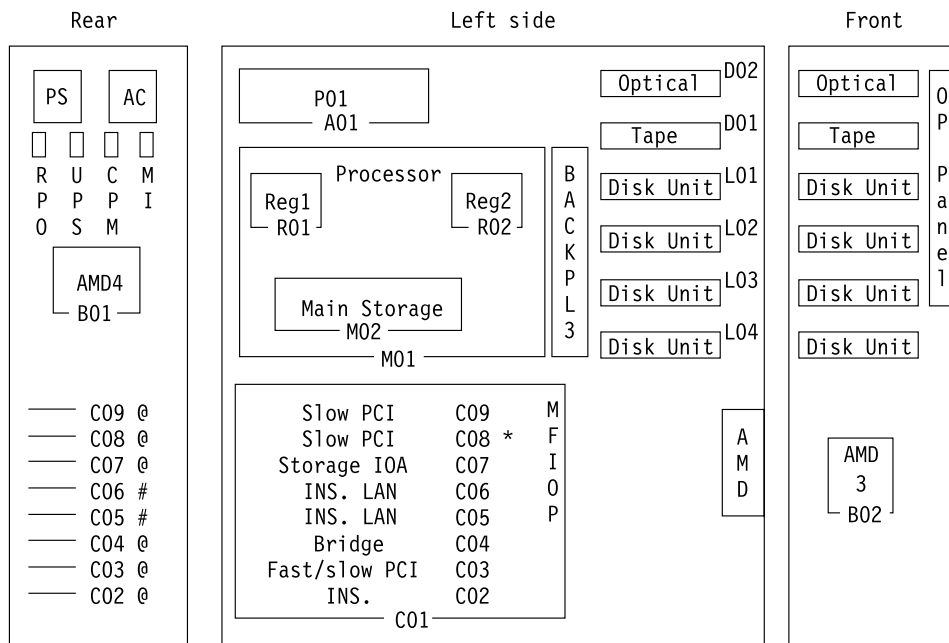
= Integrated Netfinity Server for AS/400 (C02/C04) controls slots C05, C06

@ = MFIOP(C01) controls slots C02, C03, C04, C07, C08, C09

AMD = Air Moving Device

The V4R2 version of the server 170 and server 250 has a 350 Watt power supply. See Figure 8 for card addresses for this system. See Figure 12 on page 391 for the power cables for this system.

System unit with processor FC 2159, 2160, 2164, 2176, and 2183.



* = ECS

= INS. (C02/C04) controls slots C05, C06

@ = MFIOP(C01) controls slots C02, C03, C04, C07, C08, C09

AMD = Air Moving Device

RZAGM500-4

Figure 8. 350 Watt System — PCI Card Addresses

IOP, IOA, and Integrated Netfinity Server for AS/400 Card Positions

* = ECS

= Integrated Netfinity Server for AS/400 (C02/C04) controls slots C05, C06

@ = MFIOP(C01) controls slots C02, C03, C04, C07, C08, C09

Locations and Addresses

AMD = Air Moving Device

Table 15. PCI Card Addresses — System Unit

Slot	DSA (BBBBcbb)	Unit Address	Description
	0001-01-00	FFFF FFFF	MFIOP
C09	0001-01-00	E2FF FFFF	WAN/LAN Twinaxial (except 2720)
		EAFF FFFF	2720 Twinaxial
C08	0001-01-00	E1FF FFFF	WAN
		E1FF FFFF	Operations Console (needs Operations Console cable)
		E9FF FFFF	2720 Twinaxial
		E9FF FFFF	Client Access Console (needs Client Access cable)
		E900 00FF	Client Access Console workstation
C07	0001-01-00	0FFF FFFF	Storage IOA (Internal Devices); if slot C07 is empty, the IOA is part of the MFIOP.
C06	0001-01-00	E401 FFFF	Integrated Netfinity Server LAN
C05	0001-01-00	E400 FFFF	Integrated Netfinity Server LAN
		E400 FFFF	Integrated Netfinity Server 10/100 Ethernet
C04	0001-01-00	E5FF FFFF	Integrated Netfinity Server Bridge
C03	0001-01-00	ECFF FFFF	WAN/LAN/ATM
		ECFF FFFF	10/100 Ethernet
C02	0001-01-00	E4FF FFFF	Integrated Netfinity Server
DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved			

Table 16. System Unit Locations

Location	DSA (BBBBcbb)	Unit Address
D02 Optical	0001-01-00	0006 00FF
D01 Tape	0001-01-00	0007 00FF
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
DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved		
Device unit address: IOA(x), SCSI bus(x), controller(xx), device(xx), (FF)		
1st alternate IPL: IOA slot C07, device location D01 or D02		
2nd alternate IPL: IOA slot E09, device location external		

Expansion Unit

Figure 9 is a physical block diagram of the expansion unit.

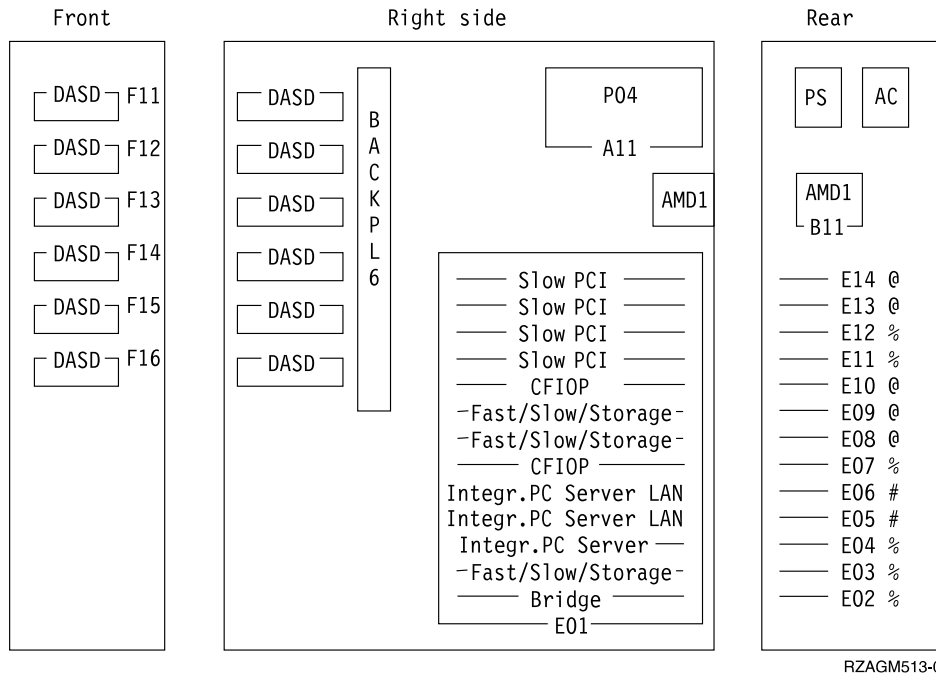


Figure 9. PCI Card Addresses for the Expansion Unit

IOP, IOA, and Integrated Netfinity Server for AS/400 Card Positions

@ = CFIOP (E10) controls slots E08, E09, E13, E14

% = CFIOP (E07) controls slots E02, E03, E04, E11, E12

= Integrated Netfinity Server (E02/E04) controls slots E05, E06

AMD = Air Moving Device

Table 17. Expansion Unit Locations

Location	DSA (BBBBcbb)	Unit Address
F11 Disk Unit	0001-01-00	0101 00FF
F12 Disk Unit	0001-01-00	0102 00FF
F13 Disk Unit	0001-01-00	0103 00FF
F14 Disk Unit	0001-01-00	0104 00FF
F15 Disk Unit	0001-01-00	0105 00FF
F16 Disk Unit	0001-01-00	0106 00FF
External Removable Media	0001-02-00	0007 00FF
DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved Device unit address: IOA(x), SCSI bus(x), controller(xx), device(xx), (FF) 1st alternate IPL: IOA slot C07, device location D01 or D02 2nd alternate IPL: IOA slot E09, device location external		

Locations and Addresses

Table 18. PCI Card Addresses — Expansion Unit

Slot	DSA (BBBBCcbb)	Unit Address	Description
E14	0001-02-00	E2FF FFFF	WAN/LAN/Twinax (except 2720)
E13	0001-02-00	E1FF FFFF	WAN/LAN/Twinax (except 2720)
E12	0001-03-00	E2FF FFFF	WAN/LAN/Twinax (except 2720)
E11	0001-03-00	E1FF FFFF	WAN/LAN/Twinax (except 2720)
E10	0001-02-00	FFFF FFFF	CFIOP
E09	0001-02-00	0FFF FFFF	Storage IOA (External Devices)
	0001-02-00		10/100 Ethernet/WAN/Twinax
E08	0001-02-00	ECFF FFFF	WAN/LAN/ATM/Twinax
		ECFF FFFF	10/100 Ethernet
E07	0001-03-00	FFFF FFFF	CFIOP
E06	0001-03-00	E401 FFFF	Integrated Netfinity Server LAN
E05	0001-03-00	E400 FFFF	Integrated Netfinity Server LAN
		E400 FFFF	Integrated Netfinity Server 10/100 Ethernet
E04	0001-03-00	E4FF FFFF	Integrated Netfinity Server
E03	0001-03-00	E7FF FFFF	WAN/LAN/ATM/Twinax
		E7FF FFFF	10/100 Ethernet
		0FFF FFFF	Storage IOA (External Devices)
E02	0001-03-00	E5FF FFFF	Integrated Netfinity Server Bridge

DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved

Power and Signal Cables

Power Cables

The following shows the power cabling for systems with processor FC 2385, 2386, 2388, 2408, and 2409.

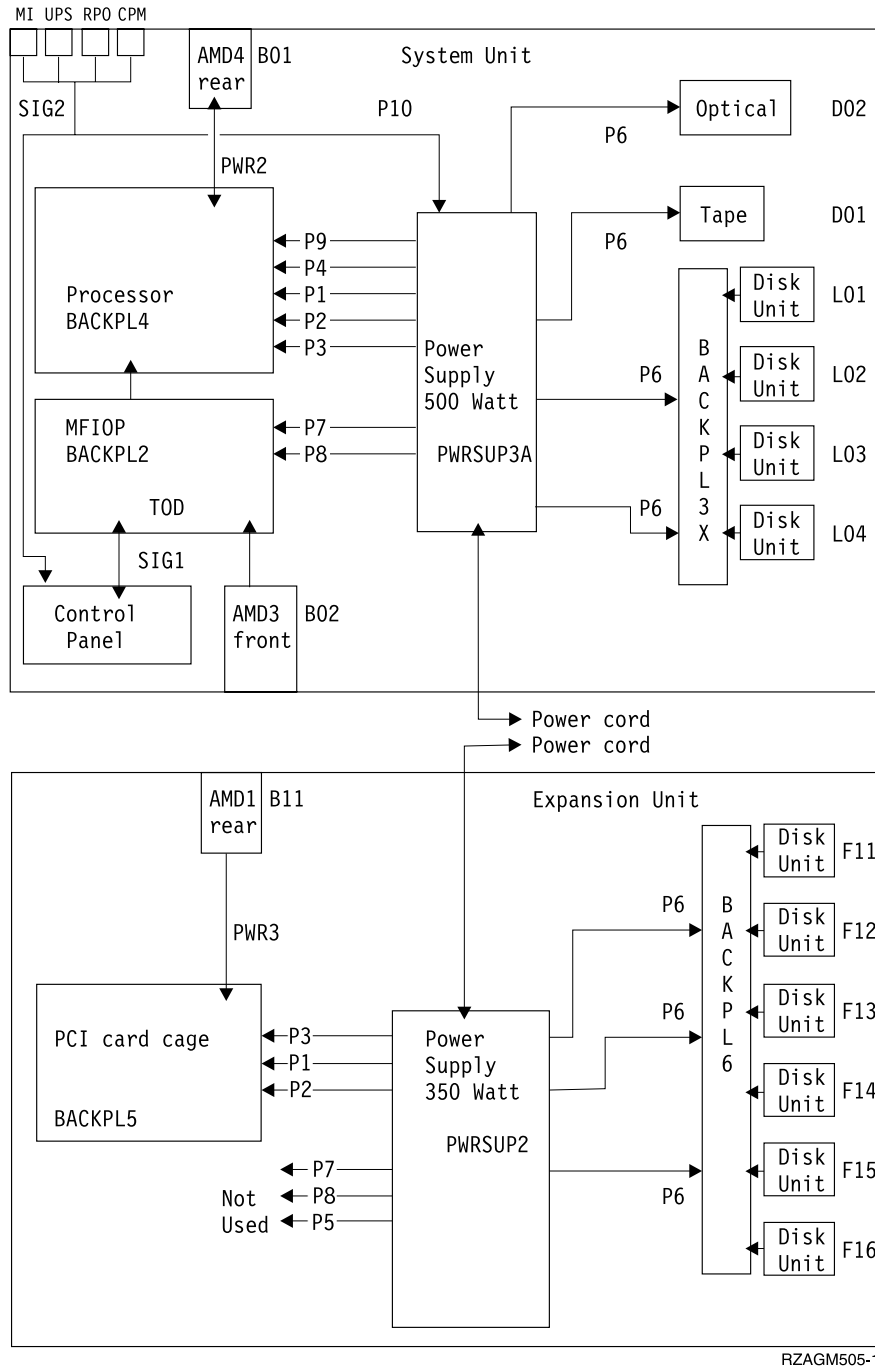


Figure 10. System unit and expansion unit power cables

The following shows the power cabling for systems with processor FC 2289, 2290, 2291, 2292, 2295, 2296, and 2407.

Locations and Addresses

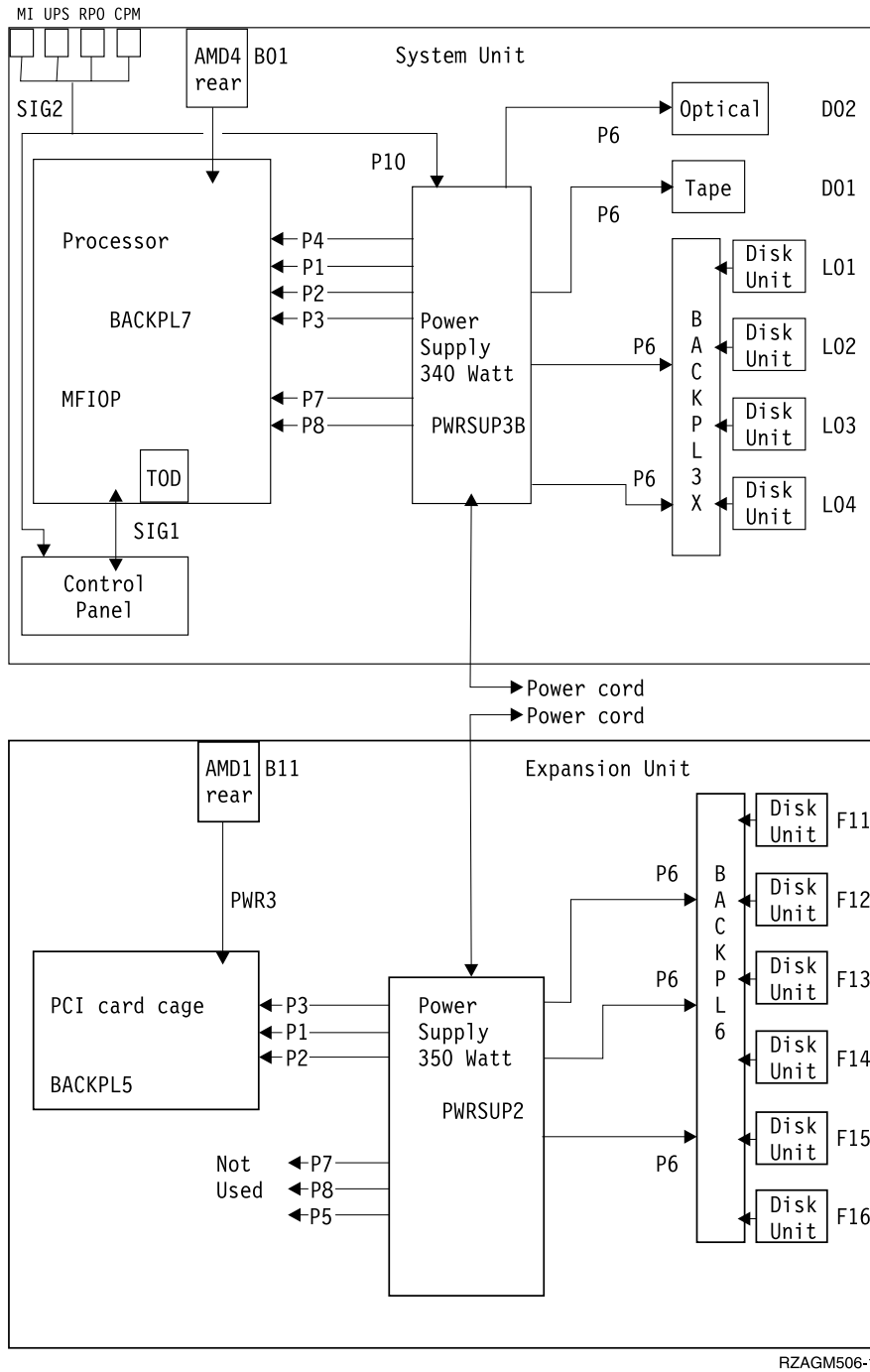
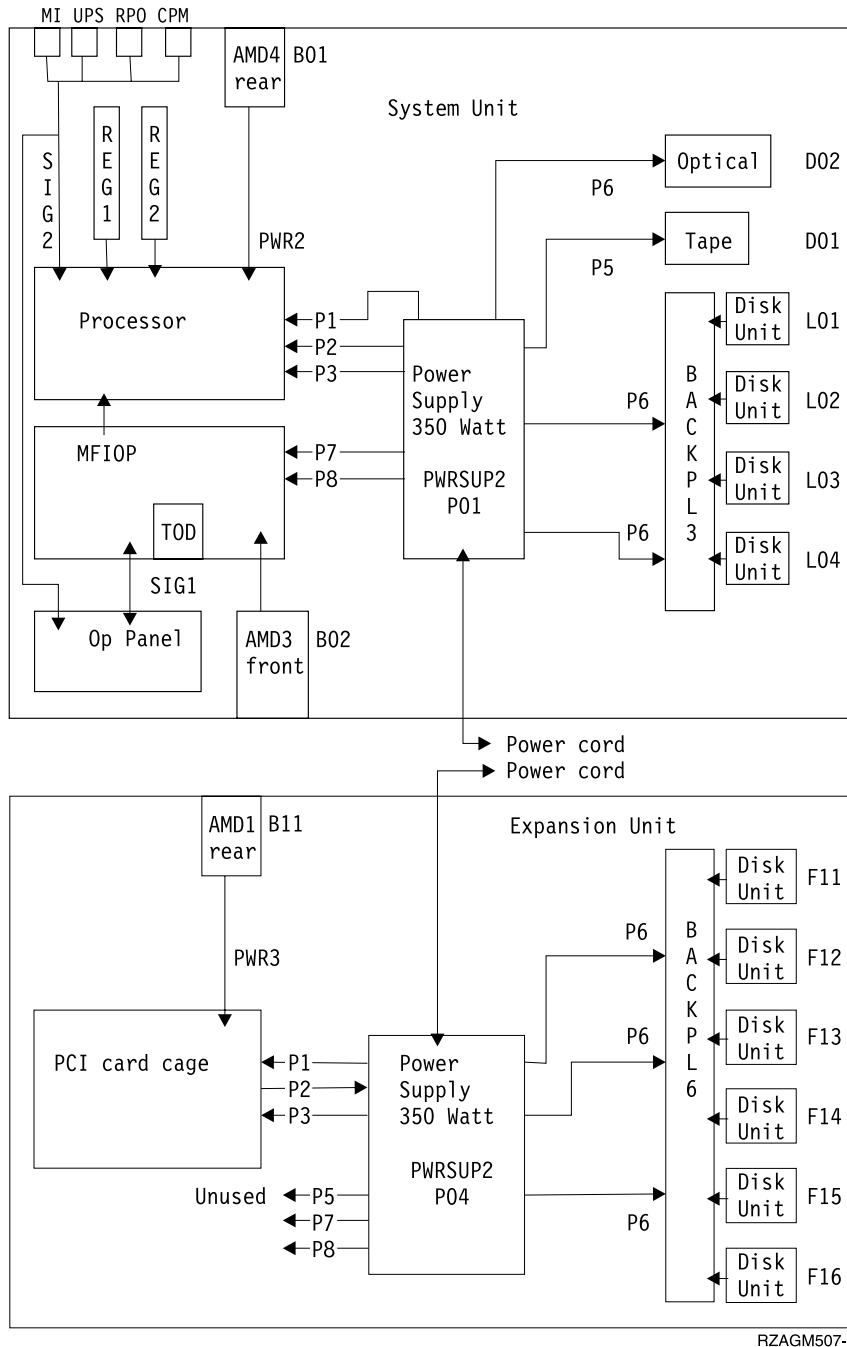


Figure 11. System unit and expansion unit power cables

The following shows the power cabling for systems with processor FC 2159, 2160, 2164, 2176, and 2183.



RZAGM507-1

Figure 12. 350 Watt System — Power cables

Notes:

1. AMD = Air Moving Device
2. Arrows indicate pluggable connections.
3. Cables are labeled with Px.
4. Control panel board contains panel processor.
5. BACKPL3B [with Concurrent Repair]: 12V is split. 5V is common across the board.
6. BACKPL3A [without Concurrent Repair]: 12V is split. 5V is split.

Locations and Addresses

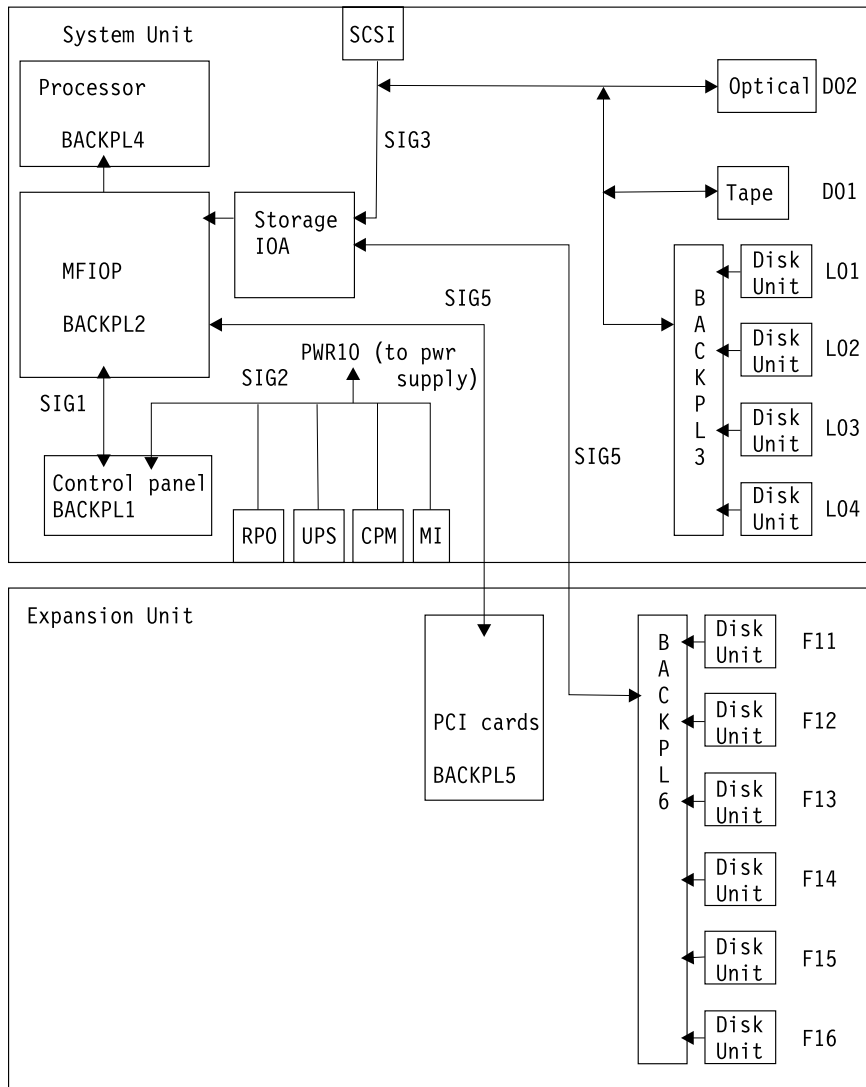
7. BACKPL6 [with Concurrent Repair]: 12V is split. 5V is common across the board.

