



# IBM 3590 Tape Subsystem Axx Controller Models Maintenance Information







# IBM 3590 Tape Subsystem Axx Controller Models Maintenance Information

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EC Number D19323

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Before using this information and the product it supports, be sure to read the general information under “Notices” on page vii.

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## Symbols

The following symbols are used in this manual:

Symbol	Description
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Imprinted on the panel to indicate that the device requires service if the Processor Check LED is on. Also imprinted on the Change Mode switch to allow the CE to change between the operator menus and the CE menus.



Displayed on the panel to indicate that trace data is stored in the device. Also printed in text as an *attention* notice.



Printed in text and in figures to indicate an ESD-sensitive part.



Displayed on the panel to indicate that the thumbwheel on the cartridge is set to the file-protected position. Also imprinted on the magazine of the ACF to indicate the position where the magazine door is locked.



Displayed on the panel to indicate that the host file-protected the volume.



Displayed on the panel to indicate that the thumbwheel on the cartridge is set to the not file-protected position. Also imprinted on the magazine of the ACF to indicate the position where the magazine door is unlocked.

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The United Kingdom Telecommunications Act 1984

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## Preface

This manual is for use by service personnel who intend to install, remove, diagnose, repair, or test the IBM Model A00 and Model A50 ESCON attach.

Part Number 05H9206

EC Number D19323

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## Related Information

Additional information related to the subsystem is available in the following publications:

- *IBM 3590 High Performance Tape Subsystem Introduction and Planning Guide*, GA32-0329
- *IBM 3590 High Performance Tape Subsystem User's Guide*, GA32-0330
- *IBM 3590 Operator Quick Reference*, GA32-0354
- *IBM 3590 High Performance Tape Subsystem Hardware Reference*, GA32-0331
- *IBM 3494 Tape Library Dataserver Maintenance Information*, P/N 05H7566
- *IBM 3590 Tape Subsystem Models B11 and B1A MI*, P/N 05H9018
- Enterprise Systems Connection Adapter: User's Guide and Service Information, SC23-2474-01
- IBM Care and Handling of the IBM Magnetic Tape Cartridge, GA32-0047

## RISC System/6000 Information

Additional information related to the A00 subsystem is available in the following publications:

- 7009 Compact Server Service Guide, SA23-2716-01
- 7009 Compact Server Operator Guide, SA23-2715-01
- POWERstation and POWERserver Common Diagnostics Information Manual, SA23-2765-00
- POWERstation and POWERserver Adapters, Devices and Cable Information, SA23-2764-00

For additional information about the RISC System/6000 subsystems and software, see:

- *RISC System/6000 Getting Started: Using RISC System/6000*, GC23-2377
- *RISC System/6000 Getting Started: Managing RISC System/6000*, GC23-2378
- *RISC System/6000 Problem Solving Guide*, SC23-2204
- *RISC System/6000 System Overview and Planning*, GC23-2406
- *RISC System/6000 Planning for System Installation*, GC23-2407
- *7202 Install and Service Guide*, SA23-2670
- *7015 Install and Service Guide*, SA23-2628

## 9076 SP2 Information

- *Scalable POWERparallel Systems: System Planning*, SC233864 PACKAGE on MKTTOOLS
- *Scalable POWERparallel Systems: Installation Guide*, SH23-3865
- *Scalable POWERparallel Systems: High-Performance Technical Computing Solutions*, GH23-2485
- *Scalable POWERparallel Systems: Business Solutions*, GA23-2475

- *IBM 9076 Scalable POWERparallel Systems: SP2 Administration Guide*, SH26-2486
- *IBM 9076 Scalable POWERparallel Systems: SP2 Diagnosis and Messages*, SC23-3866
- *IBM 9076 Scalable POWERparallel Systems: SP2 Command and Technical Reference*, SC23-3867
- *IBM 9076 Scalable POWERparallel Systems: Maintenance Information, Vol. 1*, SY66-0294
- *IBM 9076 Scalable POWERparallel Systems: Maintenance Information, Vol. 2*, SY66-0295

## **Model 140 and 240 Information**

- *The RS/6000 7043 43SP Series Models 140 and 240 Setup Instructions*, SA38-0510.
- *The RS/6000 7043 43SP Series Models 140 and 240 Service Guide*, SA38-0512.
- *The RS/6000 7043 43SP Series Models 140 and 240 User's Guide*, SA38-0511.
- *The PCI Graphics Adapter PCI Adapter Placement Rererence* , SA38-0538.
- *The Diagnostics Information for Multiple Bus Systems* , SA38-0509
- *The Adapter, Device, and Cable Information for Multiple Bus Systems*, SA38-0516

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## Summary of Changes





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## 3590 A00 and A50 Introduction

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### Overview of the 3590 ESCON A00 and A50 Controllers

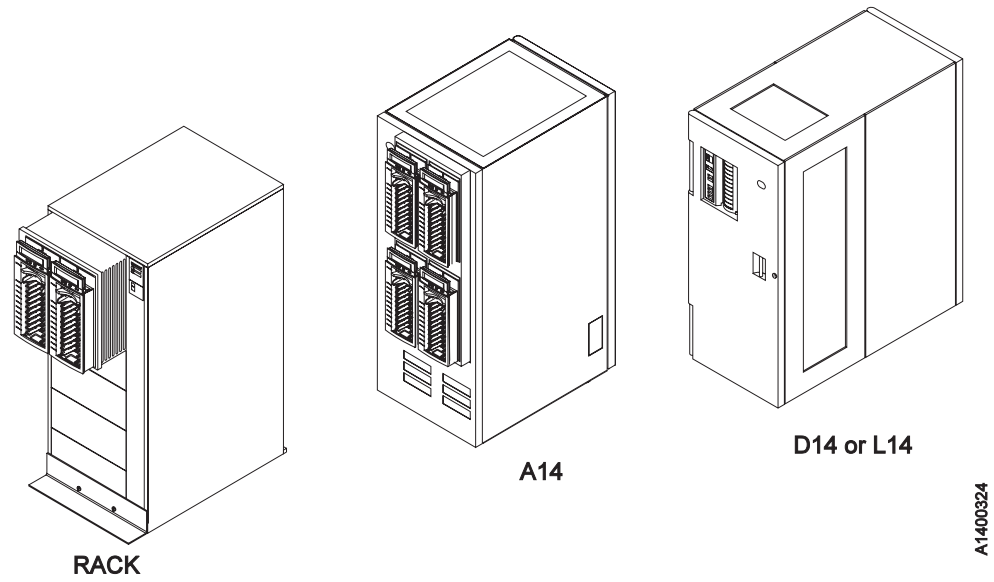
The 3590 A00 and A50 controllers are the new 3590 tape subsystem ESCON host attachment for the 3590 tape drives.