Table 19. Power Cables Diagram Key

ID	Description
SIG1	MFIOP to Control panel (power and signal)
SIG2	Control panel to MI, UPS, RPO, CPM (48volts)
PWR3	Rear Air Moving Device power cable (expansion unit)
AMD4	Rear Air Moving Device (B01)
AMD3	Front Air Moving Device (B02)
AMD1	Rear Air Moving Device (B11)
TOD	Time Of Day battery (only 1)
PWRSUP3A	Power supply 500 watt
PWRSUP3B	Power supply 340 watt
PWRSUP2	Power supply 350 watt

Signal Cables

The following shows the signal cabling for systems with processor FC 2385, 2386, 2388, 2408, and 2409.



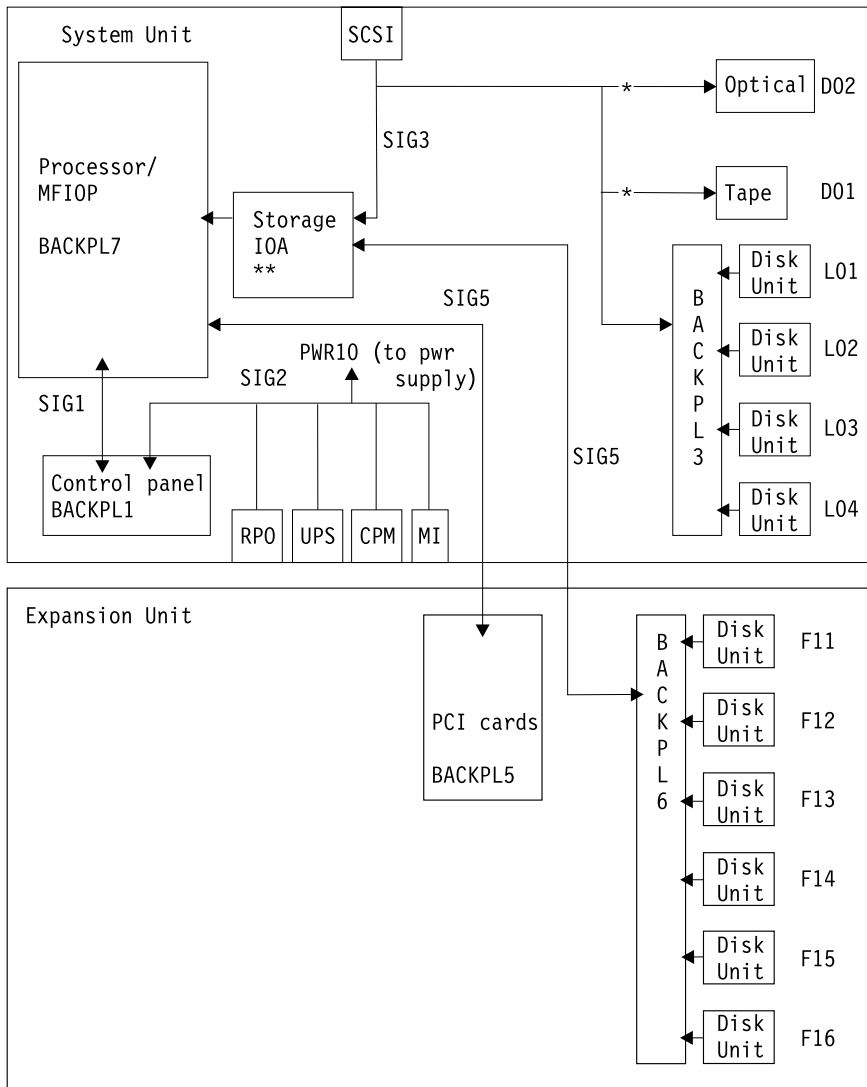
* = SIGCHG1 (68 pin to 50 pin converter for 1 byte [50 pin] tape/Optical drives)
 Arrows indicate pluggable connections

FZAGM508-1

Figure 13. System unit and expansion unit signal cables

The following shows the signal cabling for systems with processor FC 2289, 2290, 2291, 2292, 2295, 2296, and 2407.

Locations and Addresses



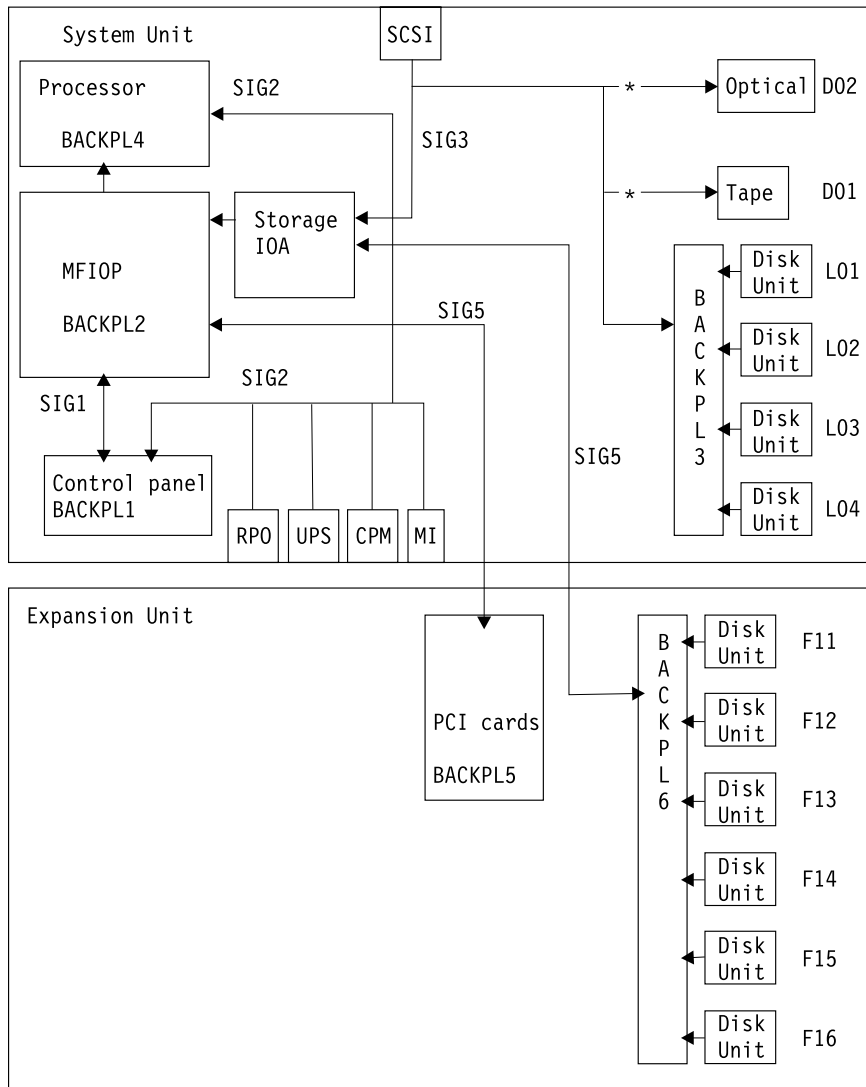
- * = SIGCHG1 (68 pin to 50 pin converter for 1 byte [50 pin] tape/Optical drives)
- ** = For MFIOP 675A (with 2289 and 229x Processor), the basic Storage IOA function is part of the MFIOP and SIG3 connects to the backplane (BACKPL7). When SCSI IOA 2740, 2741, or 2748 is installed, SIG3 connects to the IOA.

Arrows indicate pluggable connections

RZAGM509-1

Figure 14. System unit and expansion unit signal cables

The following shows the signal cabling for systems with processor FC 2159, 2160, 2164, 2176, and 2183.



* = SIGCHG1 (68 pin to 50 pin converter for 1 byte [50 pin] tape/optical drives)
 Arrows indicate pluggable connections

FZAGM510-1

Figure 15. System unit and expansion unit signal cables

Table 20. Signal Cables Diagram Key

ID	Description
SIG1	MFIOP to Control panel (power and signal)
SIG2	Control panel to MI, UPS, RPO, CPM
SIG3	MFIOP to DASD, Optical, Tape, external connector
SIG5	MFIOP to expansion unit card cage (SPD bus)
SIG6	MFIOP to expansion unit DASD (SCSI bus)
SIGCHG1	68 pin to 50 pin signal converter
BACKPL1 (SPNLCRD)	Control panel backplane
BACKPL2	MFIOP backplane

Locations and Addresses

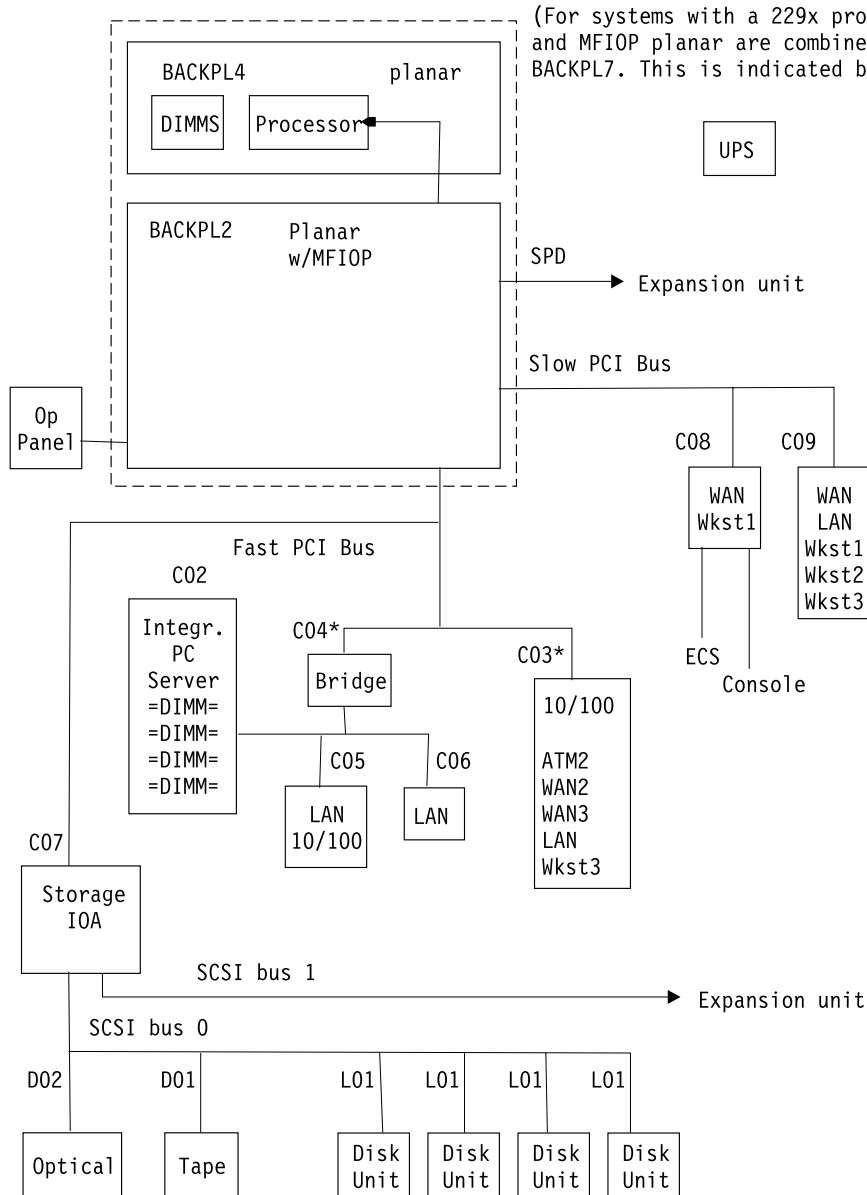
Table 20. Signal Cables Diagram Key (continued)

ID	Description
BACKPL3A	Disk unit backplane without concurrent repair
BACKPL3B	Disk Unit backplane with concurrent repair
BACKPL4	Processor backplane
BACKPL5	Expansion Unit PCI backplane
BACKPL6	Expansion Unit DASD backplane (concurrent repair)
BACKPL7	Backplane: Combined 675A MFIOP and 229x Processor

Backplane IOP/IOA Connection Diagrams

Base System Unit

Figure 16 on page 397 is a logical block diagram of the base system unit.



RZAGM511-1

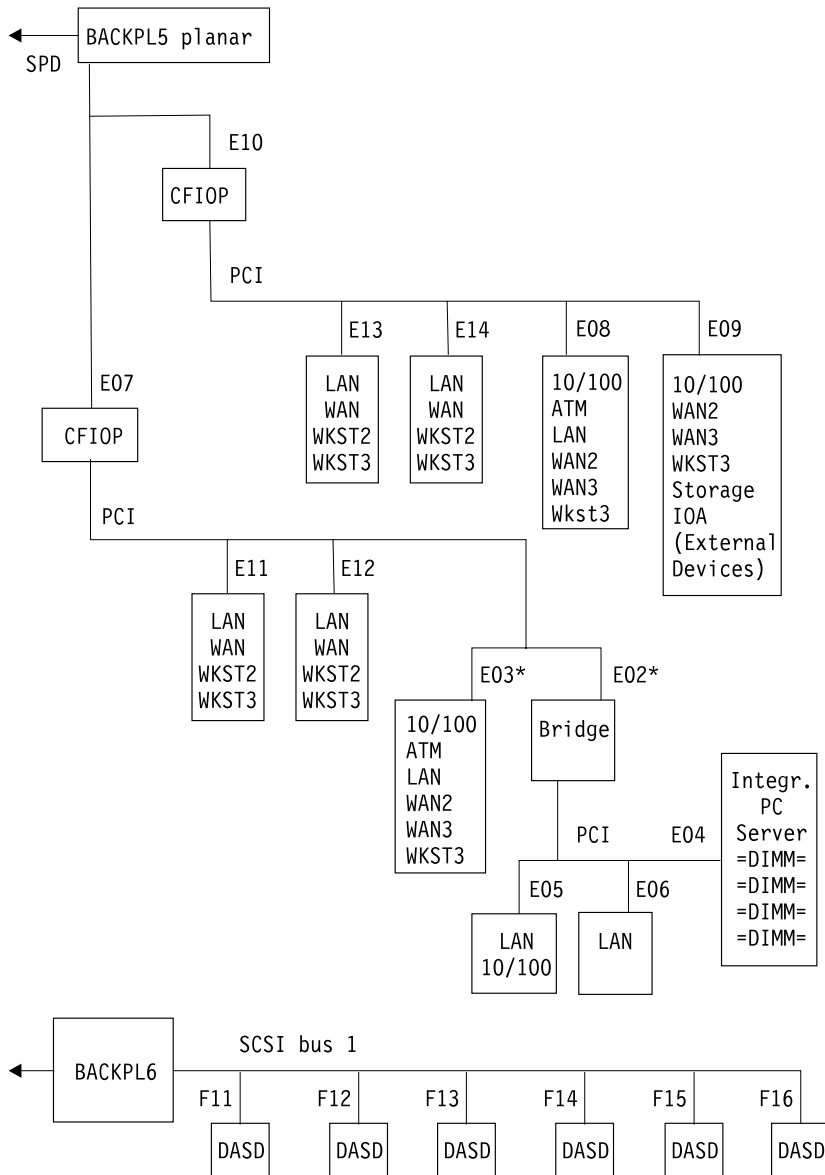
Figure 16. Base system unit

- ATM: 2811, 2812, 2815, 2816, 2818, 2819.
- LAN: Type 2723, 2724.
- WAN: Type 2721, 2745.
- WAN2: Type 2745
- Wkst1: Type 2720.
- Wkst2: Type 2722.
- 10/100 Ethernet: Type 2838.
- * You can use only 1 slot: C03 or C04.
- ** Type 2811, 2812, or 2819.
- C02 — C09 = card slots.
- L01 — L04, D01, D02 = disk, tape, and optical unit locations.

Locations and Addresses

Expansion Unit

Figure 17 is a logical block diagram of the expansion unit with a PCI bus.



RZAGM514-0

Figure 17. Expansion unit

- ATM: 2811, 2812, 2815, 2816, 2818, 2819.
- LAN: Type 2723, 2724.
- WAN: Type 2721, 2745.
- WAN2: Type 2745.
- WKST2: Type 2722.
- 10/100 Ethernet: Type 2838.
- * Only one slot can be used: E02 or E03.
- E02 — E14: card slots.

- F11 — F16: disk unit locations.

Processor and Main Storage

Processor

Figure 18 shows the main storage card and DIMM locations.

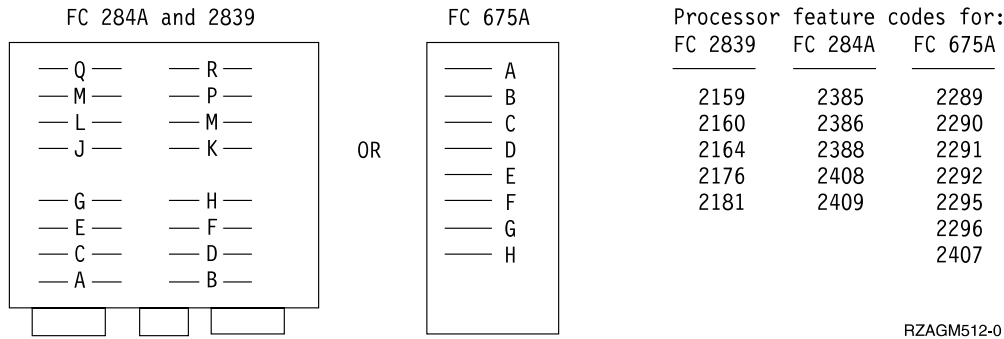


Figure 18. Processor and main storage

Main storage card placement rules for Storage Carrier Card FC 2839:

1. DIMMs are installed in 64MB or 256MB increments.
2. DIMMs slots must be populated in pairs (for example A and B, C and D, and so forth).
3. Each pair of DIMMs must be either 2 x 32MB or 2 x 128MB.
4. You can install a pair of 32MB or a pair of 128MB DIMMs in any slot pair.
5. Install DIMMs by starting with slots A and B, then C and D, and so forth.

Main storage card placement rules for Storage Carrier Card FC 284A and FC 675A (BACKPL7):

1. DIMMs are installed in 64MB, 256MB, or 512MB increments.
2. DIMMs slots must be populated in pairs (for example A and B, C and D, and so forth).
3. Each pair of DIMMs must be either 2 x 32MB, 2 x 128MB, or 2 x 256MB.
4. DIMM pairs can be installed in any lower slot pair (A and B, C and D, E and F, and G and H).
5. DIMM pairs in upper slots, J thru R, must match the size of the pair installed in the corresponding lower slot. For example, suppose a 32MB pair of DIMMs is installed in slots A and B and a 256MB pair of DIMMs is installed in slots C and D. Then you can only install a 32MB pair of DIMMs in slots J and K and a 256MB pair of DIMMs in slots L and M. Also, the corresponding lower slots can not be empty.
6. Install DIMMs by starting with slots A and B. If the next pair of DIMMs to be installed is the same size as a previously installed pair, use the corresponding upper pair of slots. If the pair of DIMMs to be installed is of a different size, or the upper slot is filled, then install them in the next lower slot, C and D, E and F, G and H.

Locations and Addresses

I/O Adapters

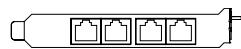
High and Low Speed PCI IOAs

Table 21 shows the PCI IOA types with descriptions and speeds.

Table 21. PCI IOAs

IOA Type	Description	Speed
2718	External removable media storage IOA	High
2720	2-line communications and twinaxial workstation	Low
2721	2-line communications	Low
2722	Twinaxial workstation	Low
2723	Ethernet	Low or High
2724	Token Ring	Low or High
2728	Internal disk, tape, and optical storage IOA	High
2729	External tape or optical storage IOA	High
2740	Internal RAID disk, tape, and optical storage IOA	High
2741	Internal RAID disk, tape, optical controller	High
2745	2-line communications	Low or 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
2763	Internal RAID disk, tape, and optical storage IOA	High
2811	ATM	High
2812	ATM	High
2815	ATM	High
2816	ATM	High
2818	ATM	High
2819	ATM	High
2838	Ethernet	High
4758	Encryption IOA	High

2750/2751 and 2761 Adapter Card Port Connector Locations



FC 2750 and FC 2751 Card

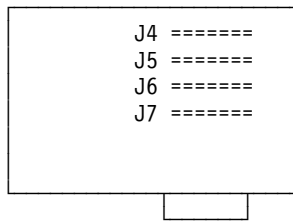
The locations are numbered 1 to 4 (Left to Right)



FC 2761 Card

The locations are numbered 1 to 8 (Left to Right)

Integrated Netfinity Server for AS/400 (2850)



Max of 4 features. A feature is one DIMM (32MB, 128 MB, or 256MB) and can be installed in any slot.

Suggested plugging order:
J7, J6, J5, J4

Figure 19. Integrated Netfinity Server for AS/400 Plugging (2850)

Split-cable connections
(PN 45H2433)

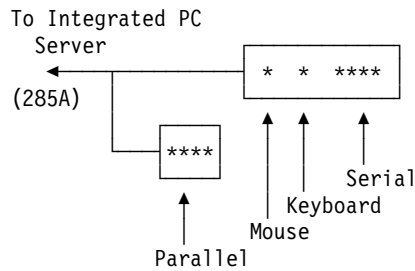


Figure 20. Split-tail Cable (PN 45H2433) Connections

Integrated Netfinity Server for AS/400 (2850) Switch Settings

2850-002 (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
ON	0	0	0	0	0	0
OFF	N	N	F	N	F	F
			F		F	F
OFF						

Figure 21. Switch Settings

Note: 2850-011 and 2850-012 do not have switches.

Tape and Optical Unit Address Jumpers

Only location D02 requires address jumpers.

Locations and Addresses

Optical Unit

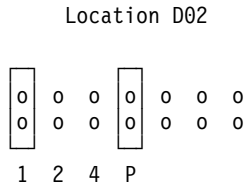


Figure 22. Optical Unit jumpers for location D02

Note: The optical unit uses jumper part number 1675209.

Tape Units

6385 Tape Unit: You do not need to install jumpers with the tape unit in location D01.



Figure 23. 6385 tape unit address jumpers for location D02

Note: The 6385 tape unit uses jumper part number 61X7052.

6381 Tape Unit: You do not need to install jumpers with the tape unit in location D01.

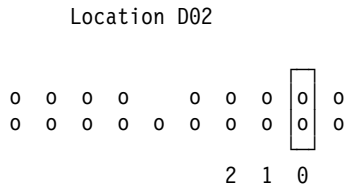


Figure 24. 6381 tape unit address jumpers for location D02

Note: The 6381 tape unit uses jumper part number 1675209.

External Devices

Type 2718 IOA, 2729 IOA, and 6534 IOP Addressing

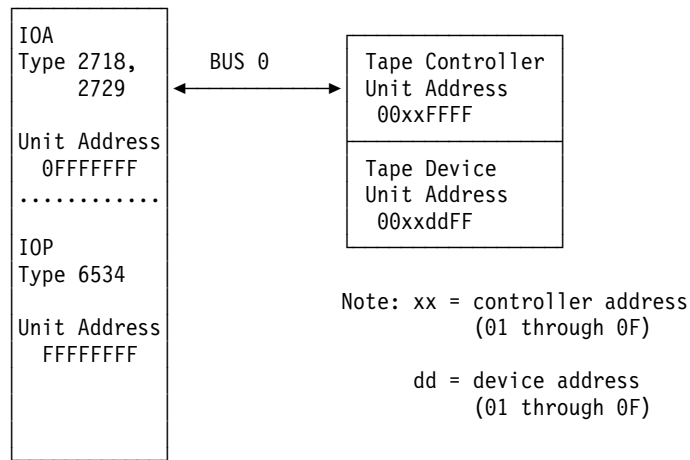


Figure 25. 2718 IOA, 2729 IOA, and 6534 IOP to tape unit

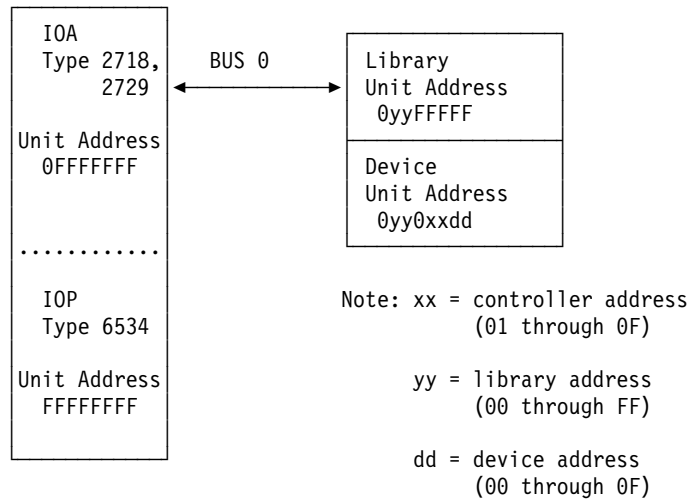


Figure 26. 2718 IOA, 2729 IOA, and 6534 IOP to tape or optical library

SRC Address Formats

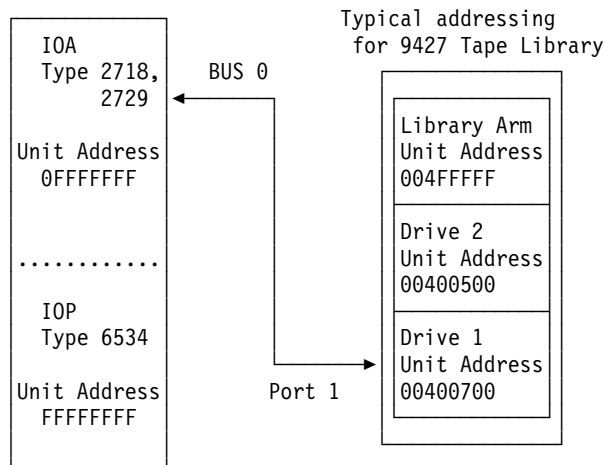


Figure 27. Typical addressing

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.
7. Addressing information is in the Bus-Bus-Bus-Bus/Card-card/board-board (BBBBCbbb) format as follows:

SRC Address Formats

- If the last 2 characters of function 12 (word 2) are 60:
 - The IOP address is in function 14 (word 4) in the format “BBBBCbb”.
 - 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 “BBBBCbb”.
 - 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 “BBBBCbb”.
 - The device address may be the 8 characters of function 16 (word 6) in the format “abcd efgh”.
8. The BBBBCbb 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 28 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 28. Product Activity Log display example

In the above example, the contents of “Storage” are defined as follows:

Reference	Description
-----------	-------------

SRC Address Formats

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 29 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 29 to understand how addresses in the Bus/Board/Card format relate to the direct select addresses used in “Locations and Addresses” on page 384.

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.

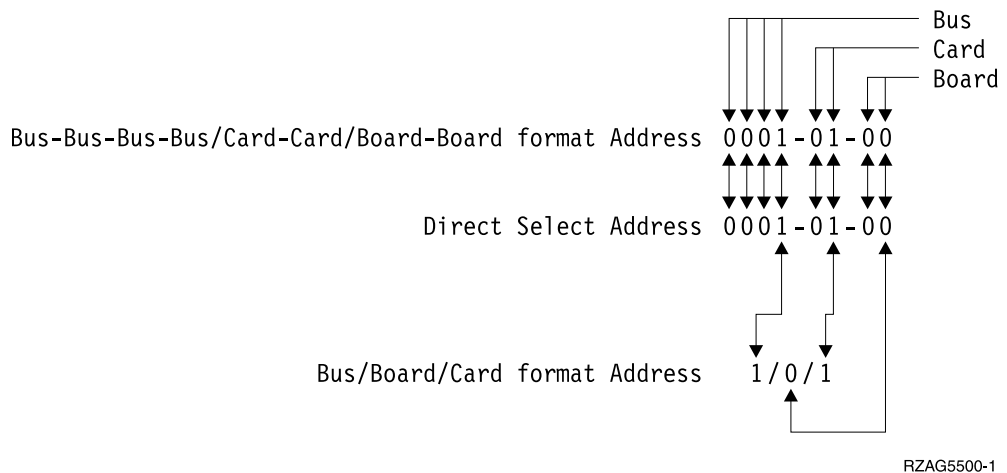
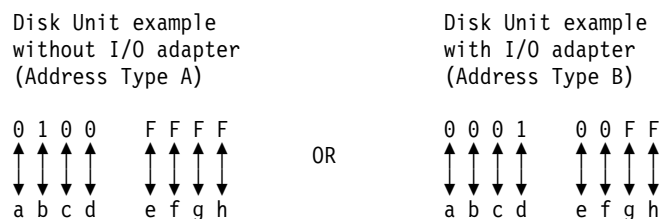


Figure 29. Format Conversion

- 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:



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.

The characters “abcd efgh” can have different meanings, depending on the subsystem that reports the problem. However, they define the information

SRC Address Formats

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 22. 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 29 on page 406.
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 29 on page 406.
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 29 on page 406.
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 406.

Return to the information that sent you to this procedure.

This ends the procedure.

SRC Address Formats

Hardware SRC Formats

Table 23. 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 410 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
------	-------------

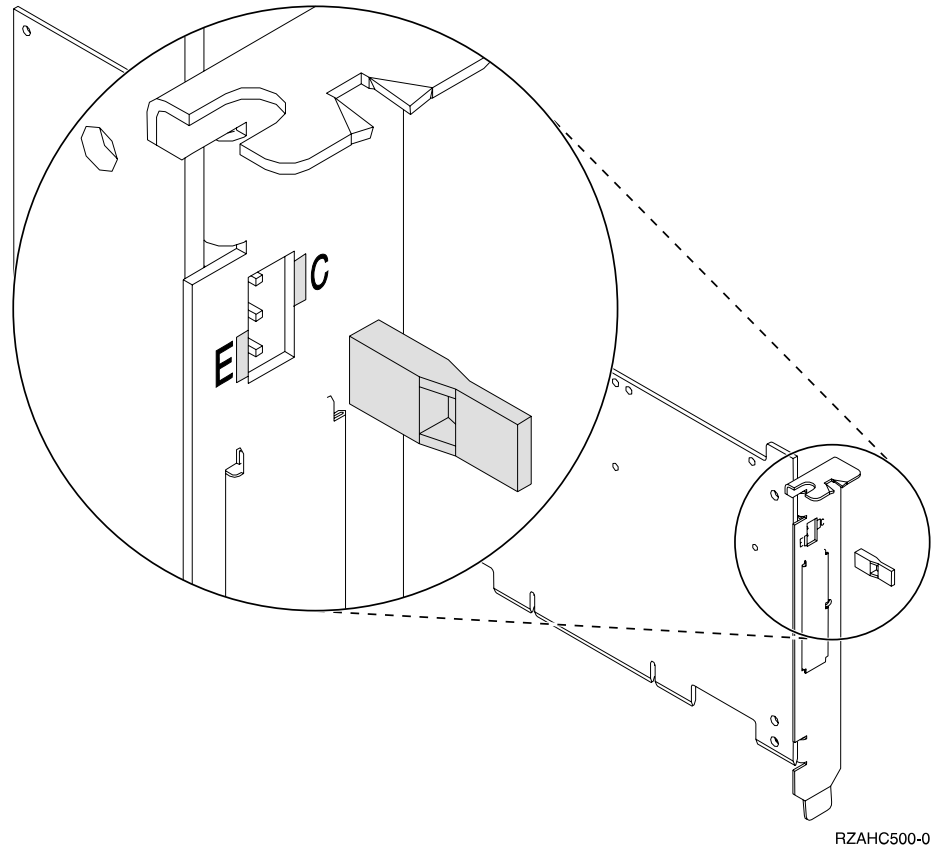
Compression Mode

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 410).
4. Power on the system.

This ends the procedure.

Manually Removing the Tape Cartridge

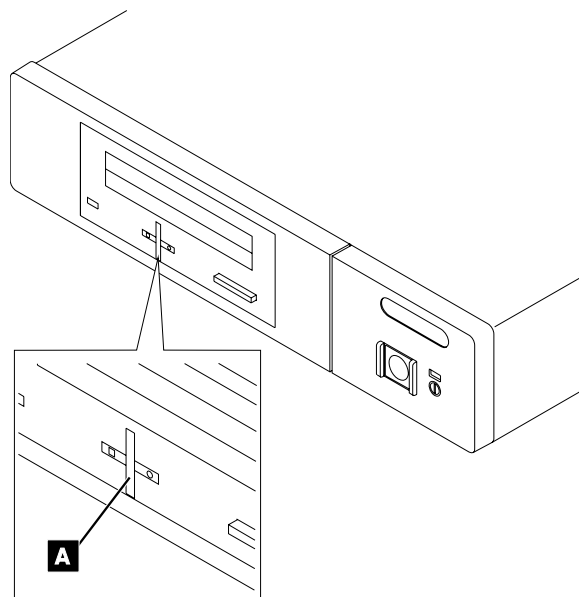
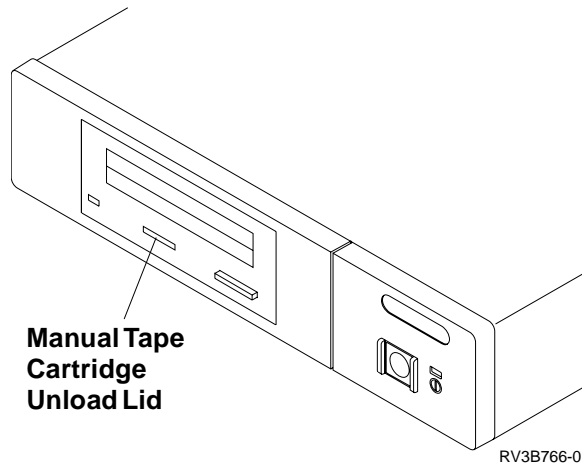
1/4 inch Tape Cartridge (Type 6335)

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

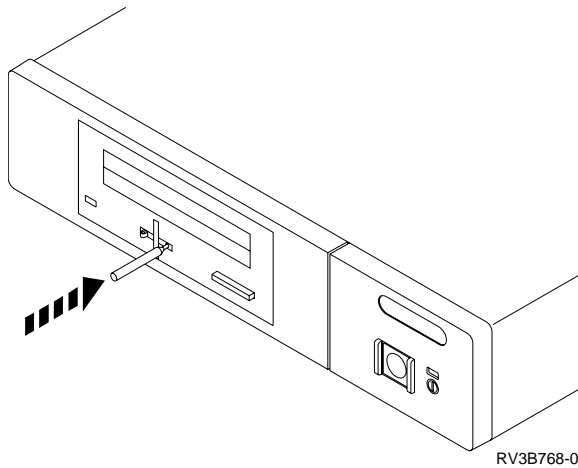
The following procedure describes how to remove a tape cartridge manually from an internal 1/4 inch tape unit. This procedure may be required if a defective tape cartridge or tape unit has caused the cartridge ejection function to fail. The procedure may also be needed if the data on the tape cartridge 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**.

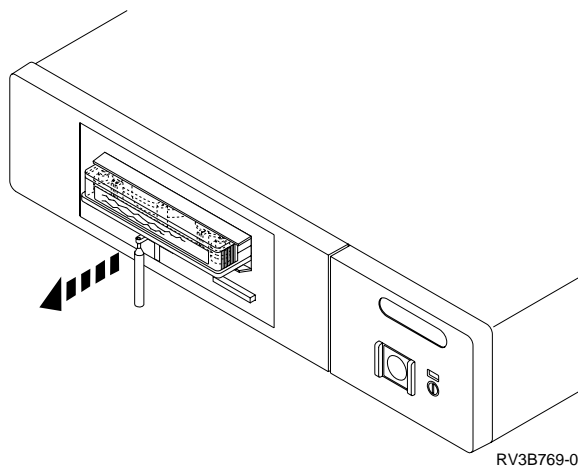


3. Insert a solid metal rod (like a bristol wrench) into the manual tape cartridge unload hole and push in until it stops and the arm appears.

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.

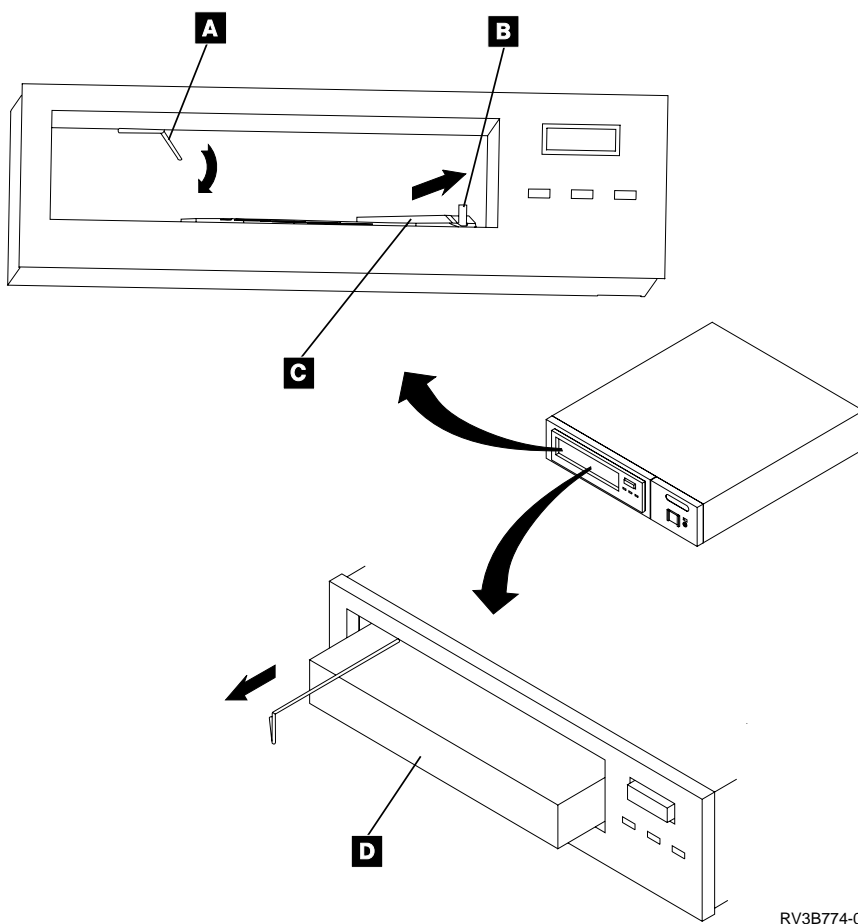
To determine which position the tape unit is in, open the tape unit door and check the location of the bridge.

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.



RV3B774-0

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.

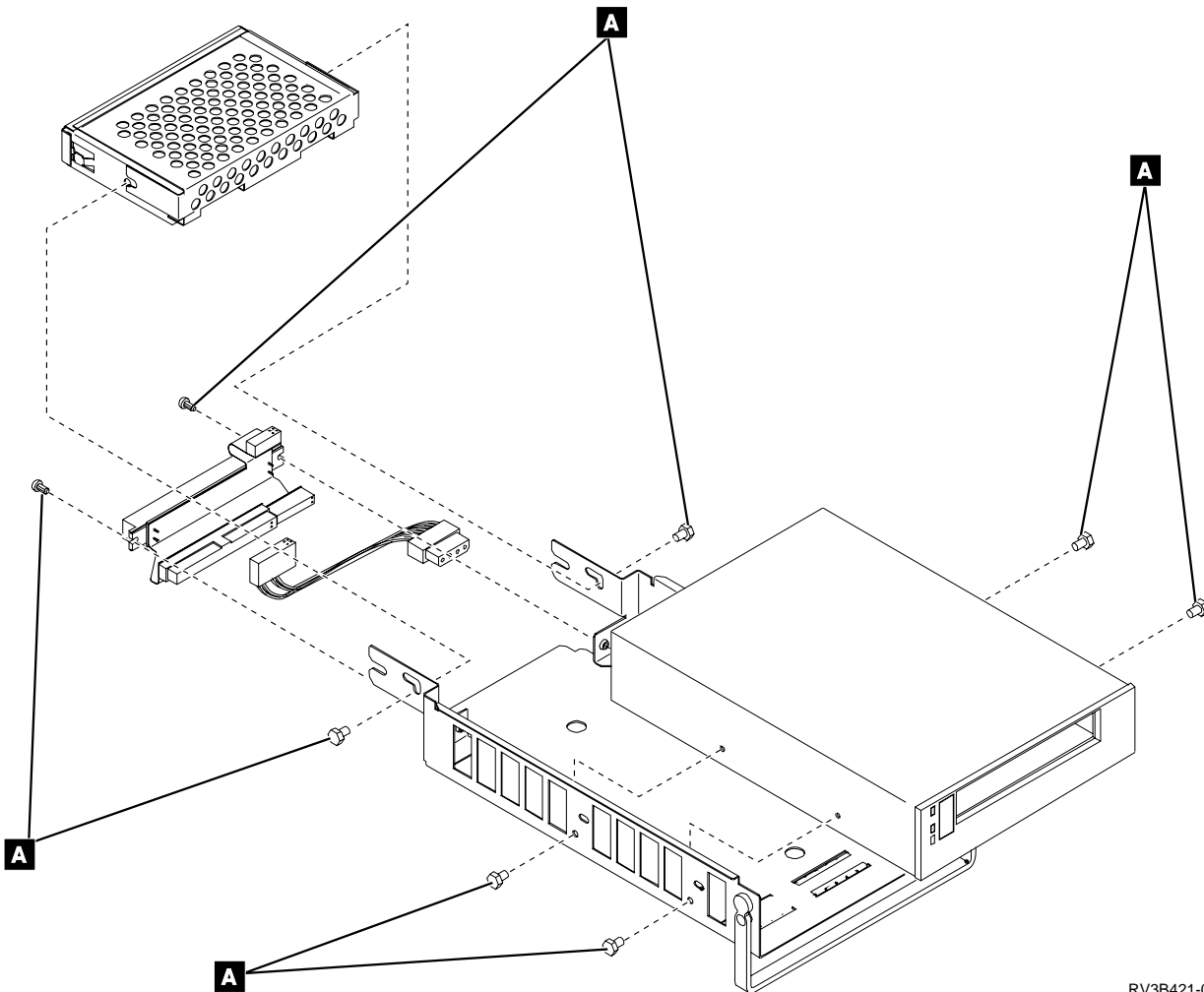
The following procedure describes how to remove a tape cartridge manually from an internal 8-mm tape unit. This procedure should be used if a defective tape cartridge or tape unit has caused a failure of the tape ejection function. The procedure should also be used if the data on the tape cartridge is 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.

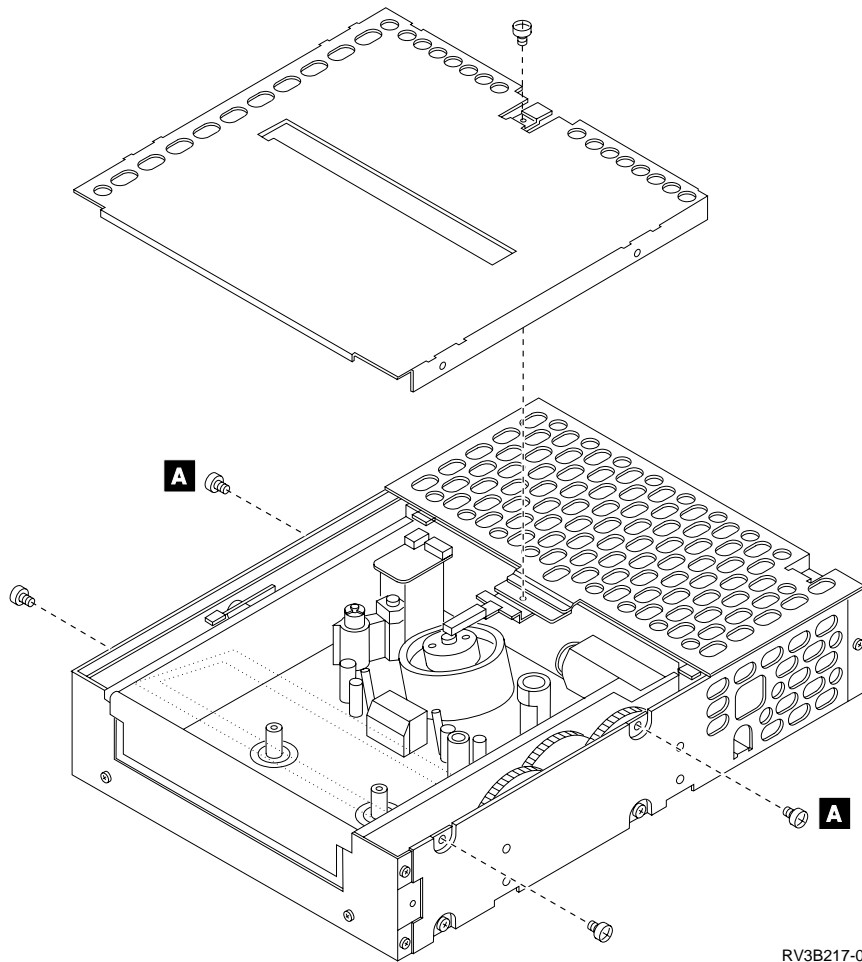
2. Remove the tape unit from the system (see "Chapter 6. Removal and Installation Procedures" on page 443).
3. Remove the screws **A** to remove the tape drive from the tape tray.



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.

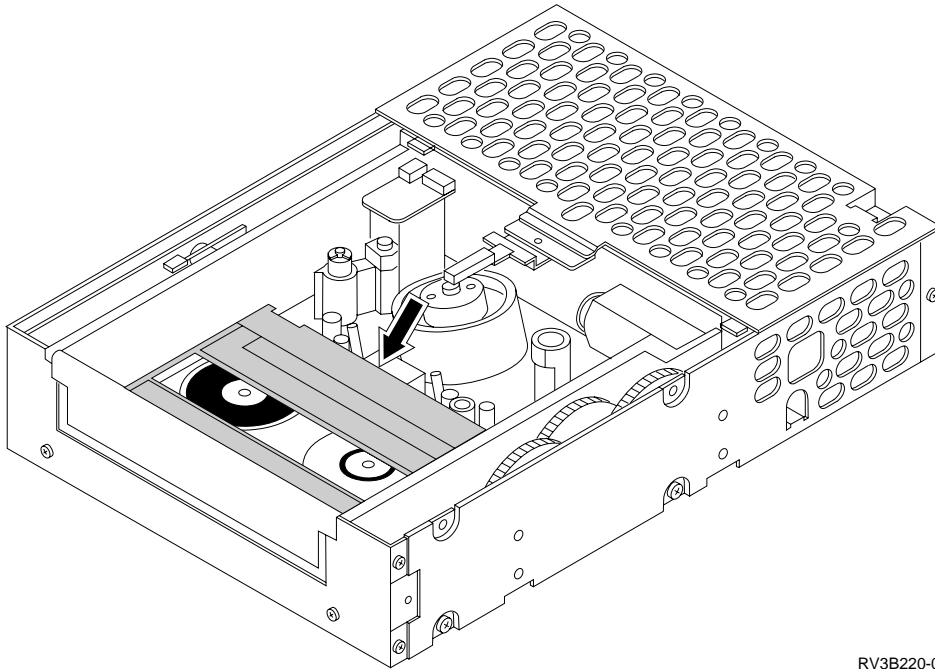
6. The drive assembly may need assistance to unload the tape. Two options are available:
 - Cutting the tape
To perform this option, continue with step 7 of this procedure.
 - Using manual actions to unload the tape from the tape guides
To perform this option, go to step 8 of this procedure.