The following are models of the 3590 A00 and A50 Controllers:

- Models A00 and A50 are ESCON controllers
- A14 is a stand-alone frame that contains one or two ESCON controllers and up to 4 3590 Model B11 or B1A drives.
- Rack Mounted with up to 4 3590 drives

See Figure 1 on page INTRO-3.

- The Models A00 and A50 are RS/6000 based controller designed to provide the customer with the ability to attach 3590 tapes drives into processor complexes which do not support the native SCSI attaches provided directly by the drives.
- The Models A00, A50, 3494 D14, and 3494 L14 attaches the 3590 SCSI adapter to an ESCON host.
- Any of the 3590 A00 and A50 Control Units can be integrated with any host system that supports ESCON
- The Models A00 and A50 are integrated into the A14 frame, the Rack-mount, the 3494 D14 frame, or the 3494 L14 frame.
- The Model D14 is a A00 or A50 controller mounted in library systems with rear service, and ESCON capability.
- The Model L14 is a A00 or A50 mounted as head of string in 3494 library systems with rear service, and contains the library controller.



*Figure 1. 3590 A00 and A50 Controller Models*

See Figure 1.

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## RAS Characteristics

### Availability

- The 3590 models A00 and A50 in addition to the SIM/MIM messages, supports Service Request Numbers (SRNs).
- The 3590 models A00 and A50 provides a service interface, a Service Terminal for Control Unit Configuration, Maintenance, and Control/Status functions.
- Minimum number of cables.
- Predictive maintenance (catches hardware and media problems before they are evident) via SIM/MIM.
- The 3590 A00 and A50 models have only one RS/6000 per control unit and does not support concurrent maintenance on the control unit. All 3590 drives do support concurrent maintenance. All control unit service will be disruptive to customer operation for hardware replacement operations.
- The ability to interrogate CU error logs and support certain microcode related service does exist concurrently and is provided to the CE.
- SIM support enables CU hardware replacement operations to avoid service impacts during peak usage, and can be scheduled at the Customers convenience.

### Serviceability

- No host resources or support is required for service.
- Most service actions are initiated from the 3590 Models A00 or A50 Service Terminal.
- Using the Service Terminal, there will be a combination of RS/6000 SMIT menus and unique Axx model menus. For consistency, and to prevent unique training of CEs, all actions performed will be menu driven versus forcing CEs to use command line entry in the AIX operating system.
- Some problems will exist with the RS/6000 that cannot be surfaced to the Service Terminal or a SIM message. These will be indicated by a flashing indicator on the Model A00 and model A50 and will require that the CE read the SRN from the operator panel on the RS/6000.
- When necessary the CE will be directed to the existing RS/6000 documentation to create a cohesive service flow.
- When the 3590 Axx models are part of a library subsystem, the existing library service documentation will be used for library problems.
- Wrap tools are provided to test all external interfaces (SCSI, RS-422, and ESCON).
- Non-disruptive microcode update from the Axx models control units for the drives, ESCON and SCSI adapters.

**Note:** The control unit can update the microcode in the Axx and SCSI adapters without interfering with any other operations that may be going on in other Axx and SCSI adapters, if the control unit contains multiple Axx or SCSI adapters.

- Control Unit code will require the entire subsystem down to update.
- The 3590 Axx control units have microcode update via a floppy drive. For AIX code Reload/Upgrade a CD ROM is used (**refer to AIX Installation Guide SBOF-1803-00 to Reload/Upgrade your operating system**) The floppy drive on the RS/6000 is used for Axx and 3590 microcode updates, dumps and logs.

- Support functions will be included on the Service Terminal to handle microcode traces and dumps. This support will be limited to routing the dump from the hard disk to diskette or tape for later analysis at the development lab.
- Error information (SIM/MIM) and (SRNs) are sent to the host. In the Axx control unit some SRNs will only be available by opening the covers and reading the SRN directly from the RS/6000 operator panel.

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## 3590 A00 and A50 Maintenance Strategy

The 3590 Axx controller maintenance strategy does not use diagnostics for problem recreation. The hardware and microcode are designed to capture and isolate failures when they occur. The fault symptom code (FSC) generated either by the functional microcode or diagnostic microcode is converted into a FRU identifier (FID) and displayed to the operator and/or the CE by sending service information messages (SIMs), media information messages (MIMs), or Service Request Numbers (SRNs)

The 3590 models A00 and A50 diagnostics are predominantly based on existing RS/6000 diagnostics. In addition there are POST (Power On Self Tests), BIST (Build In Self Test) and concurrent diagnostics while operational at the background level. If the host system does not support SIMs and MIMs, sense data is available if the subsystem is able to present it.

The maintenance strategy described here is for all configurations of the Axx models

- In all Axx models remote support is available through the RS/6000 based control unit using a standalone modem that is purchased by the customer.
- The RAS package for the 3590 Axx models A00 Controller uses the Service Terminal at the control unit for maintenance.
- The control unit can access many of the maintenance functions in the drive using the SCSI interface.
- The Maintenance information is contained in one volume.
- The drive diagnostics can be executed using the Service Terminal attached to the control unit.

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## Host Messages

Service information messages (SIM) and media information messages (MIM) are incorporated into the 3590. These messages provide the customer and the CE with diagnostic and repair information before the call, which eliminates unnecessary service calls.

**Note:** When possible the SRN from the RS/6000 control unit is part of the SIM that is sent to the host.

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## Power Supply

Both the A00 and A50 Controllers have their own power supply, for the A00 refer to Chapter 1 of the **7009 Compact Server Service Guide, document number SA23-2716-01** and for the A50 refer to Chapter 1 of the **Models 140 and 240 Service Guide document number SA38-0512-01**.

### 3590 Model A14 Power Panel

The 3590 model A14 power panel contains the following functions: Refer to Figure 2 on page INTRO-7 for the model A14 Operator Panel.