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.

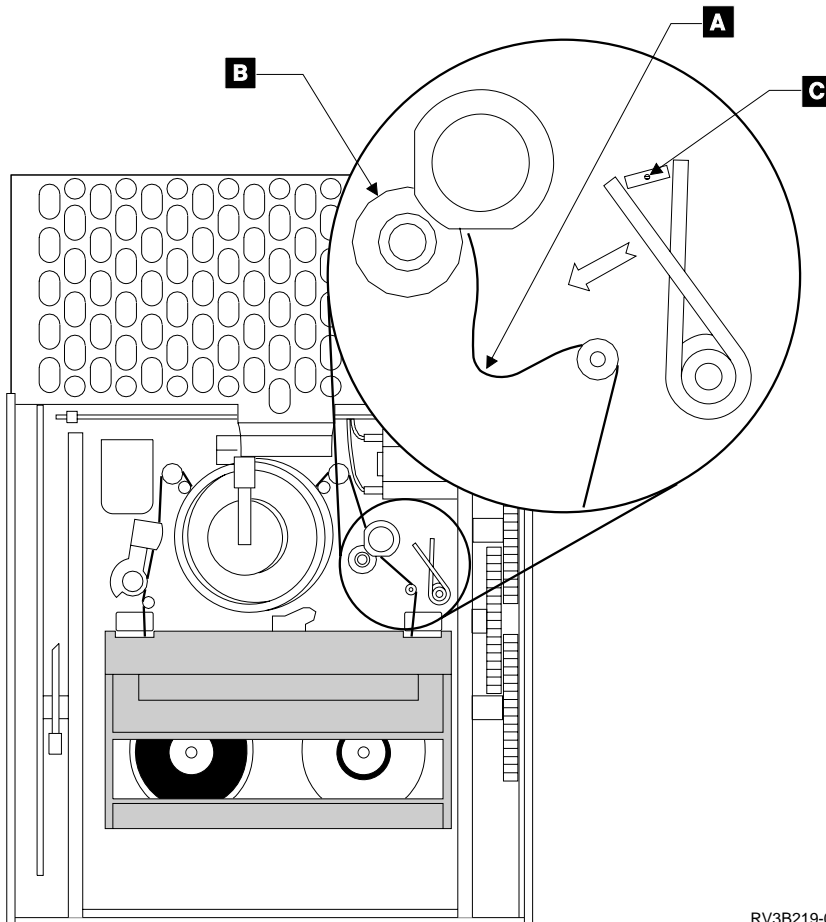


RV3B220-0

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

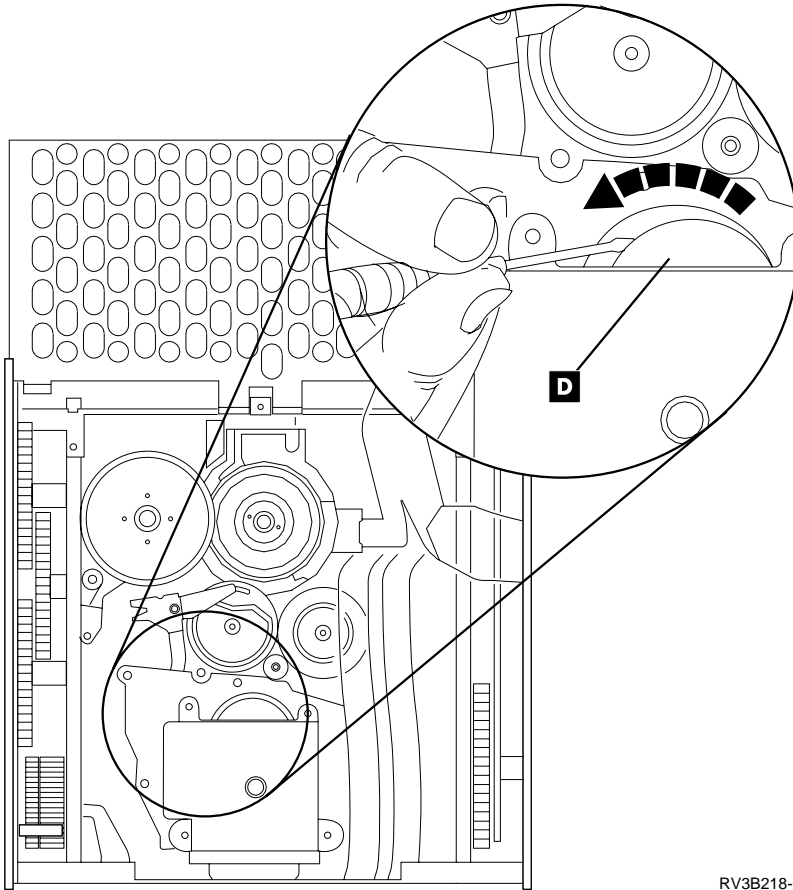


RV3B219-0

- 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

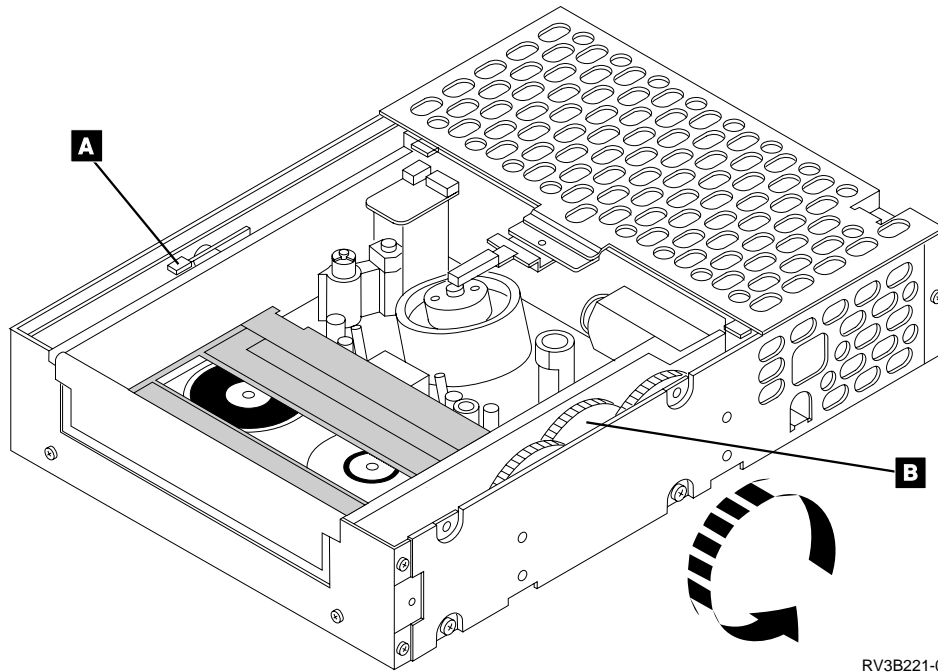


RV3B218-0

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.



RV3B221-0

Important Continuously Powered Main Storage (CPM) Information

Attention: Component damage will occur if processor, main storage, or regulators are removed while Continuously Powered Main Storage (CPM) is enabled.

When the system enables CPM due to an ac voltage loss, the batteries supply power to the main storage cards even with a system that is powered off.

Performing repair actions without disabling CPM causes system hardware failures.

Disabling CPM without a successful IPL will cause the loss of data in main storage.

See SPCN-PIP5 for the correct procedure to disable CPM.

Setting the System Date and Time

Attention: Customer applications may be sensitive to system date and time settings. Incorrect date and time settings may cause data loss. Ensure that the customer knows the date and time you have set.

Use one of the following methods to set the date and time:

- If the system is powered off, perform a Manual mode (attended) IPL. The date and time can be set on the IPL Options display. See the *Basic System Operation, Administration, and Problem Handling* information.
- If the system is powered on, perform the following procedure:
 1. To set the correct date, enter the system command:

```
CHGSYSVAL QDATE VALUE('mmdyy')
```

Set Date, Time

where:

mm = month

dd = day

yy = year

Press the Enter key.

Note: The month, day, and year format is used for this example. To determine the format for your system, enter DSPSYSVAL QDATE.

2. To set the correct time, enter the system command:

```
CHGSYSVAL QTIME VALUE('hhmmss')
```

where:

hh = 24-hour time

mm = minutes

ss = seconds

Press the Enter key.

This ends the procedure.

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 434. Otherwise, continue with this procedure.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 432, 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 2720 card with a workstation at port 1 address 0, then there can be a second alternate console. The second alternate console will be the third match on the list.

2721/2745	with Client Access Console cable in slot C08
2720	in slot C08 (port 0 address 0)
2722	in slot C09 (port 0 address 0)
2722	in slot C09 (port 1 address 0)
2720	in slot C08 (port 1 address 0)
2720	in slot C09 (port 0 address 0)

2721/2745	with Client Access Console cable in slot C09
2720	in slot C09 (port 1 address 0)
2722	in slot E13 (port 0 address 0)
2722	in slot E14 (port 0 address 0)
2722	in slot E11 (port 0 address 0)
2722	in slot E12 (port 0 address 0)

Client Access Console Cable PN is 44H7504.

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 “Locations and Addresses” on page 384).

Finding the Load-Source Disk on Systems without Mirrored Protection

The load-source disk is unit 1 in the system unit.

What You Should Know about Load-Source Disks on Systems with Mirrored Protection

If the AS/400 system 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 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 an 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) is protected with mirrored protection, the system has two disk devices that are load-source disks.

Use the *Work with disk units* option under DST or SST to display the configuration.

Load-Source Disk, Alternate IPL

Alternate IPL Device

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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 435.

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 may be attached internally or externally. For more information on how the internal and external devices attach, see “Internal Devices” and “External Devices” on page 425.

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 devices that can possibly be used for an alternate IPL. See “External Devices” on page 425 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 in a specific order. 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 Storage IOA (slot C07) with a unit address of 7 (location D01).
2. Internal device attached to the Storage IOA (slot C07) with a unit address of 6 (location D02).
3. External device attached to the Tape IOA (slot E09) with a device address of 7.

If the system can not use any device as the alternate IPL device, the system 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. The error may not be associated with the device that is used for the alternate IPL. Before using the displayed SRC, ensure that the device being used for the alternate IPL is ready and contains the correct IPL media.

Internal Devices

If the alternate IPL device is internal, it attaches to the Storage IOA in position C09 with a unit address of 7 or 6.

For more information on card positions, see “Locations and Addresses” on page 384.

External Devices

If the alternate IPL device is external to the system unit, it attaches to the Tape IOA in position E09.

The external alternate IPL device must have an address of 7. For most devices the address is preset to 7 and you cannot change it. For devices that have changeable addresses, use the following information:

- For 34xx, 35xx, and 7208 model 342 devices, the SCSI address must be set to 0.
- For an IBM 9427 8mm Tape Cartridge Library, the tape library address for the drive used as the alternate IPL device must be set to 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

Powering Off the System

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, 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.

If the system is operating under OS/400, enter the *PWRDWN SYS* command to power off the system.

Note: For consoles that run Client Access, a delayed power-off operation by using the *PWRDWN SYS* 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 428.
3. Press the Power button (white) on the control panel.

Power Off, On, IPL

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" on page 427.
A processor, system storage or processor clock problem.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 427.
A problem with any resource owned by the Primary partition.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 427.
The SRC came from the system control panel.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 427.
The part to remove or install is in the system unit. The part to remove or install is in the system expansion unit.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 427.
Powering off a secondary partition failed.	"Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 427.

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.

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 *PWRDWN SYS* 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 425.

Note: For consoles on the Primary partition that run Client Access, a delayed power-off operation by using the *PWRDWN SYS* 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

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 434.

If the secondary partition is operating under OS/400, from the logical partition's console enter the *PWRDWN SYS* 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 *PWRDWN SYS* 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:

Power Off, On, IPL

- 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 427.

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 432, 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 438. 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

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 432, 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 439.

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.

- 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 24. 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 25. 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 26. 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.

Verifying the Repair

1. Were you sent here after completing a concurrent maintenance procedure?
No **Yes**
↓ Go to “Verify Concurrent Repair.” on page 431.
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” on page 425).

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” on page 425).
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 6).
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 41 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.

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 6).

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.

Verifying Repair

Use the SRC information and go to “Chapter 2. Unit Reference Codes” on page 41 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 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 427.

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 434.

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 439 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 432.

Determine the release level of a logical partition:

See "Determining the Release Level of a Logical Partition" on page 434.

Conversion of secondary partition time and date:

See "Conversion of Secondary Partition Time and Date to Primary Partition Time" on page 437.

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 438.

Locating the console:

See "Locating a Secondary Partition's Console" on page 434.

Locating the alternate console:

See "Locating a Secondary Partition's Console" on page 434.

Accessing panel functions:

See "Accessing a Logical Partition's Panel Functions" on page 438.

Verifying Repair

Finding the load source:

See "Locating a Secondary Partition's Load Source" on page 435.

Powering off:

See "Powering Off a System With Logical Partitions" on page 426.

Powering on:

See "Powering Off and Powering On the System" on page 425.

Closing Related Problems:

See "Closing Related Problems in Other Logical Partitions" on page 437.

IPL type and mode:

See "Selecting IPL Type and Mode for a Secondary Partition" on page 439.

SRC history:

See "Finding the SRC History List for a Secondary Partition" on page 437.

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

↓ 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 436.

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?

Verifying Repair

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

Conversion of Secondary Partition Time and Date to Primary Partition Time

Use the “Query of Logical Partition Time and Date” on page 436 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 27. 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 434.

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 27 by calculating the conversion value for each of the logical partitions that own resources on the same bus.

Verifying Repair

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 434.

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*.

- 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 434.

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.

Verifying Repair

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.

Part 2. Repair and Parts

Chapter 6. Removal and Installation Procedures

AMD 1 (B11) — Expansion Unit (Rear AMD)	443	Introduction:	456
Procedure	443	Control Panel (BACKPL1) (SPNLCRD)	457
AMD 3 (B02)(Front AMD)	444	Procedure	457
Procedure	444	Control Panel Battery.	458
AMD 4 (B01) — Base Unit (Rear AMD)	444	Procedure	458
Procedure	444	Covers	458
BACKPLANES	444	Procedure	458
DISK UNITS PLANAR/FRAME ASSEMBLY—		Disk Unit — Dedicated and Concurrent	458
EXPANSION UNIT (BACKPL6)	444	Procedure	459
Procedure	445	Concurrent Maintenance-Removal and	
DISK UNITS PLANAR / FRAME ASSEMBLY —		Installation	459
SYSTEM UNIT (BACKPL3x)	445	Dedicated Maintenance-Removal and	
Procedure	445	installation	461
MFIOP PLANAR (BACKPL2)	446	Disk Unit – Removal from holder	462
Procedure	446	Parts Catalog References.	463
MFIOP / PROCESSOR PLANAR (BACKPL7)	446	Procedure	463
Procedure	446	Integrated Netfinity Server for AS/400 IOA	463
PCI PLANAR — EXPANSION UNIT		Procedure	463
(BACKPL5)	447	Main Storage (M02)	465
Procedure	447	Procedure	465
PROCESSOR PLANAR (BACKPL4)	448	Power Supply — System Unit (A01).	466
Procedure	448	Procedure	466
Cache Battery Pack, For Type 2740, 2748, 2763	450	Power Supply — Expansion Unit.	467
Procedure	450	Procedure	467
Cache Directory Card, For Type 2740, 2748, 2763	452	Regulator 1	468
Procedure	452	Procedure	468
Cards–Cache, Type 4010.	453	Regulator 2	468
Parts Catalog References.	453	Procedure	468
Procedure	453	Removable Media	469
Cards–PCI	454	Procedure	469
Procedure	454	Manually removing optical media from the	
Cards-PCI Type 4758 Battery Replacement		optical device	469
Procedure	455	Uninterruptible Power Supply.	469
Introduction:	455	Important UPS Information.	469
Cards-PCI Type 4758 Disablement Procedure	456	Procedure	470

This is the starting point for all remove procedures.

AMD 1 (B11) — Expansion Unit (Rear AMD)

Procedure

1. Power off the system. (see “Powering Off and Powering On the System” on page 425)
2. Remove the back cover (see “Covers” on page 458).
3. Disconnect the power cord from the system unit and expansion unit.
4. Remove the 4 retaining screws while holding the AMD assembly in place.
5. Remove the AMD assembly. The self docking connector will disconnect as you pull the AMD away.

This ends the procedure.

AMD 3 (B02)(Front AMD)

Procedure

1. Power off the system. (see “Powering Off and Powering On the System” on page 425)
2. Disconnect the power cord from the system unit.
3. Remove the back and left covers (see “Covers” on page 458).
4. Remove the long PCI cards that are supported by the PCI support bracket fan assembly (see “Cards-PCI” on page 454).
5. Unplug P8 (the MFIOP power cable on the right) to allow access to the inside screw on top of the AMD assembly.
6. Remove the AMD assembly by removing the screws holding the AMD to the enclosure and sliding the AMD assembly away from the MFIOP card to disengage the tabs in the machine base.
7. Disconnect the power connector and remove the AMD assembly.

This ends the procedure.

AMD 4 (B01) — Base Unit (Rear AMD)

Procedure

1. Power off the system. (see “Powering Off and Powering On the System” on page 425)
2. Disconnect the power cord from the system unit (and expansion unit if attached).
3. Remove the back cover (see “Covers” on page 458) and the connecting plate if an expansion unit is attached.
4. Remove the left cover (see “Covers” on page 458).
5. Is the AMD housed in a metal cage?

No	Yes
↓	
	a. Remove the top two screws on the cage and pivot the cage off.
	b. Remove the screws that hold the AMD mounting plate on to the frame. Go to step 7.
6. Remove the retaining screws while you hold the AMD assembly in place.
7. Remove the AMD assembly.

This ends the procedure.

BACKPLANES

Select the backplanes that are used in your system.

DISK UNITS PLANAR/FRAME ASSEMBLY— EXPANSION UNIT (BACKPL6)

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” on page 425).
2. Disconnect the power cord from the system unit and the expansion unit.
3. Remove the front, back, and right side covers (see “Covers” on page 458).
4. Remove the cables from the rear of the disk unit backplane.
5. Remove the EMC access plate from the front of the expansion unit disk cage (see “Assembly 3: Final Assembly — Expansion Unit” on page 512).
6. Label the location of all disk units. You must install the disks into the same locations they came from.
7. Remove all disk units from the disk cage.
 - a. Pull out firmly on the handle to remove the disk unit.
 - b. Remove the disk unit from the disk cage.
8. Remove the two screws from the back of the disk cage.
9. Remove the four screws from the front of the disk cage.
10. Slide the disk cage out the front of the expansion unit. You may lift the top cover slightly for clearance.

This ends the procedure.

DISK UNITS PLANAR / FRAME ASSEMBLY — SYSTEM UNIT (BACKPL3x)

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” on page 425).
2. Disconnect the power cord from the system unit.
3. Remove the front, back, and left side covers (see “Covers” on page 458).
4. Remove the cables from the rear of the disk unit backplane.
5. Remove the EMC access plate (see “Assembly 2: Final Assembly — Base Unit” on page 510).
6. Label the location of all disk units. You must install the disks into the same locations they came from.
7. Remove all disk units from the disk cage.
 - a. Pull out firmly on the handle to remove the disk unit.
 - b. Remove the disk unit from the disk cage.
8. Remove the control panel (see “Control Panel (BACKPL1) (SPNLCRD)” on page 457).
9. Remove the 4 front and 2 rear screws that hold the disk cage.
10. Remove the disk cage assembly from the system.

This ends the procedure.

Removal and Installation

MFIOP PLANAR (BACKPL2)

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

Note: The backplane location is C01 (see “Locations and Addresses” on page 384).

1. Power off the system (see “Powering Off and Powering On the System” on page 425).
2. Remove the side and back covers (see “Covers” on page 458).
3. Disconnect the power cord from the system unit.
4. If an Expansion Unit is installed:
 - a. Remove the expansion unit side cover (see “Covers” on page 458).
 - b. Unplug the SPD cable from the backside of the MFIOP planar.
5. Record the location of the PCI cards.
6. Record the cable locations and disconnect the external cables to the PCI cards.
7. Remove the PCI cards (see “Cards-PCI” on page 454).
8. Disconnect the two power cables that are connected to the backplane.
9. Remove the screw from the PCI card support bracket. Remove the bracket from the system by sliding the bracket toward the front of the system. The tabs at the bottom of the bracket will release.
10. Unplug the AMD.
11. Disconnect the control panel cable.
12. Remove the 9 Torx** screws that hold the PCI backplane.
13. Remove the backplane assembly from the system by holding the left side of the card and the upper right corner of the card. There is a connector on the back of the backplane in the upper right corner.
14. Remove the control panel battery (see “Control Panel Battery” on page 458). You must install the battery on the new backplane.

This ends the procedure.

MFIOP / PROCESSOR PLANAR (BACKPL7)

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)

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 545).

Procedure

Note: The backplane location is M01 (see “Locations and Addresses” on page 384).

1. Disable CPM by reading “Important Continuously Powered Main Storage (CPM) Information” on page 421. (Note: During reassembly of the system, ensure that you enable CPM.).
2. Power off the system (see “Powering Off and Powering On the System” on page 425).

3. Remove the side and back covers (see “Covers” on page 458).
4. Disconnect the power cord from the system unit.
5. If an Expansion Unit is installed:
 - a. Remove the expansion unit side cover (see “Covers” on page 458).
 - b. Unplug the SPD cable from the backside of the MFIOP / Processor planar.
6. Record the location of the PCI cards.
7. Record the cable locations and disconnect the external cables to the PCI cards.
8. Remove the PCI cards (see “Cards-PCI” on page 454).
9. Remove the control panel. See “Control Panel (BACKPL1) (SPNLCRD)” on page 457.

Note: Observe the connection of the control panel to the backplane for proper reinstallation.

10. Remove the disk unit cage assembly. See “DISK UNITS PLANAR / FRAME ASSEMBLY — SYSTEM UNIT (BACKPL3x)” on page 445. The disk units will not have to be removed from the cage.
11. Disconnect the two power cables and 3 signal cables that are connected near the top of the backplane.
12. Remove the processor cover.
 - a. Remove the two screws on the left side of the cover.
 - b. Remove the standoff on the right side of the cover.
13. Remove the screws that hold the PCI backplane.
14. Remove the control panel battery (see “Control Panel Battery” on page 458). You must install the battery on the new backplane.

This ends the procedure.

PCI PLANAR — EXPANSION UNIT (BACKPL5)

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

Note: The backplane location is E01 (see “Locations and Addresses” on page 384).

1. Power off the system (see “Powering Off and Powering On the System” on page 425).
2. Remove the expansion unit side and back covers (see “Covers” on page 458).
3. Disconnect the power cord from the system unit.
4. Record the location of the PCI cards and remove the PCI cards.
5. Unplug the SPD cable from the lower left corner of the PCI planar.
6. Unplug the 4 plugs on the top of the PCI planar.
7. Unplug the plug that is connected to the back of the Disk unit cage.
8. Remove the 14 screws that secure the PCI planar to the frame.