- Unit Emergency Switch
  1. When the switch is OFF, **1**, all power is OFF for the entire subsystem
  2. When the switch is ON, **1**, power is available to the subsystem.

**Note:** When the Unit Emergency switch is first turned ON, all LED are turned ON for one (1) second as an indication that the power panel is functional.
- System Power Switch
  1. When the System Power Switch is ON, **2**, power is supplied to the 3590
  2. When the System Power Switch is turned OFF, **2**, a power down sequence will be initiated on the subsystem.

## Power Switch and Power Sequence

### 3590 Model A14

Refer to Figure 2 on page INTRO-7 for the model A14 Operator Panel.

#### **Power On LED**

1. When the LED, refer to **3** is OFF, power is removed from both the 3590 drives and the control unit(s).
2. When the LED, refer to **3** is ON, power is active at both the 3590 drives and the control unit(s).

**Controller Status LED:** The 3590 Model A14 can contain up to two controllers, either a model A00 and a model A50 or two A50's.

**Note:** The A14 will not contain two A00s. If only one A00 or A50 is present in the A14 frame, only the top **4** will be active. If two A50 or a A00 and a A50 are in the A14 frame both **4** and **5** are used.

The operator panel may contain two LED's. Only **4** is used with a single A00 controller in the A14 frame. If you have two A50's or one A00 and one A50 in the A14 frame, both the LEDs **4** and **5** may be used.

1. When the LED is OFF, **4**, no fault has been detected in the upper control unit.
2. When the LED is ON, **4**, the upper control unit has detected an error.
3. When the LED is flashing, **4** the upper control unit is waiting for some self correcting action to complete.

4. When the LED is OFF, **5**, no fault has been detected in the lower control unit.
5. When the LED is ON, **5**, the lower control unit has detected an error.
6. When the LED is flashing, **5** the lower control unit is waiting for some self correcting action to complete.

**Note:** If the self correcting action is not successful, the LED, **4** and/or **5** will be turned ON solid.

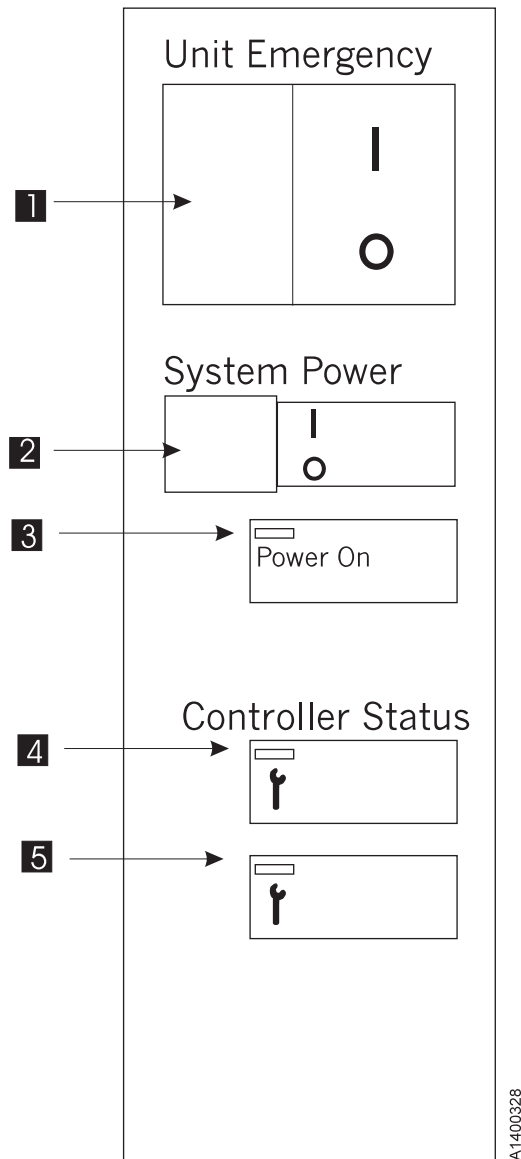


Figure 2. 3590 A14 Operator Panel

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## A50 Control Unit Panel and Controls

The A50 control unit consists of the following controls available to the customer engineer, the customer does not have access to the A50 controls.

These controls include: (refer to Figure 3 on page INTRO-9)

- **1** Power Switch: Turns the control unit power on and off.
- **2** Power-On Light: Glows when the control unit is on.
- **3** Hard disk Drive in-Use Light: Glows when control unit is reading from or writing to the hard disk.
- **4** Reset Button: (1) Causes the microcode to dump the control unit to the hard disk and (2) Following the dump, resets the RS/6000.
- **5** Operator Panel Display: Displays status of the control unit, including CU error information.
- **6** Media Bay Cover: Covers the diskette and the CD-ROM drives when they are not in use.
- **7** Cover Lock: Security feature. Prevent the cover from being removed and locks the media bay cover in the closed position if locked. However on the A50 control unit this cover is shipped in the un-locked position and keys are shipped with the CU.

**Note:** In the 3590 Axx A14 frame, the L14 and the D14, the CU is not accessible to the customer.

- **8** Diskette-Drive In-Use Light: Glows when the control unit is reading from or writing to a diskette.
- **9** Diskette Eject Button: Releases diskette from the 3.5-inch diskette drive.
- **10** CD-ROM Eject Button: Releases diskette from the CD-ROM drive.
- **11** CD-ROM Emergency Eject: Ejects CD-ROM from the CD-ROM drive if power is not available.
- **12** CD-ROM Status Light: Indicates when the CD-ROM drive is active.
- **13** CD-ROM Volume Control: Not used in this control unit application.
- **14** CD-ROM Headphone Jack: Not used in this control unit application.