This ends the procedure.

Removal and Installation

PROCESSOR PLANAR (BACKPL4)

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)

Attention: All cards are sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 545).

Procedure

Note: The backplane location is M01 (see "Locations and Addresses" on page 384).

Note: If you are removing processor FC 2385, 2386, 2388, 2408 or 2409, you will need to follow the procedure for removing and installing the Interactive card. The processor and IC are replaced as one FRU.

1. Disable CPM by reading "Important Continuously Powered Main Storage (CPM) Information" on page 421. (Note: During reassembly of the system, ensure that you enable CPM.).
2. Power off the system (see "Powering Off and Powering On the System" on page 425).
3. Remove the front, back, and side covers. It is not necessary to remove the right side cover if the system includes an expansion unit (see "Covers" on page 458).
4. Disconnect the power cord from the system unit.
5. Remove the memory card (see "Main Storage (M02)" on page 465).
6. Remove the disk enclosure (see "DISK UNITS PLANAR / FRAME ASSEMBLY — SYSTEM UNIT (BACKPL3x)" on page 445).
7. Remove PCI cards (see "Cards-PCI" on page 454).
8. Remove the MFIOF card (see "MFIOF PLANAR (BACKPL2)" on page 446).
9. Remove the power cable retainers from the processor frame.
10. Disconnect the cables (CPM, PWR P1, P2, P3) from the assembly by first removing upper and lower access covers then disconnecting the cables.
11. Remove Air Moving Device 4 (see "AMD 4 (B01) — Base Unit (Rear AMD)" on page 444).
12. Remove the 1 top and 2 bottom screws that hold the processor frame.
13. Slide the assembly out the back of the system.
14. Remove the screws that hold the processor backplane.
15. As you lift the panel that is attached to the processor, reach in and disconnect the AMD connector.

Note: Move REGS from the old processor to the new processor.

This ends the procedure.

Interactive Card:

Procedure:

1. Power off the system (see "Powering Off and Powering On the System" on page 425).
2. Disconnect the power cord from the system unit.

3. Remove the left side cover (see “Covers” on page 458).
4. Remove the cables from the rear of the disk unit backplane.
5. Remove the EMC access plate (see “Assembly 2: Final Assembly — Base Unit” on page 510).
6. Remove the control panel (see “Control Panel (BACKPL1) (SPNLCRD)” on page 457).
7. Remove the 4 front and 2 rear screws that hold the disk cage.
8. Remove the disk cage assembly from the system.
9. Remove the top and bottom screws that hold the cover plate on the processor cover. The Interactive Card is under the cover.
10. Remove the card from the system unit by pulling it straight out.
11. 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:
 - a. 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 30.
 - b. Verify that the **type number** on the above logo label matches the type number of the replacement interactive card.
 - c. 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 193.

Note: The part number for the interactive card is the second part number listed in the “Type, Model, and Part Number List” on page 193.

- d. Compare the part number that you obtained from the “Type, Model, and Part Number List” on page 193 with the part number on the bar code label on the back of the interactive card that you removed from the system.

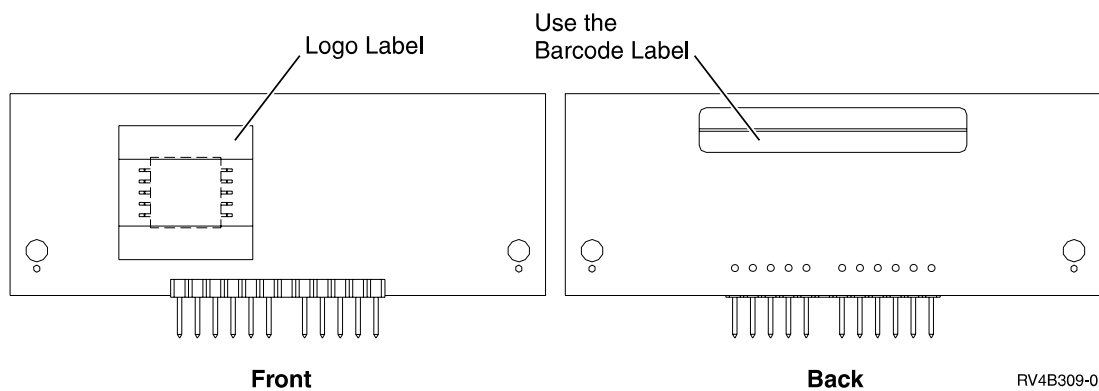


Figure 30. Interactive Card

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.

12. Assemble the new interactive card into the new processor card by reversing this procedure.

Note: Do not install the interactive card that you removed from the system into the new processor card. Return it along with the processor card that you are replacing.

Removal and Installation

This ends the procedure.

Cache Battery Pack, For Type 2740, 2748, 2763

The following safety notice pertains to the 2740 and 2748 Cache Battery Packs.

CAUTION:

The battery is a nickel-cadmium 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. (RSFTC226)

The following safety notice pertains to the 2763 Cache Battery Pack.

CAUTION:

The battery is a nickel metal hydride 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. (RSFTC244)

Attention: All cards are sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 545).

Attention: Power the system down normally prior to replacing the Cache Battery Pack. (see "Powering Off and Powering On the System" on page 425)

Procedure

1. Remove the 2740/2748/2763 card (see "Cards-PCI" on page 454).
2. Locate the casing A that holds the battery pack. See Figure 31 on page 451 and Figure 32 on page 452.
3. Squeeze the casing A to remove battery unit from the card.
4. Remove the plug that connects the battery unit and the card.

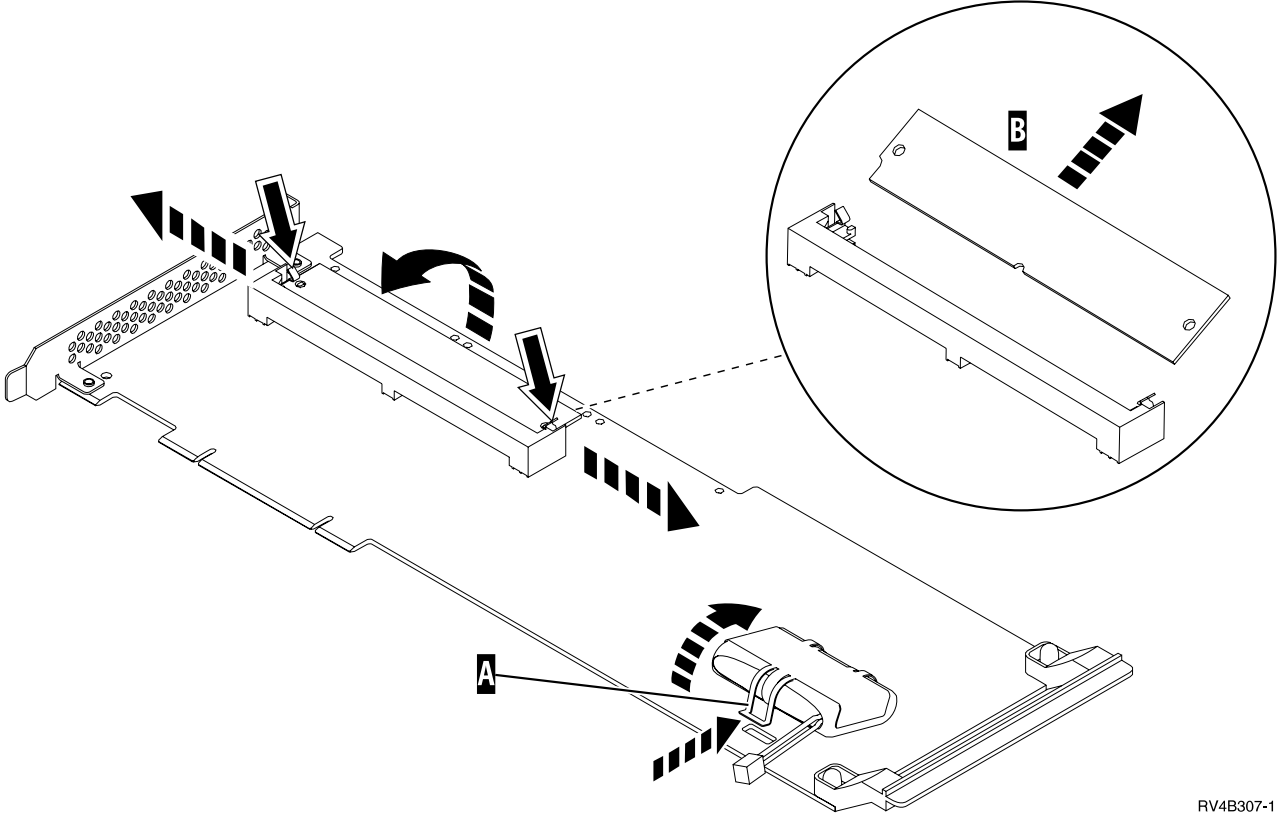
Note: The plug fits in the board only one way so you can not insert it incorrectly during the replacement phase.

5. Remove the battery unit from the battery casing.

Note: Save the battery casing. The replacement battery pack will not come equipped with a casing.

6. Install the new battery.
7. Install the 2740/2748/2763 card.

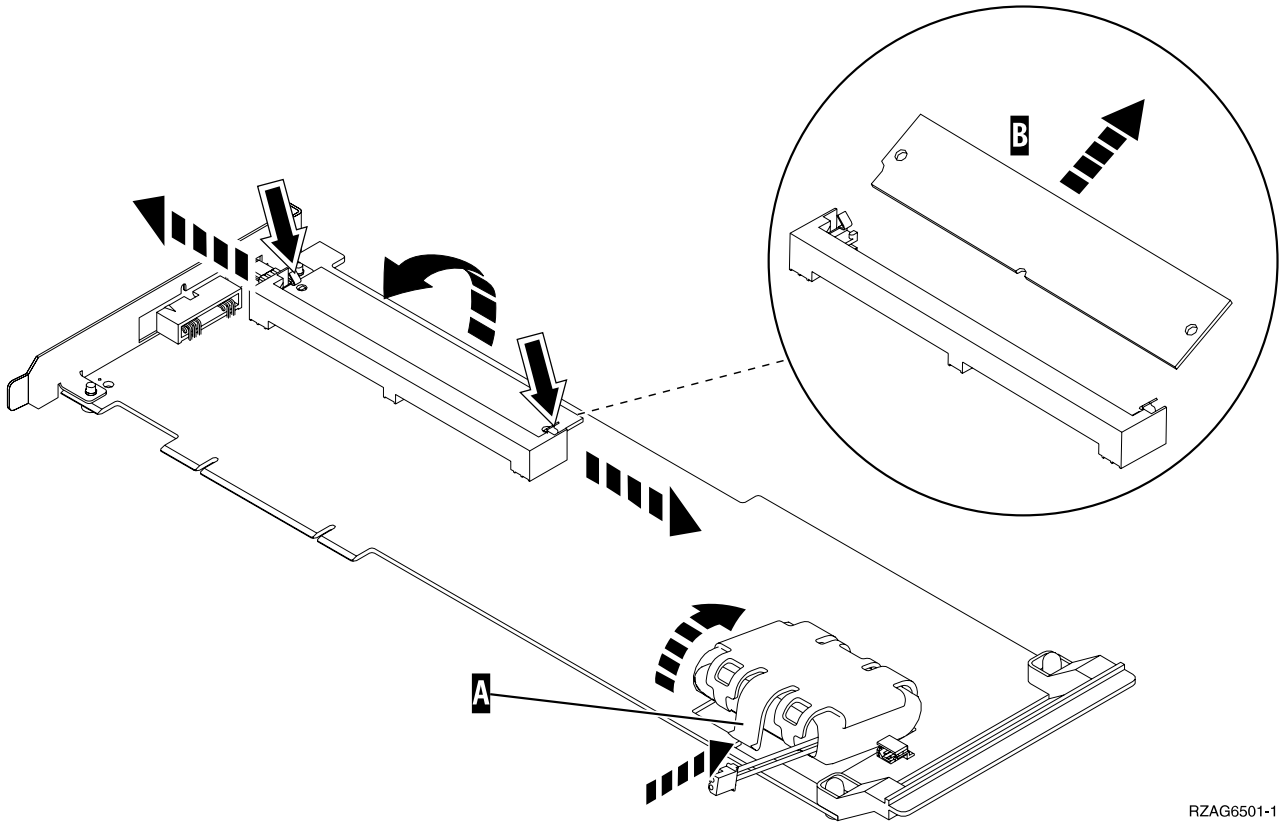
This ends the procedure.



RV4B307-1

Figure 31. Cache Battery Pack and Cache Directory Card for Type 2740

Removal and Installation



RZAG6501-1

Figure 32. Cache Battery Pack and Cache Directory Card for Type 2748, 2763

Cache Directory Card, For Type 2740, 2748, 2763

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 545).

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)

Procedure

1. Remove the 2740/2748/2763 card (see “Cards-PCI” on page 454).
2. Locate the cache directory card **B**; a small rectangular card mounted on the I/O card. See Figure 31 on page 451 and Figure 32.
3. 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°.
4. Pull cache directory card out.
5. Install cache directory card on the new 2740/2748/2763 card.

Note: To install the replacement cache directory card, the cache directory card should be wiggled into place at a 20° angle before pushing the cache directory card down and locking the tabs. The locking tabs ensure proper seating of the cache directory card.

Note: When installing the replacement cache directory card, be sure the holes on each short side of the cache directory card are filled by the pegs on the cache card. This ensures proper seating of the cache directory card.

6. Install the 2740/2748/2763 card.

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 545).

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” on page 425)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 458).
4. Remove the EMC access plate.

Note: When installing this EMC access plate, 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.

Removal and Installation

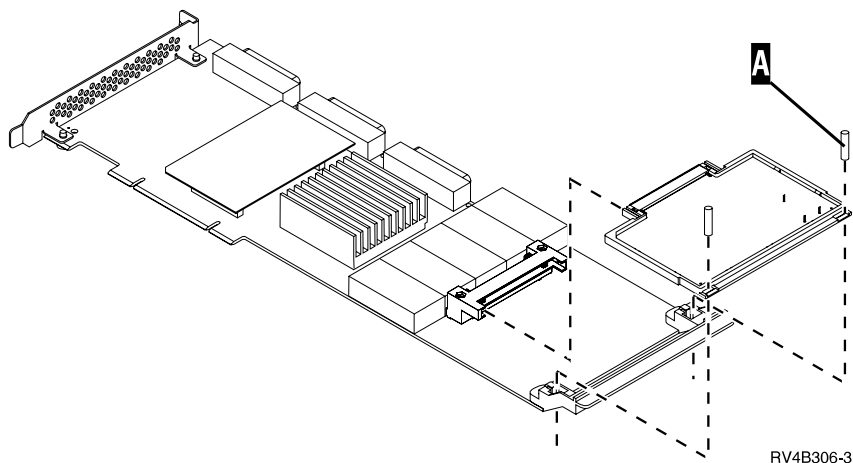


Figure 33. Cache card removal

This ends the procedure.

Cards–PCI

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 545).

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)

Procedure

1. Power off the system (see “Powering Off and Powering On the System” on page 425).
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 458).
4. Disconnect the cables that are connected to the PCI card.

Note: Label the cables to ensure correct installation.

5. Record the location of the card being removed.
6. Remove the screw that holds the card bracket.
7. Pull the card out of the system.

Note: If you are replacing the Type 4758 PCI Cryptographic coprocessor, go to “Cards-PCI Type 4758 Disablement Procedure” on page 456.

Note: If you are exchanging a type 2741, you must remove the cache card from the original type 2741 card and install it on the new card. See “Cards–Cache, Type 4010” on page 453.

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 410 for information on mode and jumper locations.

This ends the procedure.

Cards-PCI Type 4758 Battery Replacement Procedure

Introduction:

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)

1. Power off the system (see “Powering Off and Powering On the System” on page 425).
2. Remove the cover from the expansion slots. (See “Covers” on page 458.)
3. Remove the PCI Cryptographic Coprocessor card from the PCI-bus slot in the unit.
4. 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.

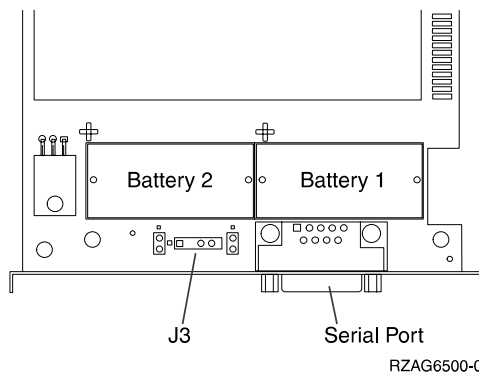


Figure 34. Battery Locations on the 4758 PCI Cryptographic Coprocessor

5. **Attention:** Any loss of battery power erases data stored in the card’s protected memory and renders the card useless.
6. Open the battery replacement kit.
7. 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.

8. 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 5 of this procedure.

9. Remove the battery warning label which covers Battery 1 and Battery 2. Discard the label.

Removal and Installation

10. 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.

11. 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.

12. Remove the battery tray from the J3 connector and discard it.
13. Place the new Battery Warning label (PN 04K9421) over the 2 new batteries which were just installed.
14. Reinstall the card.

This ends the procedure.

Cards-PCI Type 4758 Disablement Procedure

Introduction:

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)

1. Power off the system (see "Powering Off and Powering On the System" on page 425).
2. Remove the cover from the expansion slots. (See "Covers" on page 458.)
3. Remove the PCI Cryptographic Coprocessor card from the PCI-bus slot in the unit.
4. 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.

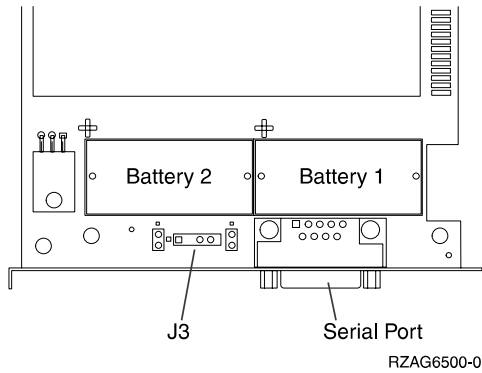


Figure 35. Battery Locations on the 4758 PCI Cryptographic Coprocessor

Note: The loss of battery power erases data stored in the card's protected memory and renders the card useless.

5. Remove the battery in the "Battery1" holder (right side).
6. Remove the battery in the "Battery2" holder (left side). When this has been accomplished, the PCI Cryptographic Coprocessor card has been disabled.
7. You can now install the new card.

This ends the procedure.

Control Panel (BACKPL1) (SPNLCRD)

Attention: The control panel is sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 545).

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

Note: The control panel is BACKPL1x (see "Locations and Addresses" on page 384).

1. Power off the system (see "Powering Off and Powering On the System" on page 425).
2. Disconnect the power cord from the system unit.
3. Remove the front cover (see "Covers" on page 458).
4. Loosen the bottom screws that hold the control panel assembly and remove the top screw.
5. Remove the control panel .
6. Disconnect the cables that are connected to the control panel card.
7. Remove the control panel card.

This ends the procedure.

Control Panel Battery

CAUTION:

The battery is a lithium battery. Only trained service personnel may replace this battery using the instructions in the Problem Analysis, Repair, and Parts service manual. 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. (RSFTC241)

Procedure

The control panel battery is located at the lower right corner of BACKPL2, the MFIOP backplane.

1. Power off the system (see “Powering Off and Powering On the System” on page 425).
2. Remove the back cover (see “Covers”).
3. Disconnect the power cord from the system unit.
4. Remove the left side system cover (see “Covers”).
5. Remove only the PCI cards that prevent access to the battery (see “Cards–PCI” on page 454). Record the location of the PCI cards.
6. Remove the PCI card support bracket.
 - a. Remove the screw from the PCI card support bracket (AMD 3).
 - b. Remove the bracket and the air moving device from the system and unplug the AMD.
7. Remove the control panel battery. Use a flat object (screwdriver) to pry the battery out.

The customer must set the time and date.

This ends the procedure.

Covers

Procedure

1. Remove the back cover by lifting the cover up and away from the frame.
2. Remove the side covers:
 - a. Remove the rear screws that hold the cover to the frame.
 - b. Slide the cover back and off.
3. Remove the front cover by grasping the fingerholds on each side of the cover and pulling the cover forward.

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 545).

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 432, before continuing with this procedure.

Were you directed here from “Chapter 7. Recovery Procedures” on page 473?

Yes **No**

↓ Go to “Chapter 7. Recovery Procedures” on page 473.

1. Remove the front covers (see “Covers” on page 458).
2. Remove the EMC access plate (see “Assembly 3: Final Assembly — Expansion Unit” on page 512).

Note: When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

3. Are you removing a disk unit by using device concurrent maintenance?

Note: Concurrent repair is not available if slot C07 is empty or has a 2728 storage IOA installed in it.

No **Yes**

↓ Go to “Concurrent Maintenance-Removal and Installation”.

4. Go to “Dedicated Maintenance-Removal and installation” on page 461.

Concurrent Maintenance-Removal and Installation

1. **To remove a disk unit using Device Concurrent Maintenance:**
 - 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 pull out firmly on the handle and pull the disk unit partially out of the frame.
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 frame.

2. The concurrent repair sequence takes 15 seconds to fully complete. Does the light start flashing 2 times per second after the concurrent maintenance procedure has completed?

No **Yes**

↓ The disk unit is not the cause of the problem. Schedule the system for dedicated repair in order to replace the disk unit backplane.

Removal and Installation

If the disk unit was in a location labeled Lxx, replace BACKPL3. See “DISK UNITS PLANAR / FRAME ASSEMBLY — SYSTEM UNIT (BACKPL3x)” on page 445 for replacement instructions.

If the disk unit was in a location labeled Fxx, replace BACKPL6. See “DISK UNITS PLANAR/FRAME ASSEMBLY— EXPANSION UNIT (BACKPL6)” on page 444 for replacement instructions.

For part number information, see “Chapter 8. Parts Listing” on page 503.

This ends the procedure.

3. Remove the disk unit from the holder (see “Disk Unit – Removal from holder” on page 462).

Replace the failing item (either the holder or the disk unit).

This ends the removal procedure.

4. 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.

5. **Perform the following to install the disk unit using concurrent maintenance:**

- a. Install the new disk unit into the holder (see “Disk Unit – Removal from holder” on page 462).

- b. Select System Service Tools (SST). If you cannot get to SST, select DST.

Do not perform a system IPL to get to DST.

- c. Select the *Start a Service Tool* 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 mounting frame. **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 10 times per second. You now have 9 seconds to push in firmly on the handle and push the disk unit completely into the frame.

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.

Did the light above the device go on and remain on?

No Yes

↓ **This ends the install procedure. Return to the procedure that sent you here.**

6. Perform the device concurrent maintenance procedure again without physically moving the disk unit.

Did the light above the device go on and remain on?

No Yes

↓ **This ends the install procedure.**

7. Did the light start flashing 2 times per second after the concurrent maintenance procedure was completed?

Yes No

↓ There is a power problem. One of the following has occurred:

- The new disk unit is defective. Repeat this procedure using a different disk unit or disk unit holder.
- The disk unit backplane was damaged during the device concurrent maintenance procedure.

If the disk unit was in a location labeled Lxx, replace BACKPL3. See “DISK UNITS PLANAR / FRAME ASSEMBLY — SYSTEM UNIT (BACKPL3x)” on page 445 for replacement instructions.

If the disk unit was in a location labeled Fxx, replace BACKPL6. See “DISK UNITS PLANAR/FRAME ASSEMBLY— EXPANSION UNIT (BACKPL6)” on page 444 for replacement instructions.