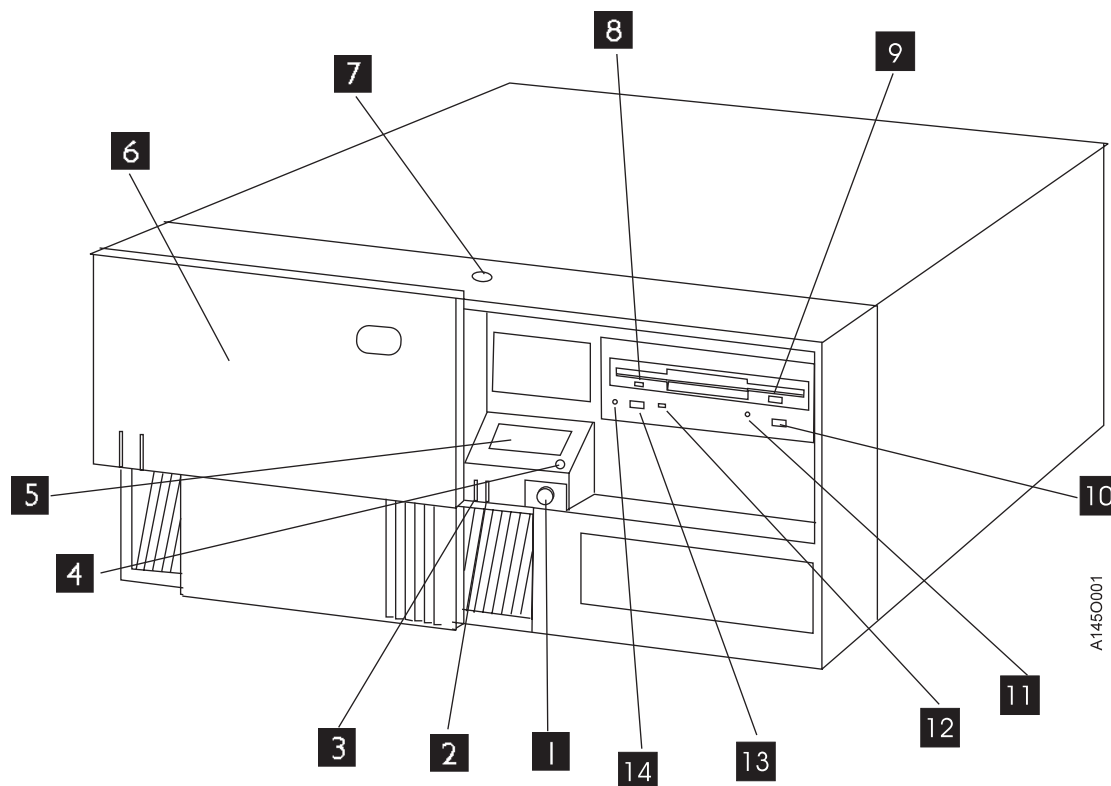


Figure 3. 3590 A50 Control Unit Panel

## Field Microcode Support Using the Axx Control Unit

Refer to "3590 Axx Subsystem Microcode Addition or Activation" on page PROC-7

## Special Tools

Special tools are shipped, purchased, or ordered; they are used to repair or maintain the Axx controller

A Service Terminal is needed for maintenance with all Axx, that are not part of a 3494 Library. This Service Terminal is not part of the subsystem and is not shipped with any models. The Maintenance personnel servicing the Axx is expected to come to the account with this tool.

## Service Terminal

The Service Terminal for the 3590 Axx controllers is a portable PC and must be equipped to act as an IBM 3151 Emulator. The diagnostic microcode to drive the menus and diagnose the subsystem comes installed on the RS/6000. See "Getting Started" on page PANEL-2.

The screens shown here are examples only and will be explained as needed through out the MI. See "Getting Started" on page PANEL-2

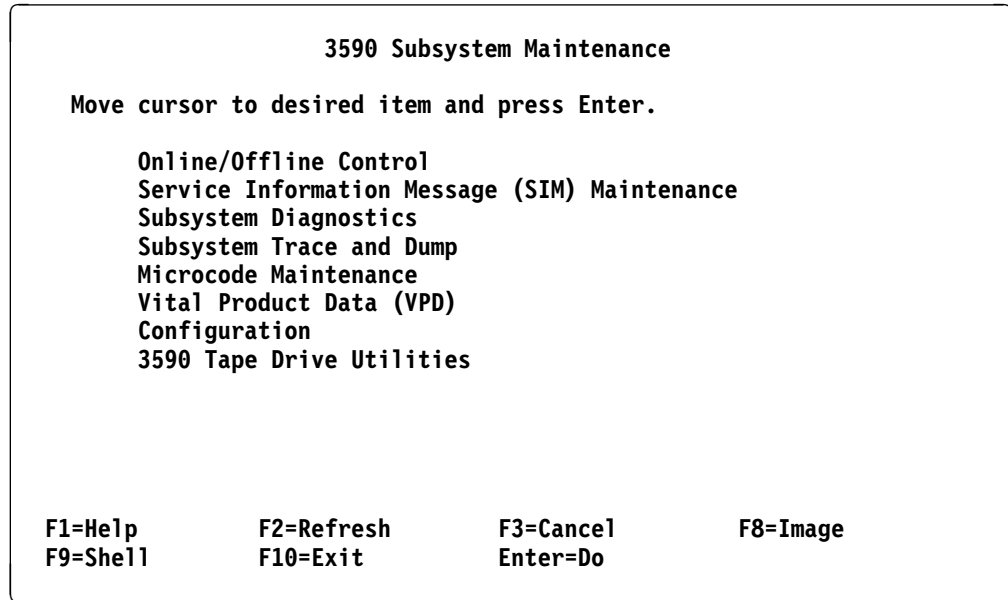


Figure 4. Main 3590 Subsystem Maintenance Screen

To select the **Online/Offline Control** Figure 4 the cursor is moved to that line and when the enter key is depressed, the next menu shown next will be active on the screen.