- There is a new problem with the power subsystem. Use the new reference code to solve the problem.

This ends the procedure.

8. What you replaced was not the failing item. If you replaced the disk unit, then perform this procedure again and replace the disk unit holder.

If you replaced the disk unit holder, replace the disk unit. Go to “Start Disk Service Here” on page 473 to replace the disk unit.

This ends the procedure.

Dedicated Maintenance-Removal and installation

1. Is the disk unit light at the location you are working with flashing 2 times per second?

No Yes

↓ The problem is either the disk unit holder, the disk unit, or the disk unit backplane.

Go to 5 on page 462.

2. **To remove a disk unit using dedicated maintenance perform the following:**

- a. Power off the system. (see “Powering Off and Powering On the System” on page 425)
- b. Disconnect the power cord from the system unit.
- c. Pull out firmly on the handle to remove the disk unit.
- d. Remove the unit from the holder (see “Disk Unit – Removal from holder” on page 462).
- e. Replace the failing item (either the holder or the disk unit).
- f. Install the disk unit into the holder (see “Disk Unit – Removal from holder” on page 462).

3. 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.

4. **To install a disk unit using dedicated maintenance perform the following:**

Removal and Installation

- a. Power off the system. (see “Powering Off and Powering On the System” on page 425)
- b. Disconnect the power cord from the system unit.
- c. Install the disk unit into the holder (see “Disk Unit – Removal from holder”).
- d. Push in firmly on the handle to install the disk unit.
- e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

This ends the procedure.

5. You are at this step because you are doing a dedicated repair and the disk unit light is flashing 2 times per second. Perform the following:
 - a. Make a note of the location of the disk unit that has the flashing light.
 - b. Power off the system. (see “Powering Off and Powering On the System” on page 425)
 - c. Remove the disk unit that had the flashing light.
 - d. IPL the system to DST. (see “Powering Off and Powering On the System” on page 425)
6. Approximately 20 seconds after powering on the system, look at the light at the disk unit location. Is the disk unit light flashing 2 times per second?

No Yes

- ↓ The disk unit you removed was not the failing item. Perform the following:
- a. Power off the system. (see “Powering Off and Powering On the System” on page 425)
 - b. If the disk unit was in a location labeled Lxx, replace BACKPL3. See “DISK UNITS PLANAR / FRAME ASSEMBLY — SYSTEM UNIT (BACKPL3x)” on page 445 for replacement instructions.
If the disk unit was in a location labeled Fxx, replace BACKPL6. See “DISK UNITS PLANAR/FRAME ASSEMBLY— EXPANSION UNIT (BACKPL6)” on page 444 for replacement instructions.
For part number information, see “Chapter 8. Parts Listing” on page 503.

This ends the procedure.

7. The disk unit or the disk unit holder is failing. Perform the following:
 - a. Power off the system. (see “Powering Off and Powering On the System” on page 425)
 - b. Repeat this procedure to install a new disk unit or disk unit holder.

This ends the procedure.

Disk Unit – Removal from holder

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 545).

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

- “Assembly 5: DASD/Holder Assembly” on page 516.

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 443.)
2. Loosen and remove screws **A** and **B** first. Then loosen and remove screws **C** and **D**.

To install disk units into the casing:

1. Tighten and torque the screws in the following sequence. Refer to the drawing in “Assembly 5: DASD/Holder Assembly” on page 516.
 - **A**
 - **B**
 - **C**
 - **D**
2. Do not over tighten!

This ends the procedure.

Integrated Netfinity Server for AS/400 IOA

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 545).

Procedure

For the system unit:

1. Power off the system (see “Powering Off and Powering On the System” on page 425).
2. Disconnect the power cord from the system unit.
3. Remove the left side cover (see “Covers” on page 458). Remove the card in slot C04 (the INS bridge card) to allow for enough room. See “Cards-PCI” on page 454).
4. Remove the 3 screws that holds the card to the standoffs.
5. Pull the card out far enough to remove the card from the connector.
6. Slide the card slightly to the left so the card clears the card guides.
7. Raise the card up slightly so the bottom of the card will clear the three standoffs.
8. Remove the card from the system unit by pulling it straight out.

Note: When installing the 2850 card, be sure to use the two guide pins on either side of the connector inside the system. There are many fragile pins in this connector and care must be taken to avoid bending the pins.

This ends the procedure.

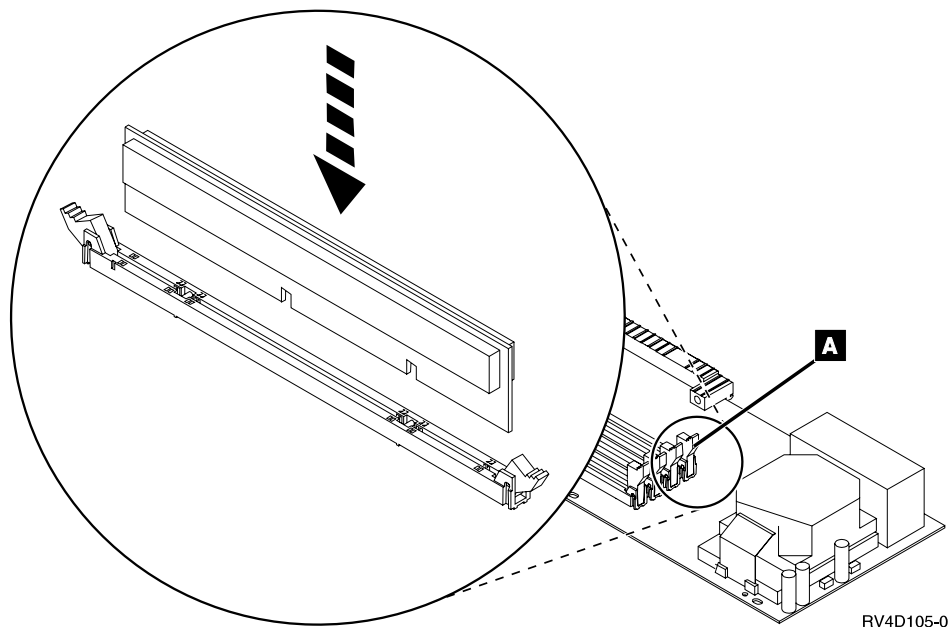
To install memory to the Integrated Netfinity Server for AS/400 card:

1. Find the package that contains the 2861, 2862 or 2867 PC server memory cards. Remove the cards from their static-protective package.
2. Align the memory card with the next available connector on the 2850 INS card.

Removal and Installation

Note: In the figure below, **A** shows the location of the first memory card.

3. Snap the card in place by moving it downward in the connector. There will be a distinct click sound when the card snaps into the connector.



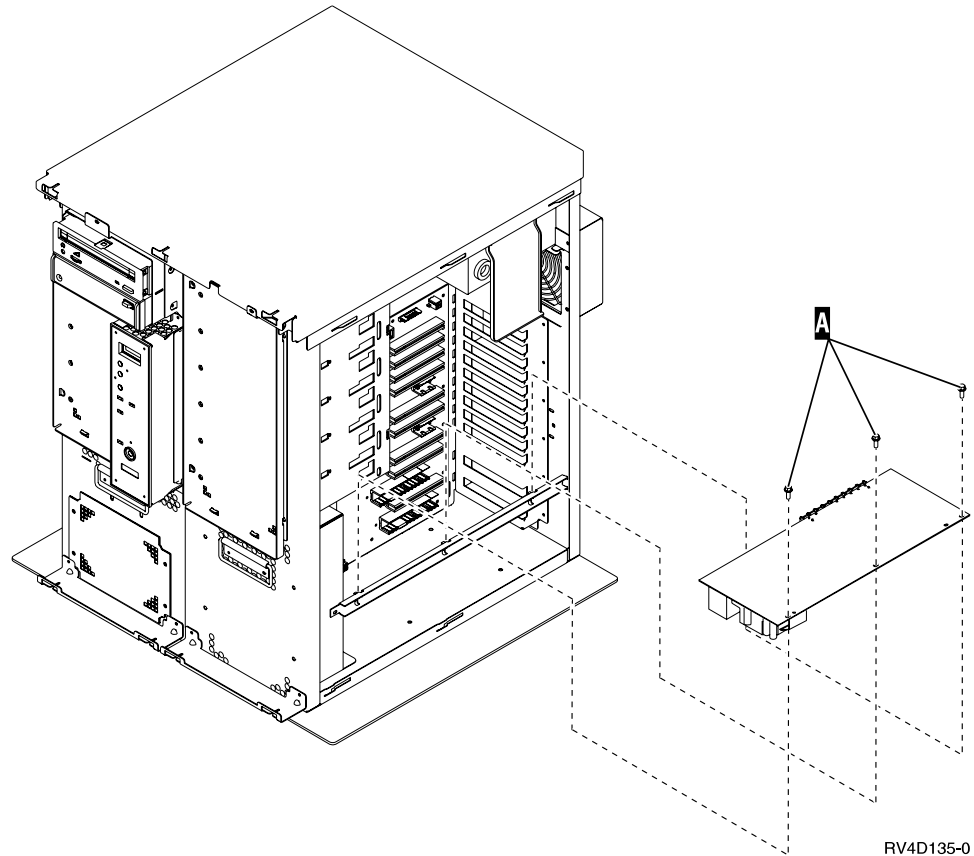
This ends the procedure.

For the expansion unit:

1. Power off the system (see “Powering Off and Powering On the System” on page 425).
2. Disconnect the power cord from the system unit.
3. Remove the right side cover (see “Covers” on page 458).
4. Remove the 3 screws that holds the card to the bracket.
5. Pull the card out of the system.
- 6.

Note: When installing the 2841 or 2857 card, be sure to use the two guide pins on either side of the connector inside the system. There are many fragile pins in this connector and care must be taken to avoid bending the pins.

This ends the procedure.



RV4D135-0

Main Storage (M02)

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 545).

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. Disable CPM by reading “Important Continuously Powered Main Storage (CPM) Information” on page 421. (Note: During reassembly of the system, ensure that you enable CPM.).
2. Power off the system. (see “Powering Off and Powering On the System” on page 425)
3. Remove the back and left side covers (see “Covers” on page 458).
4. Disconnect the power cord from the system unit.
5. Disconnect the power cord to the backplane.
6. Release the card latch and remove the memory card by pulling the tray forward.
7. To remove the memory module, release the clips on each side of the module and lift the module straight up and out of the socket.

Removal and Installation

Note: Record the memory module positions to ensure that you install them in the same locations.

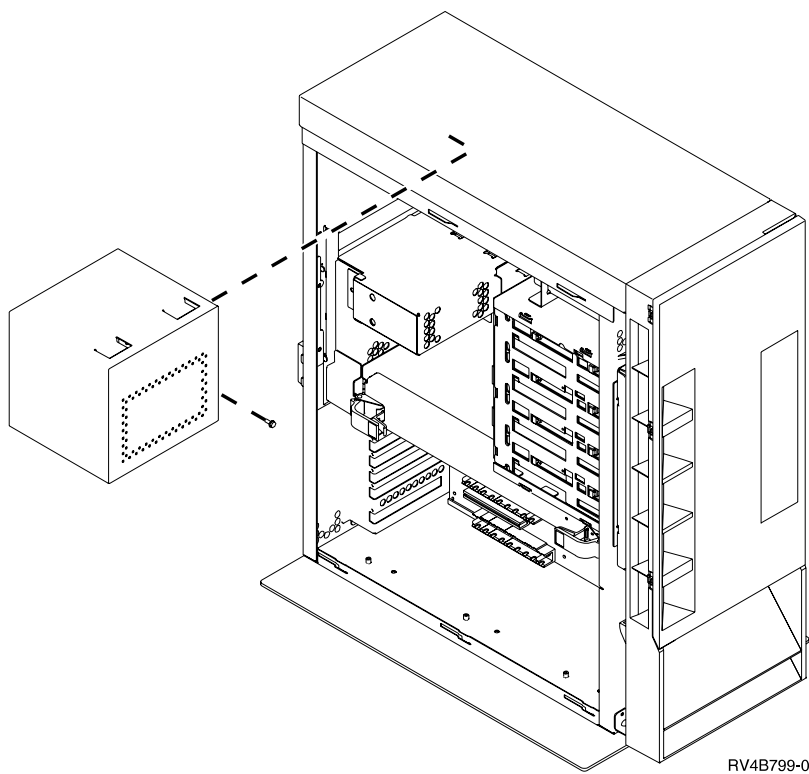
This ends the procedure.

Power Supply — System Unit (A01)

Procedure

1. Power off the system (see “Powering Off and Powering On the System” on page 425).
2. Disconnect the power cord.
3. Remove the back, side and top covers (see “Covers” on page 458).
4. Disconnect the power cables (P7 and P8) from the MFIOP.
5. Disconnect the power cables from the disk units, optical unit, and tape unit.
6. If the system has a regulator, remove the cover from the regulator 1 card (see “Regulator 2” on page 468).
7. Remove the power cable retainer (top and bottom) from the processor.
8. Disconnect the power cables from the processor planar.
9. Remove the power supply screws that hold the power supply to the back of the system unit.
10. Slide the power supply toward the front of the system and remove it.
11. Install the power supply by reversing the removal procedure.

This ends the procedure.



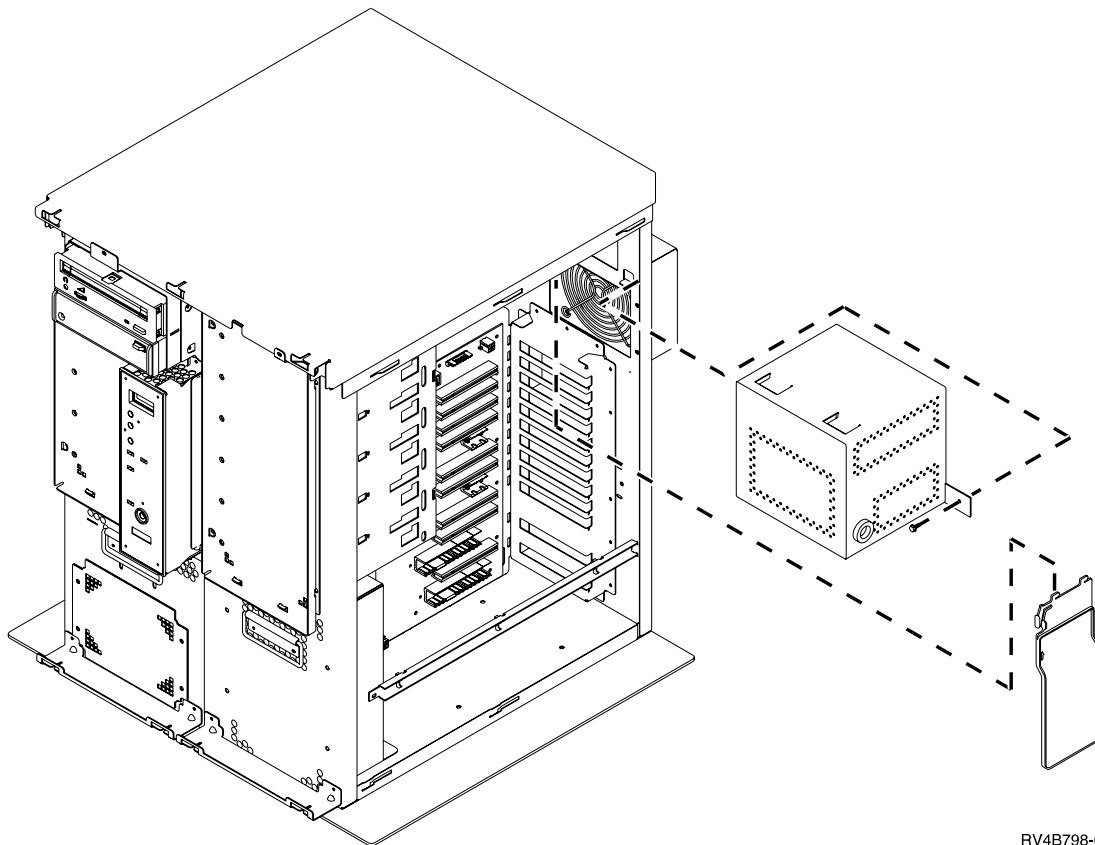
This ends the procedure.

Power Supply — Expansion Unit

Procedure

1. Power off the system (see “Powering Off and Powering On the System” on page 425).
2. Disconnect the power cord.
3. Remove the side cover (see “Covers” on page 458).
4. Remove the ESD shield by:
 - a. Press the tab on the left side of the ESD shield.
 - b. Pull down slightly on the left side of the ESD shield.
 - c. Slide the ESD shield forward.
5. Disconnect the power cables from the expansion planar and disk units.
6. Remove the screws holding the power supply to the back of the expansion unit.
7. Slide the power supply toward the front of the expansion unit and remove it.
8. Install the power supply by reversing the removal procedure.

This ends the procedure.



RV4B798-0

This ends the procedure.

Regulator 1

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 545).

Procedure

Attention: Read “Important Continuously Powered Main Storage (CPM) Information” on page 421.

1. Power off the system (see “Powering Off and Powering On the System” on page 425).
2. Remove the side and back covers (see “Covers” on page 458).
3. Disconnect the power cord from the system unit.
4. Remove the two screws (back and bottom) that are securing the regulator 1 cover.
5. Pull the cover slightly toward the front of the system unit to disengage the retaining tabs on the lower left side of the regulator cover.
6. Pull the cover straight out.
7. Push down the two side buttons that secure the card.
8. Pull out the regulator card.

This ends the procedure.

Regulator 2

Attention: All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 545).

Procedure

1. Disable CPM by reading “Important Continuously Powered Main Storage (CPM) Information” on page 421. (Note: During reassembly of the system, ensure that you enable CPM).
2. Power off the system (see “Powering Off and Powering On the System” on page 425).
3. Remove the side and back covers (see “Covers” on page 458).
4. Disconnect the power cord from the system unit.
5. Remove the disk unit cage (see “DISK UNITS PLANAR / FRAME ASSEMBLY — SYSTEM UNIT (BACKPL3x)” on page 445).

Note: It is **not** necessary to remove the disk units from the cage. Disregard steps 6 on page 445 and 7 on page 445.

6. Remove the screw on the forward plate covering regulator 2.
7. Lift the retaining tabs on both sides of the regulator 2 card and pull the card out.

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 432, before continuing with this procedure.

1. Remove optical media (if any) from the optical device.

Note: If the eject button on an optical device is failing and will not open, follow the steps in “Manually removing optical media from the optical device”.

2. Power off the system (see “Powering Off and Powering On the System” on page 425).
3. Disconnect the power cord from the system unit.
4. Remove the front cover, left side cover, and top cover (see “Covers” on page 458).
5. Disconnect the Power cables and Signal cables from the rear of the removable media unit.
6. If an expansion unit is present, remove the expansion unit disk unit cover to gain access to the screws.
7. Remove the screws on each side of the unit and then remove the unit by pulling the unit forward.
8. Remove the unit from the system frame.
9. Refer to “Tape and Optical Unit Address Jumpers” on page 401 for the tape and optical address jumpers.

This ends the procedure.

Manually removing optical media from the optical device

The following procedure describes how to remove optical media from the optical device if the eject button is not responding:

1. 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.
2. 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.
3. 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.

This ends the procedure.

Uninterruptible Power Supply

Important UPS Information

Before continuing the repair action, read and understand the following information. It is important that you follow the instructions to verify the repair.

After completing a repair action, you must run a battery test from the Hardware Service Test display. The test is required to verify the repair and also to reset the 90-day battery test timer.

Removal and Installation

If the battery is not charged, the UPS may reject the test and the HST display will show a message stating "The command to test the battery has failed". Any other code indicates that the test was successful. Depending on the state of the battery charge, it may take up to 24 hours for the UPS to accept the test.

If the SRC that initiated the repair action was 1xxx 2403, 1xxx 2404, or 1xxx 2405, this SRC will display when the system is powered on after the repair action is complete. A battery test will reset this SRC indication. If you do not reset the SRC after the battery test, the repair action was not successful and the UPS was not the failing item.

If the SRC that initiated the repair action was **not** 1xxx 2403, 1xxx 2404, or 1xxx 2405 and the repair action was successful, the system will power on and no SRC will display. However, you must run the battery test to reset the 90-day timer. If the repair action was not successful, either the original SRC or a new SRC will display.

If you detect a problem during the battery test, the results may be misleading because the SRC may not return until a new test is required.

Once the battery test is successful, the repair action is complete.

Procedure

Attention: Read "Important Continuously Powered Main Storage (CPM) Information" on page 421.

Before continuing with this procedure, ensure that you have read and understand the information in "Important UPS Information" on page 469.

1. Power off the system. (see "Powering Off and Powering On the System" on page 425)
2. Disconnect the power cord from the system.

Attention: AC power must be removed to prevent the batteries from charging during the removal procedure.

3. **Attention:** Wait 2 minutes and 30 seconds before continuing this procedure. This ensures that the system is not running on the UPS batteries.
4. Remove the UPS front cover (see "Covers" on page 458).
5. Remove the battery pack tray retaining screws.
6. Remove the battery pack retaining bar.

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 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. Slide the battery pack out of the pedestal.
Are you only exchanging the battery pack?
No Yes

↓ Exchange the battery pack trays.

This ends the procedure.

8. Perform the following:
 - a. Disconnect the UPS cables from the rear of the UPS unit.
 - b. Exchange the power supply and UPS unit.
 - c. Reverse the procedure to install UPS cables, battery pack trays, and the front cover.
 - d. Run the battery test.
 - e. **This ends the procedure.**

Removal and Installation

Chapter 7. Recovery Procedures

Disk Service Support	473	Resuming Mirrored Protection.	483
Start Disk Service Here	473	Disk Unit Data Save and Initialize	483
Determining Storage Protection Status	474	Disk Unit Initialize and Disk to Disk Copy	492
Exchanging a Disk Unit with Device Parity Protection	475	DST Procedures	500
Exchanging a Disk Unit with Mirrored Protection	477	Recover Remote Loadsource	500
		Copy the Contents of LIC Log.	501

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 443.

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 474. 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 477.

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 475.

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 443).

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 483.

To save the data by copying to another disk:

- Go to “Disk Unit Initialize and Disk to Disk Copy” on page 492.

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 474)?

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 404. Use the address to find the location. See “Locations and Addresses” on page 384.

Recovery Procedures

Exchange the failing disk unit (see “Chapter 6. Removal and Installation Procedures” on page 443). 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 443). 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 500 .

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 483.

To save the data by copying to another disk:

- Go to “Disk Unit Initialize and Disk to Disk Copy” on page 492.

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 483.

To save the data by copying to another disk:

- Go to “Disk Unit Initialize and Disk to Disk Copy” on page 492.

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 443).

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 500.

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 443).

After exchanging the disk unit, go to “Recover Remote Loadsource” on page 500.

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 483.

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 266 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 473 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 443). 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 483.

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 500.

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 443). 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 483.

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 41).

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 443).
- 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 443).
- 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 197. 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 443). If you do not know the part number, see “Type, Model, and Part Number List” on page 193.
- 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 41). 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 443).

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 443).

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 495.

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 483.

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 443).
- 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 443).
 - 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 197. 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 443).
 - 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 443).
 - 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 443).
 - 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 197. 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 443).
 - 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 483.

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 443).
- 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 443).
 - 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 197. 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 443).
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 443). If you do not know the part number, see “Type, Model, and Part Number List” on page 193.
 - 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 443).
 - 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 197. 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 493 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 443).

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

- **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

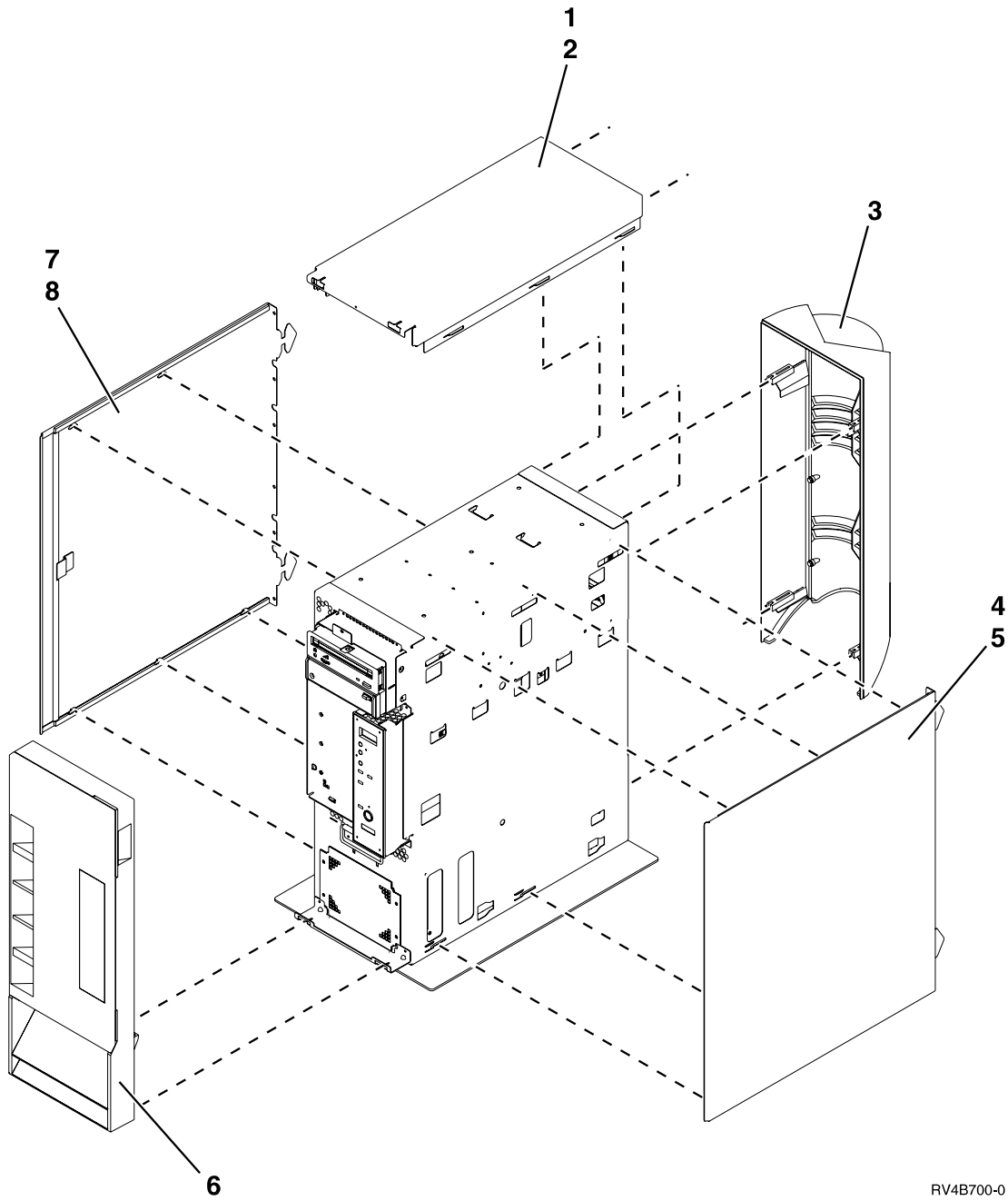
Asm-Index	Part Number	Units	Description
3-	2512667 2513714	1 1	Cover Asm, Rear, Red Cover Asm, Rear, White For next higher asm, see assembly 1-2
-1	5373637	1	• Seal, Top
-2	5356429	2	• Clip, Retaining
-3	1847630	1	• Finger Stock Asm
-4	1847602	NR	• • Channel, Finger Stock
-5	5373639	AR	• Seal, Bottom

Asm-Index	Part Number	Units	Description
-6	5356429	2	• Clip, Retaining
-7		NP	• Cover, Rear, Without Paint
-8	0416629	R	• Screw, Panel

Assemblies—System Unit and Expansion Unit

Assembly 1: Cover Assemblies	506	Assembly 4: Control Panel Assembly	514
Assembly 2: Final Assembly — Base Unit	510	Assembly 5: DASD/Holder Assembly	516
Assembly 3: Final Assembly — Expansion Unit	512		

Assembly 1: Cover Assemblies

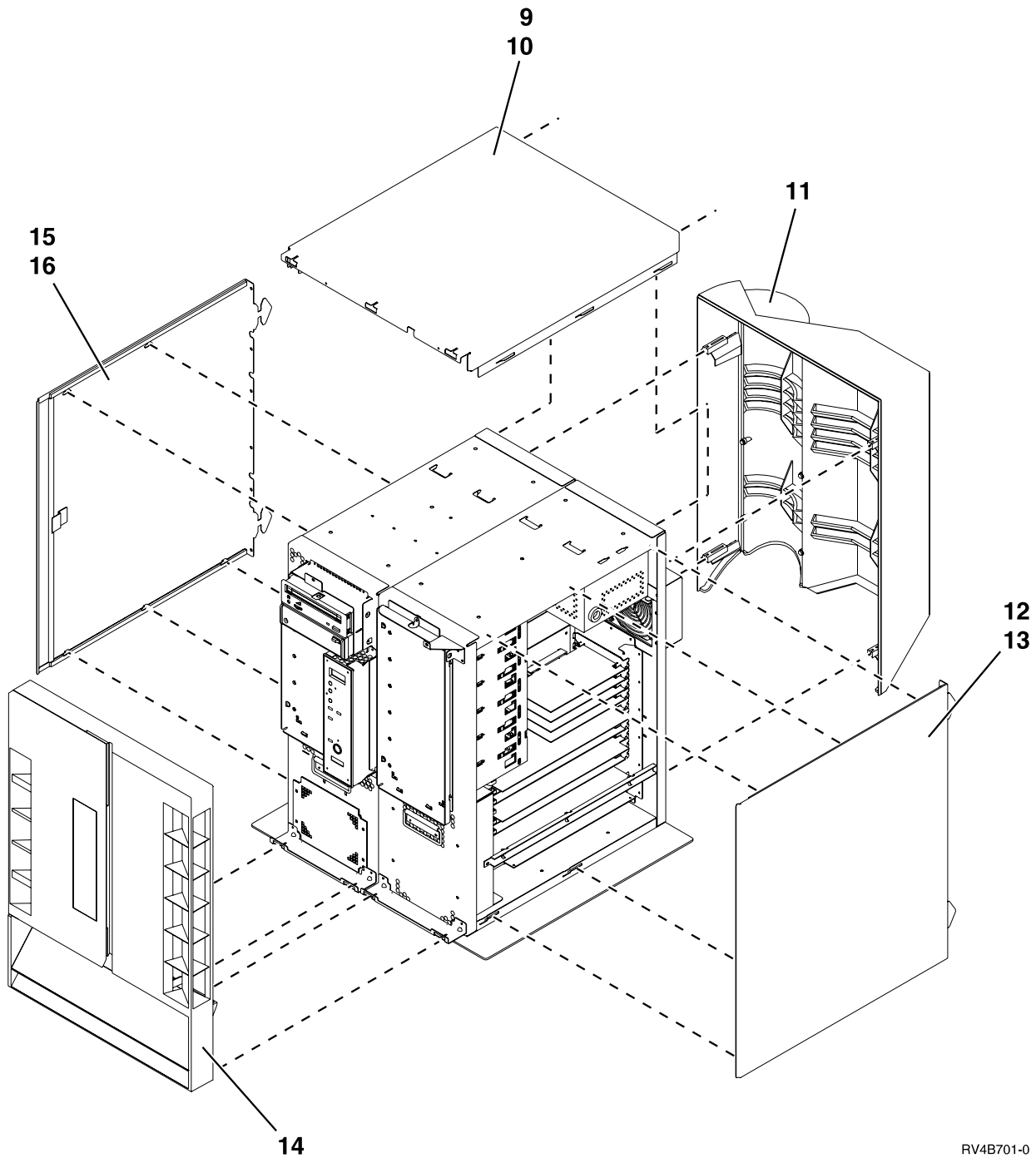


RV4B700-0

Assembly 1: (continued)

Asm- Index	Part Number	Units	Description
1-1	97H5936	1	Cover, Top (Base Unit Only)
-2	75G2878	3	Screw, M3.5 x 0.6
-3	97H5920	1	Cover Asm, Back (Base Unit Only)
-4	97H5937	1	Cover, Side
-5	75G2878	6	Screw, M3 x 0.5
-6	97H7774	1	Cover Asm, Front (Base Unit Only)
-7	97H5937	1	Cover, Side
-8	75G2878	5	Screw, M3 x 0.5

Assembly 1: (continued)

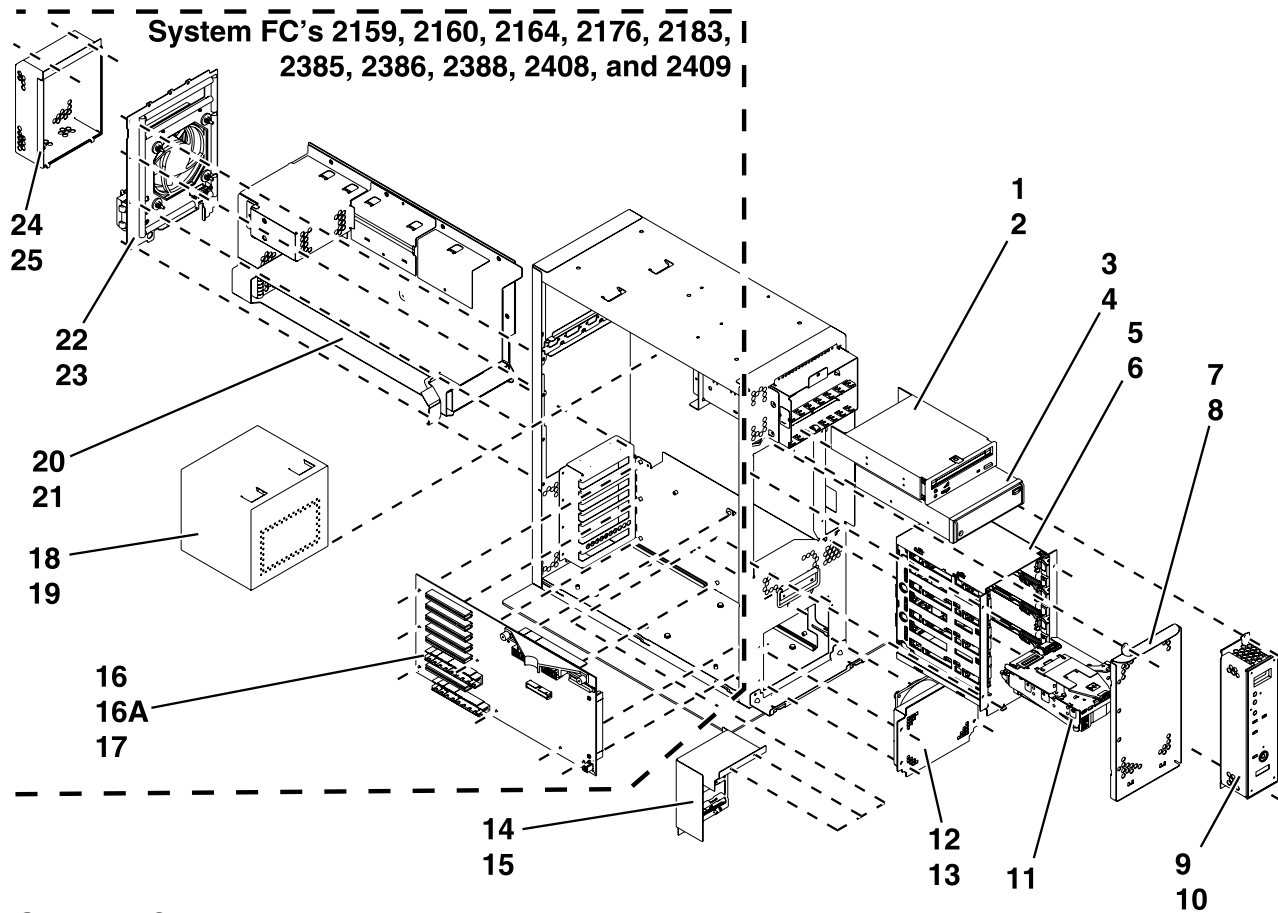


RV4B701-0

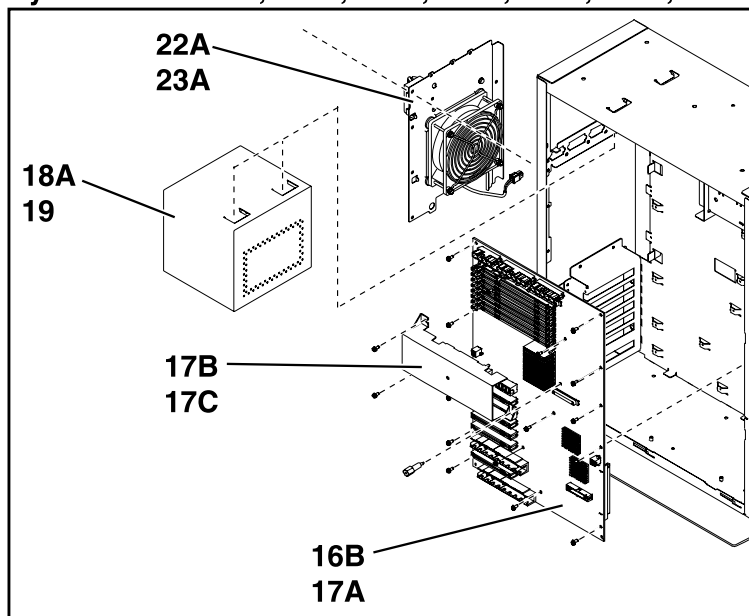
Assembly 1: (continued)

Asm- Index	Part Number	Units	Description
1-9	90H4558	1	Cover, Top (Base Unit with Expansion)
-10	75G2878	5	Screw, M3.5 x 0.6
-11	97H5921	1	Cover, Back (Base Unit with Expansion)
-12	97H5937	1	Cover, Side
-13	75G2878	6	Screw, M3 x 0.5
-14	97H7777	1	Cover Asm, Front (Base Unit with Expansion)
-15	97H5937	1	Cover, Side
-16	75G2878	5	Screw, M3 x 0.5

Assembly 2: Final Assembly — Base Unit



System FC's 2289, 2290, 2291, 2292, 2295, 2296, and 2407

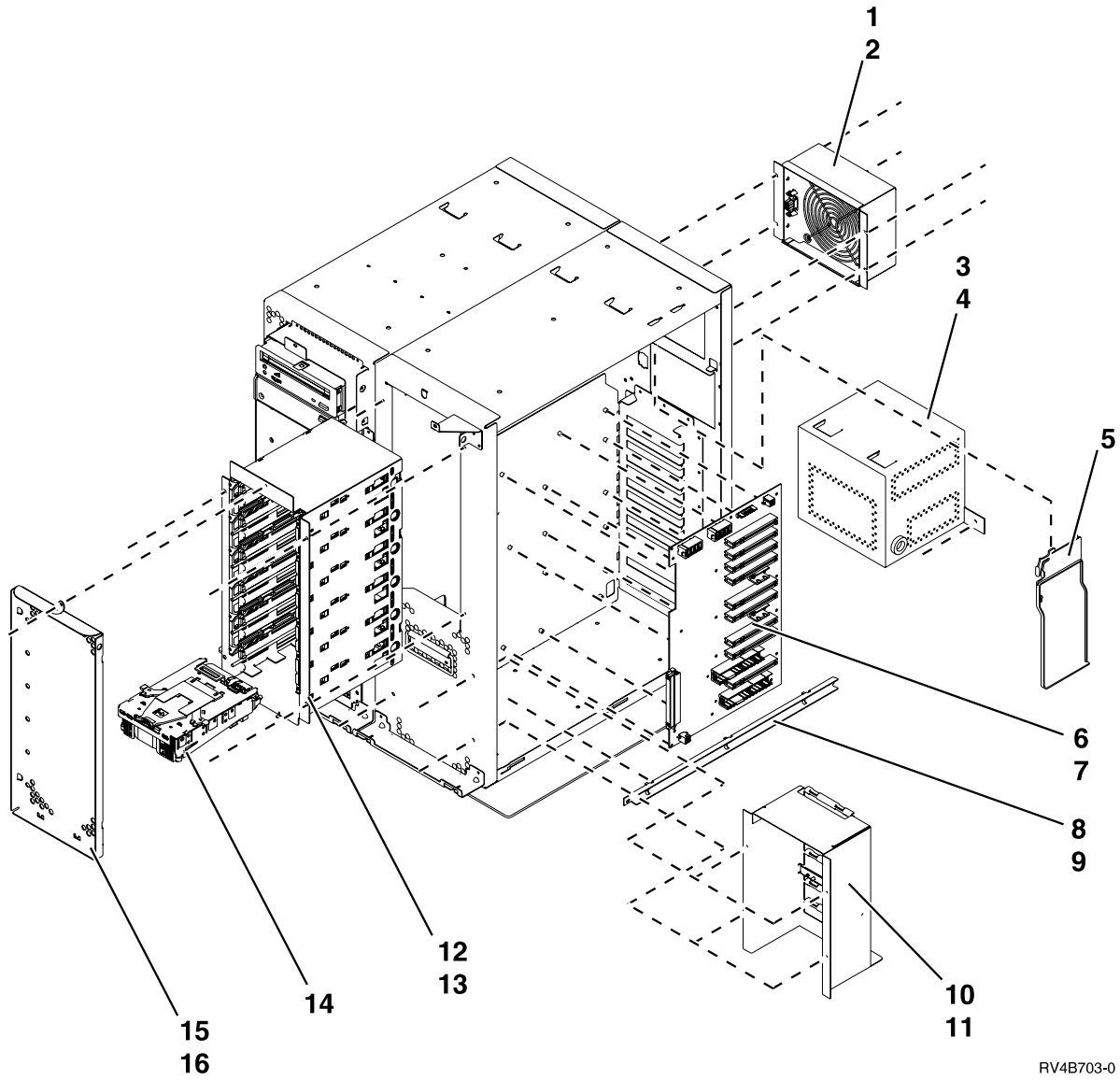


RV4B702-2

Assembly 2: (continued)

Asm-Index	Part Number	Units	Description
2-1	NONUM	1	Optical Storage Unit See "Type, Model, and Part Number List" on page 193.
-2	33G3907	3	Screw, M3 x 0.5 (5mm)
-3	NONUM	1	Tape Unit (63xx) See "Disk Unit Type, Model, and Part Number List" on page 197. See "Type, Model, and Part Number List" on page 193.
-4	33G3907	3	Screw, M3 x 0.5 (5mm)
-5	97H5946	1	Cage Asm, Disk Unit (non-CCM) — BACKPL3A
-5	97H9230	1	Cage Asm, Disk Unit (CCM) — BACKPL3B BACKPL3A or BACKPL3B is attached to the back of the disk cage.
-5	44H4636	AR	Connector Cover (when media is not installed) (CCM only)
-6	75G2876	6	Screw, M3.5 x 0.6 (8mm)
-7	NONUM	1	ESD Shield, Disk Unit
-8			Screw
-9	NONUM	1	Control Panel Backplane See "BACKPLx" on page 203.
-10	75G2878	2	Screw, M3.5 x 0.6 (8mm)
-11	NONUM	AR	Disk Unit / Tray Asm See "Disk Unit Type, Model, and Part Number List" on page 197.
-12	75G2699	1	AMD3 Asm
-13	75G2878	4	Screw, M3.5 x 0.6 (8mm)
-14	90H4525	1	PCI Guide Asm
-15	75G2878	4	Screw, M3.5 x 0.6 (8mm)
-16	91H4105	1	Planar Asm (MFIOP BACKPL2)
-16A	16G8095	1	•Control Panel Battery (PNLBAT) The Control Panel Battery is mounted on BACKPL2 (MFIOP).
-16B		1	Planar Asm (Processor/MFIOP BACKPL7) See Table 6 on page 193 for possible part numbers.
-17	75G2877	6	Screw, M3 x 0.5 (7.5mm)
-17A	75G2878	15	Screw, M3.5 x 0.6 (8mm)
-17B	74G6327	1	Air flow tunnel
-17C	75G2878	2	Screw, M3.5 x 0.6 (8mm)
-18	75G2727	1	Power Supply Asm 500-watt (for system units with processor types 2385, 2386, 2388, 2408, 2409)
-18	97H5881	1	Power Supply Asm 350-watt (for system units with processor types 2159, 2160, 2164, 2176, 2183)
-18A	90H8983	1	Power Supply Asm 340-watt (for system units with processor types 2289, 2290, 2291, 2292, 2295, 2296, 2407)
-19	75G2878	4	Screw, M3.5 x 0.6 (8mm)
-20	NONUM	1	Processor Enclosure Asm BACKPL4 is housed inside the Processor Enclosure Asm. See "Type, Model, and Part Number List" on page 193 for possible part numbers.
-20	97H7840	1	Riser card for DIMMs The main storage card is housed inside the Processor Enclosure Asm. See "Type, Model, and Part Number List" on page 193.
-22	90H4559	1	AMD4 Asm
-22A	74G6331	1	AMD Asm, mounting plate
-23	75G2878	4	Screw, M3.5 x 0.6 (8mm)
-23A	75G2878	9	Screw, M3.5 x 0.6 (8mm)
-24	75G2806	1	ESD Shield, AMD Asm
-25	75G2878	4	Screw, M3.5 x 0.6 (8mm)

Assembly 3: Final Assembly — Expansion Unit

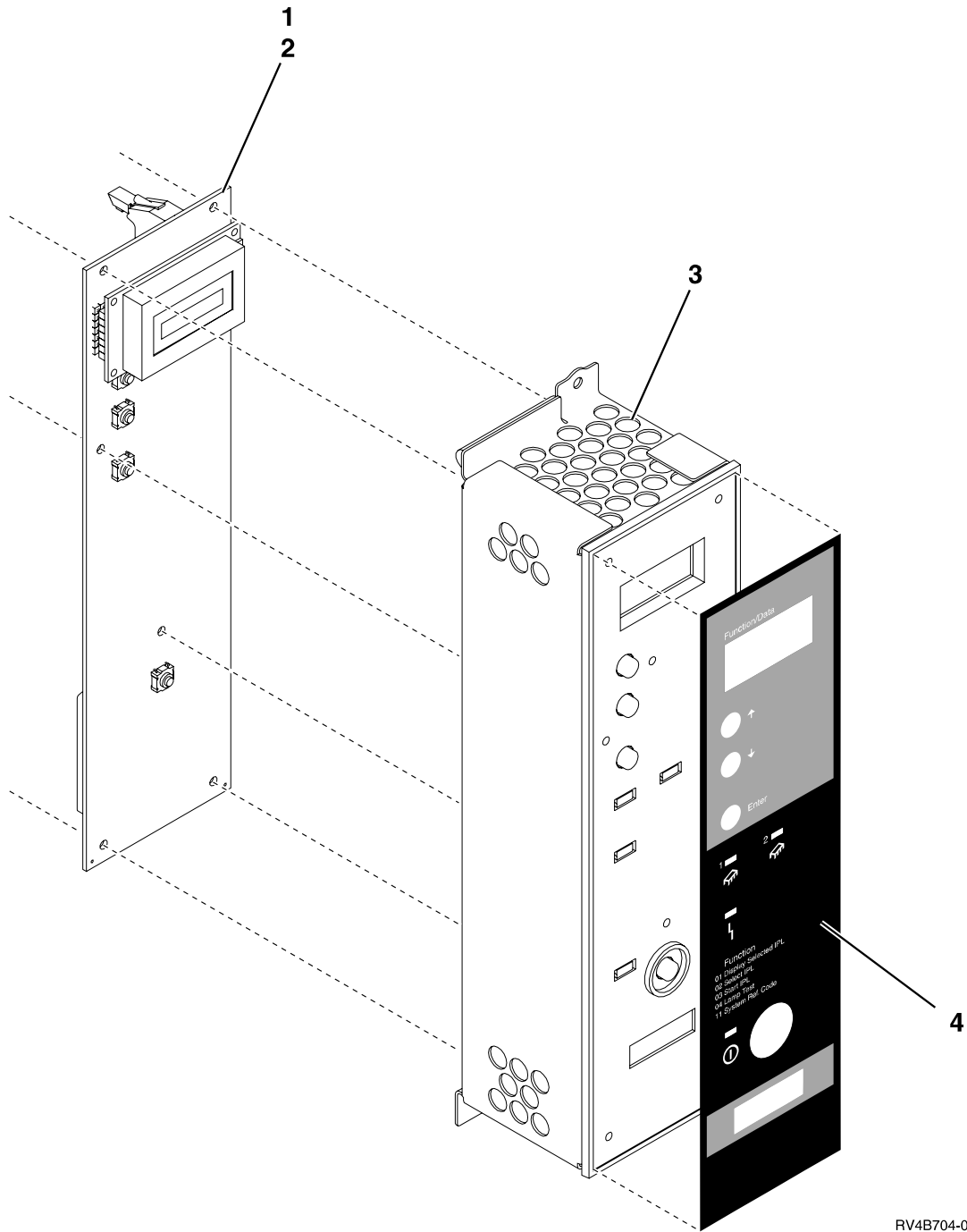


RV4B703-0

Assembly 3: (continued)