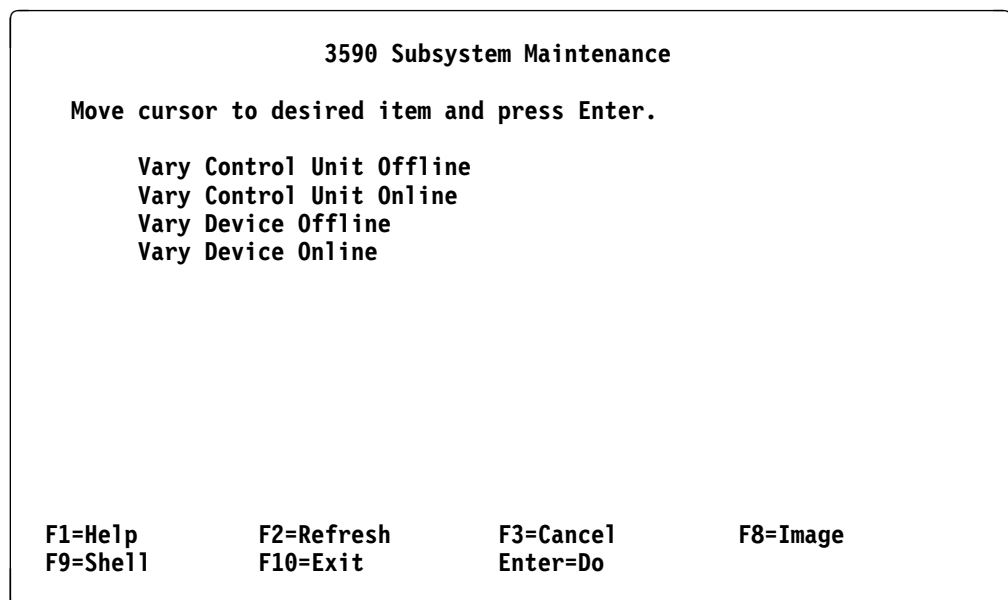


Figure 5. Online/Offline Control Screen

To select the **Service Information Message (SIM) Maintenance** , Figure 4 the cursor is moved to that line and when the enter key is depressed, the next menu shown below will be active on the screen.

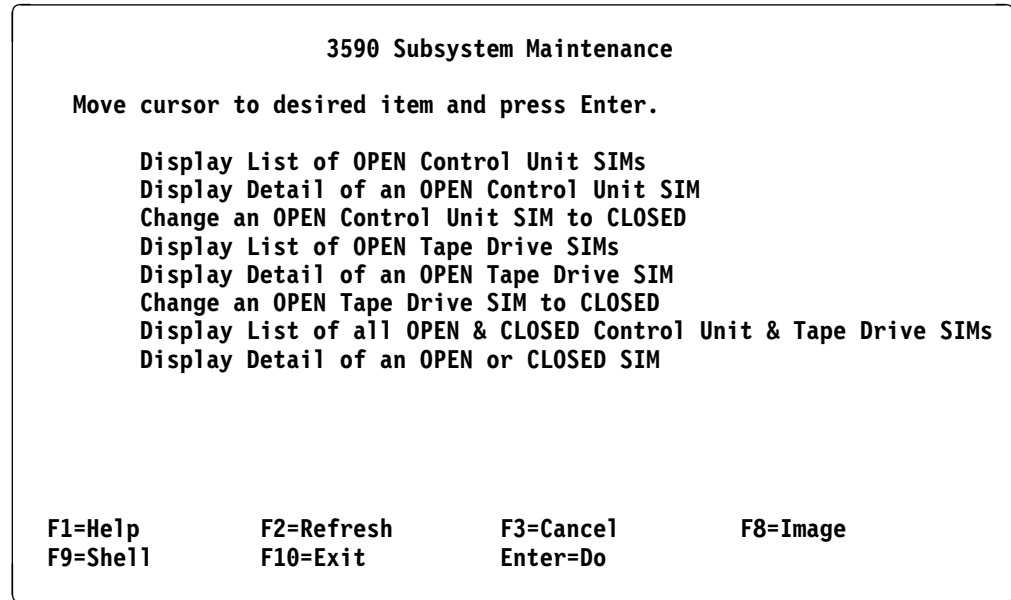


Figure 6. SIM Maintenance Screen

## ESD Kit

The ESD kit (P/N is available in *General CE Tools Reference Summary*, 5131-0075) is used to prevent damage when you work with electrostatic discharge (ESD) sensitive parts. **This tool (Figure 7) is not shipped with the subsystem and must be ordered.**

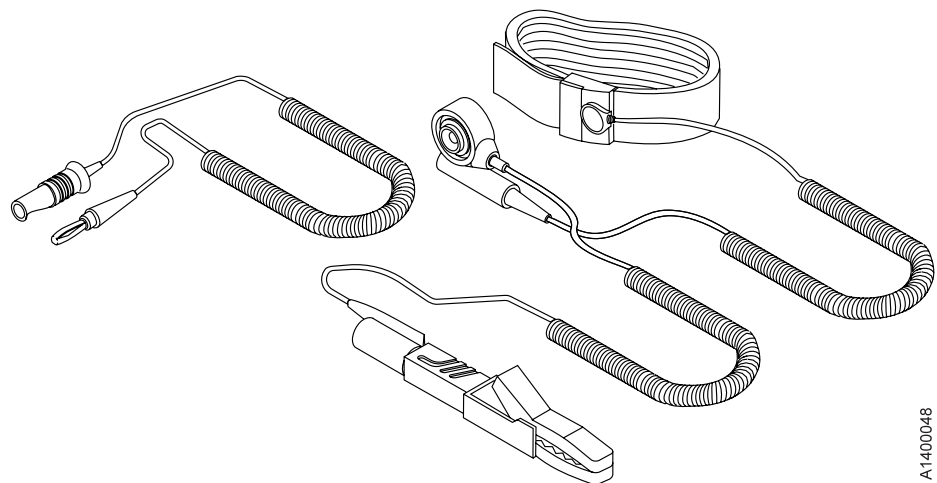


Figure 7. ESD Grounding Strap

## Wrap Tool

The ESCON wrap tool P/N 5605670, is used to verify the ESCON channel in the Axx models **This tool (Figure 8 on page INTRO-12) is a unique part and cannot be swapped with other wrap tools.**

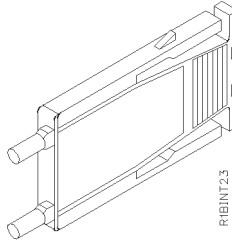


Figure 8. ESCON Wrap Tool

## 3590 Model Axx Security Controls

Customer security and data integrity on the 3590 Axx is safeguarded in several ways. The intent is to ensure the customer doesn't need to worry about unauthorized personnel viewing or altering his data. The RS/6000 has the following security levels for the service package and support structures.

**Local Access Security:** Service is performed on the Axx through local access by using a serial port. This access is available either through the Library Manager (LM) or from the CE's MoST service terminal.

In the case where the LM is used for service, the terminal emulator program, EBTERM is only available in the password protected service mode of the LM. Once the program is invoked from a service window in the LM, the main VTS II service window appears. In the other case, the CE's MoST will bring up the following information in the service window when EBTERM is invoked.