Asm- Index	Part Number	Units	Description
3-1	75G2692	1	AMD1 Asm
-2	45G2878	4	Screw, M3.5 x 0.6
-3	97H5881	1	Power Supply Asm 350-watt
-4	75G2878	4	Screw, M3.5 x 0.6
-5	NONUM	1	ESD Plate
-6	97H5996	1	Planar Asm (Expansion Unit PCI Backplane, BACKPL5)
-7	75G2877	16	Screw, M3 x 0.5
-8	75G2707	1	Bracket, Integrated Netfinity Server for AS/400
-9	75G2878	1	Screw, M3.5 x 8
-10	75G2691	1	PCI Guide Asm
-11	75G2878	4	Screw, M3.5 x 0.6
-12	97H9232	1	Cage Asm, Disk Unit (CCM) with BACKPL6 The backplane is attached to the back of the disk cage.
-12	44H4636	AR	Connector Cover (when media is not installed)
-13	75G2878	6	Screw, M3.5 x 0.6
-14	NONUM	AR	Disk Unit / Tray Asm See "Disk Unit Type, Model, and Part Number List" on page 197.
-15	NONUM	1	ESD Shield, Disk Unit
-16			Screw

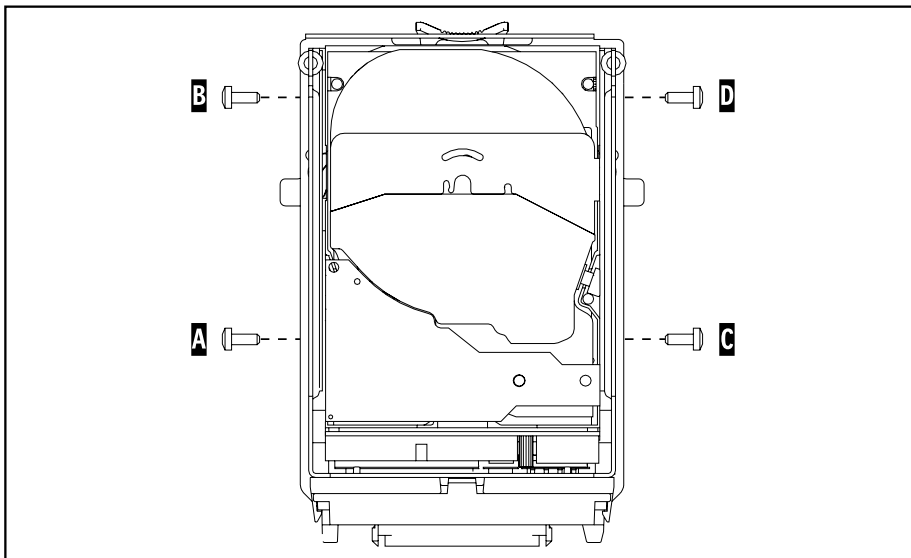
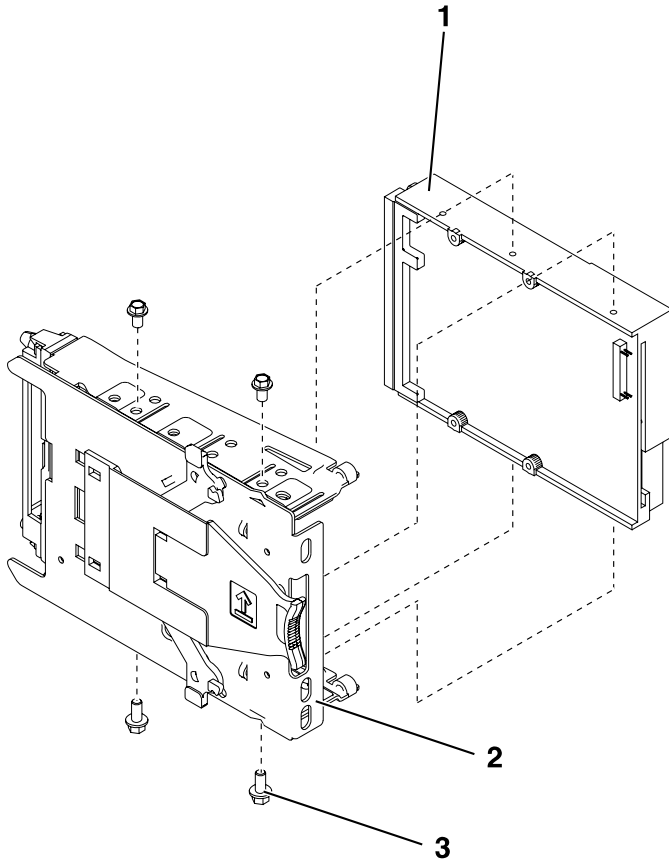
Assembly 4: Control Panel Assembly



Assembly 4: (continued)

Asm- Index	Part Number	Units	Description
4-	NONUM	1	Control Panel Asm
-1	97H9108	1	• Control Panel Card (BACKPL1)
-2	1622660	5	• Screw, 8mm
-3	NONUM	1	• Control Panel/Bezel Asm
-4	75G2778	1	Control Panel Overlay - English
-4	75G2779	1	Control Panel Overlay - Italian
-4	75G2780	1	Control Panel Overlay - French
-4	75G2781	1	Control Panel Overlay - German
-4	75G2782	1	Control Panel Overlay - Norwegian
-4	75G2783	1	Control Panel Overlay - Spanish
-4	75G2784	1	Control Panel Overlay - Japanese
-4	75G2785	1	Control Panel Overlay - Chinese T
-4	75G2786	1	Control Panel Overlay - Chinese S
-4	75G2787	1	Control Panel Overlay - Portuguese
-4	75G2788	1	Control Panel Overlay - Russian
-4	75G2789	1	Control Panel Overlay - Czech
-4	75G2790	1	Control Panel Overlay - Polish
-4	75G2791	1	Control Panel Overlay - Hungarian
-4	75G2792	1	Control Panel Overlay - Korean

Assembly 5: DASD/Holder Assembly



RV4B304-3

Assembly 5: (continued)

Asm- Index	Part Number	Units	Description
5- -1	NONUM	AR	DASD/Holder Asm • Disk Unit See "Disk Unit Type, Model, and Part Number List" on page 197.
-2	44H8999	1	• Holder
-3	44H4266	4	• Screw

Part Numbers — Peripherals

Assembly 6: Internal Cable Assemblies 518 Assembly 8: Miscellaneous 520
 Assembly 7: External Cable Assemblies 519

Assembly 6: Internal Cable Assemblies

Asm- Index	Part Number	Units	Description
6-	97H5917	1	PWR2 — Rear fan power cable (system and expansion)
-	97H5917	1	PWR3 — Rear AMD Power Cable (expansion unit)
-	97H5913	1	SIG1 — MFIOP to Control panel cable (power and signal)
-	97H5914	1	SIG2 — Control panel to RPO/UPS/CPM/MI cable
-	97H5915	1	SIG3 — MFIOP to disk unit / tape / Optical / SCSI cable
-	8193226	1	SIG5 — MFIOP to expansion unit card planar cable
-	97H5916	1	SIG6 — MFIOP to expansion unit disk unit SCSI cable
-	92F0324	1	SIGCHG1 — Signal converter, 68-pin to 50-pin

Assembly 7: External Cable Assemblies

Asm- Index	Part Number	Units	Description
7-	6495268	AR	SCSI, 4 m (12 feet) (9826)
-	6495269	AR	SCSI, 12 m (40 feet) (9827)
-	21F4980	AR	SCSI, 20 m (60 feet) (9846)
-	NONUM	AR	Tape signal cables. (See "EXTSCSI" on page 209.)
-	6339098	AR	Token-Ring LAN
-	72X5645	AR	Twinaxial, 4 port, 3 m (10 feet)
-	21F5093	AR	Twinaxial, 8 port, 6 m (20 feet)
-	21F8075	AR	Twinaxial, 8 port only, 9 m (30 feet)
-	4236482	AR	Twinaxial, 6 m (20 feet) - To First W/S Console
-	94X3698	AR	Twinaxial connector shield
-	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)
-	75G5958	1	Filter, RJ-45 (2723 and 2424)
-	97H7385	1	Filter, RJ-45 (2811 and 2815)
-	97H5917	1	Front fan power cable (system and expansion)
-	44H8676	1	Bridge video cable (15 feet)
-	44H8677	1	Keyboard or mouse extension (16 feet)
-	45H2433	1	Keyboard/mouse/serial (brick)
			WAN PCI Cables
-	44H7480	AR	RS232 cable 6.1 meter (20 feet)
-	44H7482	AR	RS232 cable 6.1 meter (20 feet) - Germany
-	44H7484	AR	RS232 cable 6.1 meter (20 feet) - Japan
-	44H7498	AR	V.36 cable 6.1 meter (20 feet)
-	44H7495	AR	V.35 cable 6.1 meter (20 feet)
-	44H7501	AR	X.21 cable 6.1 meter (20 feet)
-	44H7504	AR	Communications Console cable 6.1 meter (20 feet)
-	97H7557	AR	Operations Console cable (36 pin) 6.1 meter (20 feet)
-	97H7591	AR	Remote Control Panel cable (SAMI)

Assembly 8: Miscellaneous

Asm- Index	Part Number	Units	Description
8-	74F1846	1	CC Card Wrap (Enet)
-	23F5634	1	HH Card Wrap (SERIAL PORT) FC 285A
-	6165899	1	II Card Wrap (TRlan)
-	86G7674	1	JJ RJ45 Card Wrap (for FC 2723, 2724)
-	21H3548	1	LL Card Wrap (ATM) FC 2812, 2819
-	21H3547	1	MM Card Wrap (ATM) FC 2816, 2818
-	42H0540	1	NN Cable Wrap (ATM) FC 2811, 2815
-	45H2364	1	OO Card Wrap (WS PCI)
-	21H3760	1	PP Card Wrap (WAN)
-	44H7479	1	QQ Card Wrap (WAN PCI)
-	90H6024	1	RR Card Wrap (PARALLEL PORT) FC 285A
-	21H4811	1	SS RJ45 Card Wrap FC 2838
-	97H7749	1	UU Card Wrap (ISDN) FC 2750
-	97H7745	1	VV Card Wrap (ISDN) FC 2751
-	97H7754	1	WW Card Wrap FC 2761
-	17G2642	1	ASYNC 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
-	44H8167	1	Filler card — main storage
-	81F8902	1	CDROM test CD
-	16G8467	1	Tape cleaner — 8mm abrasive
-	1675209	1	Jumper address — QIC, CD
-	59X4262	1	Twinax port tester (93X2040)
-	92F0324	1	Signal Converter 68 pin to 50 pin
-	46G0298	AR	Adapter, 25 pin to 9 pin EIA232
-	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
-	59H2677	AR	CE Test Tape (FC 7208 model 342)
-	59H3661	AR	CE Test Tape (QIC-4GB)
-	59H4127	AR	CE Test Tape (MLR3)
-	59H4463	AR	CE Test Tape (QIC5010, MLR1)
-	81F8902	AR	CE Test Tape 1.2SL (QIC-1000)
-	16G8438	AR	CE Test Tape (QIC-2GB)
-	21F8577	AR	CE Test Tape 8mm (on line)
-	46G2660	AR	CE Test Tape 8mm (off line)
-	16G8095	1	TOD — Time of Day battery

Power Cord Part Numbers and Receptacle Descriptions

Table 28. AS/400 System Power Cords and Receptacles

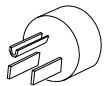

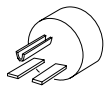

B - FC 5070, 5072, 5080, 5082 D ¹ - Model 620, 720, S20 E ¹ - Model 600, 610 F - Models 640, 650, 730, 740, S30, S40, SB1 G - Models 170, 250 H - FC 5081, 5083, 5071, 5073, 9251		
Plug	Receptacle	Countries
Type 4  125V 15A		<i>National Electrical Manufacturers Association</i> NEMA WD-1: 5-15P Antigua, 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 28. 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 28. 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 28. AS/400 System Power Cords and Receptacles (continued)



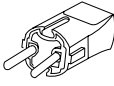

B - FC 5070, 5072, 5080, 5082 D ¹ - Model 620, 720, S20 E ¹ - Model 600, 610 F - Models 640, 650, 730, 740, S30, S40, SB1 G - Models 170, 250 H - FC 5081, 5083, 5071, 5073, 9251		
Plug	Receptacle	Countries
Type 12  250V 30A Locking		<i>National Electrical Manufacturers Association</i> NEMA WD-5: L6-30P 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
	Part Number 11F0114 (6 ft) F 11F0113 (14 ft) F	
Type 18  250V 16A		<i>International Rule for the Approval of Electrical Equipment</i> CEE 7 VII 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
	Part Number 13F9978 (6 ft) B H 13F9979 (9 ft) G 13F9980 (14 ft) B H 14F1554 (14 ft) D E	

Table 28. 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 28. AS/400 System Power Cords and Receptacles (continued)

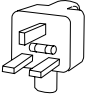



<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 23</p>  <p>250V 13A</p>		<p><i>British Standards 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 28. 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 28. AS/400 System Power Cords and Receptacles (continued)

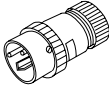

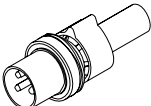

<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 34</p>  <p>250V 10A/15A Water Resistant</p>		<p><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 28. AS/400 System Power Cords and Receptacles (continued)

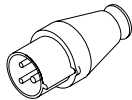

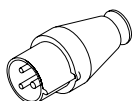

<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 46 (P+N+G)</p>  <p>250V 32A</p>		<p><i>International 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 28. AS/400 System Power Cords and Receptacles (continued)

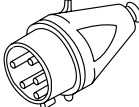

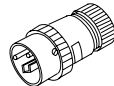


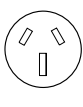
<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 46 (3P+N+G)</p>  <p>250V 16A</p>		<p><i>International 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 28. AS/400 System Power Cords and Receptacles (continued)

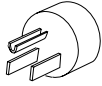



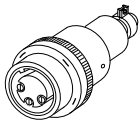

<p>B - FC 5070, 5072, 5080, 5082</p> <p>D¹ - Model 620, 720, S20</p> <p>E¹ - Model 600, 610</p> <p>F - Models 640, 650, 730, 740, S30, S40, SB1</p> <p>G - Models 170, 250</p> <p>H - FC 5081, 5083, 5071, 5073, 9251</p>		
Plug	Receptacle	Countries
<p>Type 59</p>  <p>125V 20A</p>		<p><i>JIS C-8303-1983</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 28. 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 432, 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 438.

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

1. Check for damaged or missing covers.
2. Check covers for sharp edges.

AC Power Cord(s)

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

1. Ensure that all power supply mounting screws are tight.

Safety Labels

Ensure that all the safety labels are visible and readable:

1. Information label attached to outside back of base frame in the PCI card cage recess.
2. Main power rating label attached to outside back of base and expansion unit frames near the power supply input power connector.
3. Multiple line cord label attached to the outside back of base and expansion unit power supply frame near input power connector.

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

1. Ensure that the finger guards are in place on the exhaust side of the base PCI card ,AMD and CEC ,AMD (CEC finger guard is located under the EMC shield). Ensure that the finger guard is in place on the intake side of the expansion fan.
2. Ensure that the base and the expansion unit stabilizing fee are securely fastened to the frame.

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 Problem Log (WRKPRB) for possible problems (see "Online Problem Analysis and Resolution" in the *AS/400 Service Functions* information).

4. 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).
5. 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.
6. 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 443).
7. Inspect the system for safety hazards such as loose cables, open doors, and bent covers.
8. 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
9. 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.
10. Vacuum and clean, if necessary.
11. 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.
12. Verify that all engineering changes for the system and I/O units have been installed.
13. Fill out the "Appendix E. Service Log" on page 547 or in the *Account Management Planning Guide*
14. 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).

15. 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.
16. 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.

Appendix F. OptiConnect Table

Note: Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 432, before continuing with this procedure.

Note: Within this table the terms “system” and “logical partition” are interchangeable where used together.

To determine which logical partition owns a bus see “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 438.

To locate the console of a secondary partition see “Locating a Secondary Partition’s Console” on page 434.

Complete this table with the WRKHDWRSC *CSA command and use the *Display Resource Details* and the cabling diagram for your site. Make one copy for each system you will be working with.

Table 29. System Name:

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

Table 29. 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 Planning Reference*
- *Port Tester Use*
- *Security - Reference*
- *Software Installation*
- *Basic System Operation, Administration, and Problem Handling*
- *AS/400 CPM/UPS Safety Manual*
- *AS/400 CPM/UPS User's Guide (English, French, German, Spanish, Italian)*
- *AS/400 CPM/UPS User's Guide (Japanese, Korean, Chinese, Simplified Chinese)*
- *AS/400 CPM/UPS User's Guide (Portuguese, Turkish, Danish, Dutch, Norwegian)*
- *Twinaxial Cabling Troubleshooting Guide , SY31-0703*
- *AS/400e Handbook*
- *IBM AS/400 Integration for Windows Server -- Setup, SC41-5439-03*
- *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*
- *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
1622660	4-2	515	59H3661	8-	520	75G2878	2-10	511
1675209	8-	520	59H4127	8-	520	75G2878	2-13	511
16G8095	2-16A	511	59H4463	8-	520	75G2878	2-15	511
16G8095	8-	520	59X4262	8-	520	75G2878	2-17A	511
16G8438	8-	520	6165899	8-	520	75G2878	2-17C	511
16G8467	8-	520	62X3421	7-	519	75G2878	2-19	511
16G8572	8-	520	6339098	7-	519	75G2878	2-23	511
17G2642	8-	520	6473011	7-	519	75G2878	2-23A	511
21F4980	7-	519	6473014	7-	519	75G2878	2-25	511
21F5093	7-	519	6473016	7-	519	75G2878	3-11	513
21F8075	7-	519	6473026	7-	519	75G2878	3-13	513
21F8577	8-	520	6473029	7-	519	75G2878	3-4	513
21H3547	8-	520	6495268	7-	519	75G2878	3-9	513
21H3548	8-	520	6495269	7-	519	75G5958	7-	519
21H3760	8-	520	72X5645	7-	519	8193226	6-	518
21H3761	8-	520	74F1846	8-	520	81F8902	8-	520
21H3762	8-	520	74G6327	2-17B	511	81F8902	8-	520
21H3763	8-	520	74G6331	2-22A	511	86G7674	8-	520
21H3790	8-	520	75G2691	3-10	513	90H4525	2-14	511
21H3791	8-	520	75G2692	3-1	513	90H4558	1-9	509
21H4811	8-	520	75G2699	2-12	511	90H4559	2-22	511
23F5634	8-	520	75G2707	3-8	513	90H6024	8-	520
33G3907	2-2	511	75G2727	2-18	511	90H8983	2-18A	511
33G3907	2-4	511	75G2778	4-4	515	91H4105	2-16	511
4236482	7-	519	75G2779	4-4	515	92F0324	6-	518
42H0540	8-	520	75G2780	4-4	515	92F0324	8-	520
44H4266	5-3	517	75G2781	4-4	515	94X3698	7-	519
44H4636	2-5	511	75G2782	4-4	515	97H5881	2-18	511
44H4636	3-12	513	75G2783	4-4	515	97H5881	3-3	513
44H7479	8-	520	75G2784	4-4	515	97H5913	6-	518
44H7480	7-	519	75G2785	4-4	515	97H5914	6-	518
44H7482	7-	519	75G2786	4-4	515	97H5915	6-	518
44H7484	7-	519	75G2787	4-4	515	97H5916	6-	518
44H7495	7-	519	75G2788	4-4	515	97H5917	6-	518
44H7498	7-	519	75G2789	4-4	515	97H5917	6-	518
44H7501	7-	519	75G2790	4-4	515	97H5917	7-	519
44H7504	7-	519	75G2791	4-4	515	97H5920	1-3	507
44H8167	8-	520	75G2792	4-4	515	97H5921	1-11	509
44H8676	7-	519	75G2806	2-24	511	97H5936	1-1	507
44H8677	7-	519	75G2876	2-6	511	97H5937	1-12	509
44H8999	5-2	517	75G2877	2-17	511	97H5937	1-15	509
45G2878	3-2	513	75G2877	3-7	513	97H5937	1-4	507
45H2364	8-	520	75G2878	1-10	509	97H5937	1-7	507
45H2433	7-	519	75G2878	1-13	509	97H5946	2-5	511
46G0298	8-	520	75G2878	1-16	509	97H5996	3-6	513
46G2660	8-	520	75G2878	1-2	507	97H7385	7-	519
46G2674	8-	520	75G2878	1-5	507	97H7557	7-	519
59H2677	8-	520	75G2878	1-8	507	97H7591	7-	519

Part Number	Asm- Index	Page
97H7745	8-	520
97H7749	8-	520
97H7754	8-	520
97H7774	1-6	507
97H7777	1-14	509
97H7840	2-20	511
97H9108	4-1	515
97H9230	2-5	511
97H9232	3-12	513
NONUM	2-1	511
NONUM	2-11	511
NONUM	2-20	511
NONUM	2-3	511
NONUM	2-7	511
NONUM	2-9	511
NONUM	3-14	513
NONUM	3-15	513
NONUM	3-5	513
NONUM	4-	515
NONUM	4-3	515
NONUM	5-	517
NONUM	7-	519

Readers' Comments — We'd Like to Hear from You

AS/400e
AS/400e server 170 and 250 Problem Analysis, Repair and Parts
Version 4

Publication No. SY44-5965-03

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



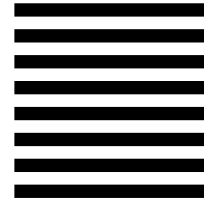
NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

IBM CORPORATION
Attention Department 542
IDCLERK
3605 Highway 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.

SY44-5965-03



Spine information:



AS/400e

AS/400e server 170 and 250 Problem Analysis, Repair
and Parts V4R5

Version 4