This main service window has two options:

1. Service
2. Extended Service

Each of these functions require a password - different for each. The intention is to prevent unauthorized access, even within the LM service mode.

Particular care has been taken in these menus as well, to prevent actions detrimental to the customer's data security. The following functions are examples of the service menu content:

- Subsystem control functions (Offline for service, Online, etc.)
- Diagnostics on devices and components, when in an offline state
- Exercisers for extended testing
- Access to Error Logs, including SIMs (Service Information Messages) and MIMs (Media Information Messages)
- Code upgrade functions

The extended service provides more extensive diagnostics and exercisers, but is generally not needed for typical service scenarios.

**Note:** **NEITHER** of the above service options ever provide the CE access to customer data or pointers. In addition, the design point of the service package blocks the CE from all AIX command line access authority. The intention here is to prevent accidental command invocations that could damage the code integrity or data integrity.

**Remote Support Access Security:** Remote access service has been implemented for many reasons, including, but not limited to diagnosis and fix for various difficult hardware problems, plus microcode bug analysis. This allows far faster fixes to code bugs without the associated re-duplication problems of the past and provides the ability to resolve field problems by simply dialing in from the lab.

There are several layers of protection available and in place.

1. Security of the dial up hardware (Modem and WTI switch)
2. RS/6000 security, as described above.

The chosen modem for remote service at customer accounts is the Microcom Deskport FAST. This modem was chosen for multiple reasons, including high/reliable bandwidth on noisy lines, in conjunction with its password protection capabilities. It can be configured to have password protection such that only dial in by authorized users with the password can gain access to the serial port of the RS/6000 (which is still protected by the additional log in security described above). The modem itself can accept up to 50 unique passwords, if desired. And, they can be tailored by the CE or the customer through the use of EBTERM or a similar terminal program facility for modems. When this is set by the customer, access, even by IBM remote service, would be blocked, if desired, until the password was verbally given to the service personnel - or it could be left standardized to block only calls from other parties which did not have authorized access.

The WTI switch (FC 2711), if multiple A00's or VTS II subsystems are present, has password protection as well. It allows selection of 1 unique password. This would typically be inline with the modem, and either or both could be password enabled. Having both enabled would be somewhat redundant, but possible.

**Remote Support Access Hierarchy:** Two levels of remote access authority are also employed within Tucson:

1. Tucson Support Center - this is the first lab level support interface to the customer/CE. Lab personnel can remotely perform all functions described above in the Service and Extended menus. They have greater technical knowledge than the CE on the product and serve as the first line of defense in problem isolation. They don't have access to any customer data or command line authority in the RS/6000 and the A00 Control Unit and have the same passwords as the CE's use to perform local service.
2. Development level personnel - this group comprises Product Field Engineers (PFE) and the lab microcode development functions. They have additional password authority not granted elsewhere to perform root access functions and have full command line authority. This password authority is tightly controlled in a small group on a "need to know" basis only.

The procedures for setting up remote access using password protection can be found on pages "Setting Up EBTERM or Terminal Emulator for Setting Modem Password" on page PROC-45 and "Modem Initialization with Password" on page PROC-47



# Inspection

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## General Instructions

Use this checklist to ensure that a machine not covered by an IBM Maintenance Agreement has the necessary safety items installed and no other changes were made that would make it unsafe or inoperable. Each machine, as it was designed and assembled, had needed safety items installed to protect the owners, operators, and service personnel from injury.

**Note:** This equipment is designed for connection to IT (impedance transformer) power subsystems.

## Materials Needed

The following items are needed or are useful during the inspection:

- Copies of safety service memorandums (SMs) and engineering change announcements (ECAs) for this machine type
- Machine history
- *Electrical Safety for IBM Customer Engineers*, S229-8124

## Education

Service personnel must be trained on the new general maintenance agreement qualification (MAQ), tailored-maintenance agreement qualification, and changed machine safety inspection procedures as part of the electrical safety course.



## Safety

The general caution symbol  identifies conditions where caution must be used.

The electrical caution symbol  identifies electrical hazards where extreme caution must be used.

Perform this inspection before the normal inspection for a maintenance agreement. **Suspect that the 3590 is unsafe until you verify that it is safe.** If any unsafe conditions are present, decide how serious the hazard is and whether you can continue without first correcting the problem. Possible safety hazards are:

### Electrical

An electrically charged frame can cause serious or lethal electrical shock.

### Mechanical

Hazards, such as a safety cover missing, are potentially harmful to people.

### Chemical

Do not use solvents, cleaners, or other chemicals not approved for use on this product.

Any of the problems listed above must be repaired before you use the 3590.

The following notices are translated into selected languages. Each notice contains an identifier (Caution=Cx).

C1

### CAUTION

**The 3590 Model B11 with the ACF weighs 40.5 kilograms (89 pounds) so remove the ACF before lifting the 3590. The 3590 weighs 28.6 kilograms (63 pounds) without the ACF attached; it takes two persons to safely lift this unit.**

C2

### CAUTION

**The 3590 Model B1A weighs 28.6 kilograms (63 pounds); it takes two persons to safely lift this unit.**

## Safety Inspection Procedures

Before performing the safety procedures, ensure the existing room and electrical conditions are safe.

Perform the following steps:

Read all Safety information on the label before starting. (See Figure 9 **2**).

### Axx AC Grounding Inspection

1. Power off the 3590.
2. Disconnect the channel cables. Disconnect the power cord from its source.
3. Check that no voltage exists between the housing on the power source and building ground.
4. Check that resistance is less than 0.1 ohm from the building ground to the power supply enclosure **4**.
5. Inspect the power cable **3** for visible cracks, wear, or damage.
6. Check that the resistance between the power cable ground and the 3590 frame **1** is less than 0.1 ohm.
7. Inspect the power supply enclosure covers **4** to ensure all screws are installed and tight.

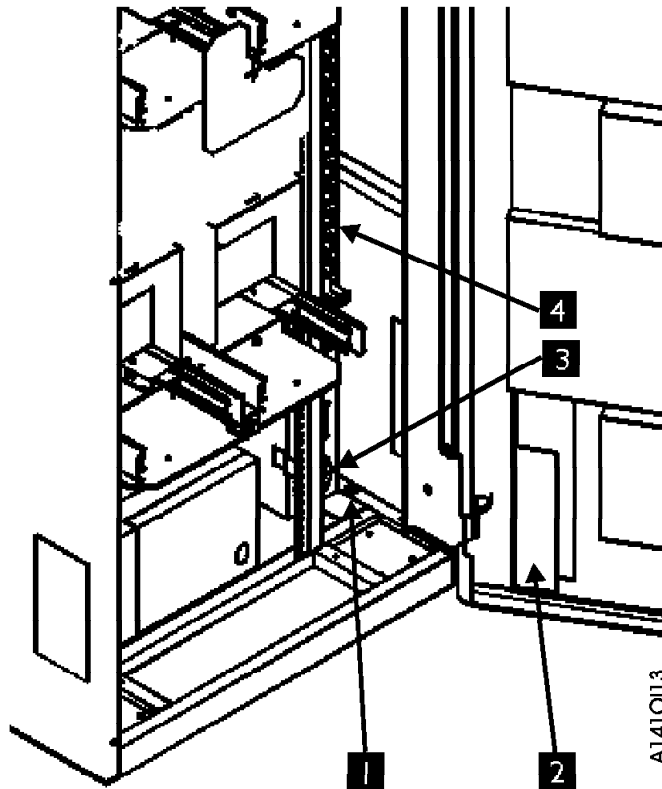
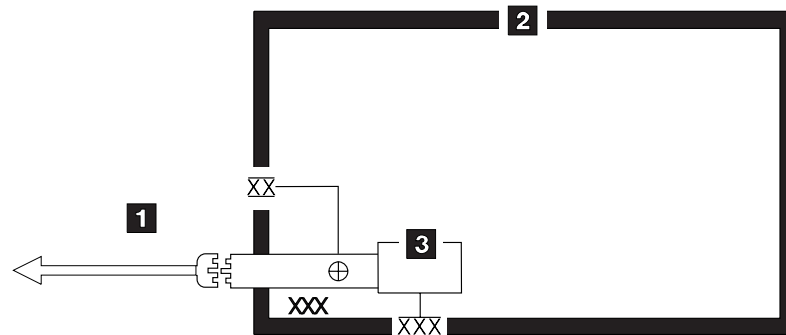


Figure 9. Model A00 AC Grounding Diagram (50 Hz and 60 Hz)

## 3590 Drive AC Grounding Inspection

1. Power off the 3590.
2. Disconnect the channel cables.
3. See Figure 10. Disconnect the power cord **1** from its source.
4. Check that no voltage exists between the housing on the power source and building ground.
5. Check that resistance is less than 0.1 ohm from the building ground to the power supply enclosure **3**.
6. Inspect the power cable **1** for visible cracks, wear, or damage.
7. Check that the resistance between the power cable ground and the 3590 frame **2** is less than 0.1 ohm.
8. Inspect the power supply enclosure covers **3** to ensure all screws are installed and tight.



Legend:


- XX External tooth lock washer  
Green/yellow ground wire terminated to chassis or ground
- ⊕ Green/yellow ground wire terminated with slip-on spade terminal
- XXX Redundant ground path to frame
- XXXX External tooth lock washer

A1400040

Figure 10. AC Grounding Diagram (50 Hz and 60 Hz)

---

## Sécurité

Le symbole attention  indique qu'une attention particulière est nécessaire.

Le symbole risque électrique  identifie des risques liés au courant électrique ; il faut en ce cas faire preuve d'une extrême prudence.

Ces procédures doivent être effectuées avant l'inspection normale pour un contrat de maintenance. **Le sous-système de bande magnétique IBM 3590 doit être considéré comme potentiellement dangereux tant qu'il n'a pas été vérifié.** Si vous détectez la moindre condition d'insécurité, vous devez évaluer sa gravité et déterminer si vous pouvez continuer ou non sans avoir d'abord corrigé le problème. Les risques peuvent être de différentes natures :

### Risques électriques

Un châssis chargé en électricité peut provoquer un choc électrique grave ou mortel.

### Risques mécaniques

L'absence d'un carter de sécurité, par exemple, peut être à l'origine de blessures.

### Risques chimiques

Utilisez uniquement les produits de nettoyage et autres produits chimiques recommandés pour ce matériel.

Assurez-vous que toutes ces conditions de sécurité sont remplies avant d'utiliser le sous-système de bande magnétique IBM 3590.

Chaque consigne est introduite par un identificateur (Attention=Cn).

C1

### ATTENTION

**Le sous-système 3590 modèle B11 doté du dispositif ACF (chargeur automatique de cartouches) pèse 40,5 kilogrammes. Retirez le dispositif ACF avant de soulever le 3590. Sans ce dispositif, le sous-système pèse 28,6 kilogrammes. La présence de deux personnes est nécessaire pour le soulever.**

C2

### ATTENTION

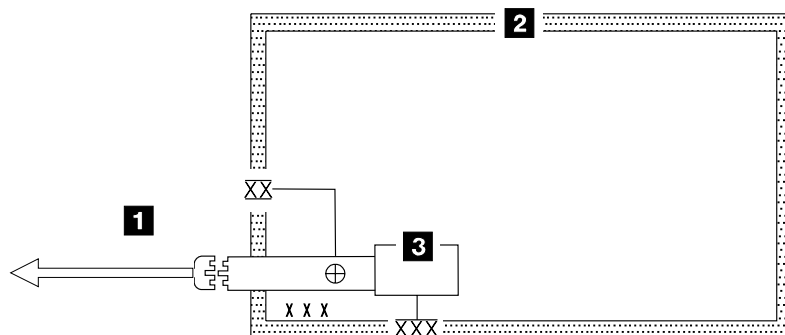
**Le sous-système 3590 modèle B1A pèse 28,6 kilogrammes. La présence de deux personnes est nécessaire pour le soulever.**

## Inspection de sécurité

Avant de procéder à l'inspection de sécurité, assurez-vous que la salle ainsi que l'installation électrique remplissent toutes les conditions de sécurité.

Pour plus de détails sur les emplacements des éléments, reportez-vous aux sections "Device Covers" et "Labels." Effectuez les opérations ci-dessous.

1. Mettez le sous-système 3590 hors tension.
2. Débranchez les cordons de transmission.
3. Reportez-vous à la Figure 11. Débranchez le cordon d'alimentation **1** du socle de prise de courant.
4. Assurez-vous que la tension est nulle entre le boîtier de la source d'alimentation et la terre du bâtiment.
5. Vérifiez que la résistance est inférieure à 0,1 ohm entre la terre du bâtiment et le carter du sous-système **2**.
6. Examinez le cordon d'alimentation **1** et assurez-vous qu'il n'est ni craquelé, ni troué, ni endommagé.
7. Vérifiez que la résistance entre la broche de terre du cordon d'alimentation et le sous-système 3590 est inférieure à 0,1 ohm.
8. Examinez les capots **3** et assurez-vous que les vis sont correctement placées et serrées



Légendes :


- XX Rondelle frein dentelée externe
- Fil de terre vert/jaune aboutissant au châssis ou à la terre
- ⊕ Fil de terre vert/jaune muni d'une cosse plate
- XXX Chemin de mise à la terre redondant vers le châssis
- XXX Rondelle frein dentelée externe

Figure 11. Schéma de mise à la terre c.a. (50/60 Hz)

A11F0040

## 안전

일반 주의 기호  는 주의를 요합니다.

전기 주의 기호  는 극도의 주의를 요하는 전기적 위험을 표시합니다.

유지보수 계약에 대한 일반 검사 전에 이 검사를 수행하십시오. **3590**이 안전하다고 증명되기 전에는 **3590**이 안전하지 않다고 생각하십시오. 안전하지 않은 조건이 있으면 그 위험의 심각성을 결정하고 그 문제가 먼저 정정되지 않고 계속할 수 있는지 결정하십시오. 가능성이 있는 위험요소는 다음과 같습니다.

### 전기적

충전되어 있는 프레임은 심각하거나 치명적인 전기 쇼크를 일으킬 수 있습니다.

### 기계적

안전 커버가 없다면 하는 위험은 잠재적으로 인체에 해롭습니다.

### 화학적

이 제품에서 사용이 허용되지 않은 용해제, 클리너, 기타 화학 물질을 사용하지 마십시오.

**3590**을 사용하기 전에 위에 나열된 문제점 중 어떤 것이 있으면 반드시 시정하십시오.

다음 주의 사항은 선택된 언어로 번역되었습니다. 각 주의 사항은 식별명을 갖습니다 (주의 = Cx).

### C1

#### 주의

**ACF**를 포함하는 **3590** 모델 **B11**은 **40.5** 킬로그램입니다 (**89** 파운드). **3590**을 들어올리기 전에 **ACF**를 제거하십시오. **ACF**가 부착되지 않은 **3590**은 **28.6** 킬로그램입니다 (**63** 파운드). 이 장치를 안전하게 들어 올리려면 두 사람이 들어야 합니다.

### C2

#### 주의

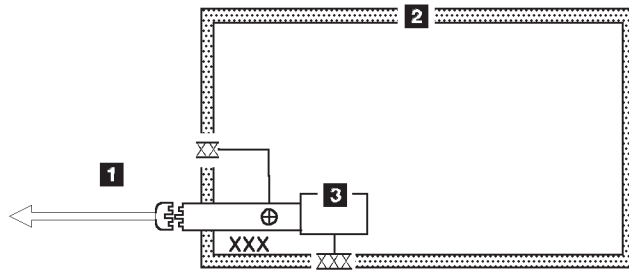
**3590** 모델 **B1A**은 **28.6** 킬로그램입니다 (**63** 파운드). 이 장치를 안전하게 들어 올리려면 두 사람이 들어야 합니다.

## 안전 검사 프로시저

안전 프로시저를 수행하기 전에 설치 장소와 전기 상태가 안전한지 확인하십시오.

위치에 대해서는 “장치 커버”와 “레이블”을 참조하십시오. 다음의 단계를 수행하십시오.

1. 3590의 전원을 끄십시오.
2. 채널 케이블을 분리하십시오.
3. 전원 코드 **1**을 소스에서 분리하십시오. 그림1을 참조하십시오.
4. 전원 소스의 단자와 빌딩 접지선 사이에 전압이 있는지 체크하십시오.
5. 빌딩 접지선과 AC 박스 커버 **2** 사이의 저항이 0.1 옴 보다 적은지 체크하십시오.
6. 전원 케이블 **1**이 눈에 띄는 파열이나 낡음, 혹은 파손된 곳이 있는지 점검하십시오.
7. 전원 케이블 그라운드와 3590 사이에 저항이 0.1 옴 보다 적은지 체크하십시오.
8. AC 박스 커버 **3**을 점검하여 모든 나사못이 제대로 짝 조여 있는지 확인하십시오.



범례:

- XX External tooth lock washer
- Green/yellow ground wire terminated to chassis or ground
- ⊕ Green/yellow ground wire terminated with slip-on spade terminal
- XXX Redundant ground path to frame
- XXX External tooth lock washer

그림 1. AC 그라운드링 다이어그램 (50 Hz 와 60 Hz)

## Seguridad

El símbolo general de precaución  identifica situaciones en las que debe tener precaución.

El símbolo de precaución eléctrica  identifica situaciones de riesgo eléctrico en las que debe extremar la precaución.

Realice esta inspección antes de la inspección normal para un acuerdo de mantenimiento. **Considere que la 3590 no es segura hasta verificar que lo es.** Si detecta alguna condición poco segura, decida el grado de riesgo existente y si puede continuar sin solucionar primero el problema. Posibles condiciones de riesgo para su seguridad son,

### Riesgos eléctricos

Un bastidor cargado eléctricamente puede producir descargas serias o letales.

### Riesgos mecánicos

Riesgos, como la falta de la cubierta de seguridad, son potencialmente perjudiciales para la gente.

### Riesgos químicos

No use disolventes, artículos de limpieza u otros productos químicos que no hayan sido aprobados para ser usados en este producto.

Cualquier problema de los listados anteriormente debe ser corregido antes de usar la 3590.

Los avisos siguientes se han traducido en varios idiomas. Cada aviso contiene un identificador (Precaución=Cx).

C1

### PRECAUCION

La 3590 modelo B11 con el ACF (Dispositivo avanzado de comunicaciones) pesa 40.5 kilogramos (89 libras) por tanto, quite el ACF antes de levantar la 3590. La 3590 pesa 28.6 kilogramos (63 libras) sin el ACF montado; se necesitan dos personas para levantar la unidad sin peligro.

C2

### PRECAUCION

La 3590 modelo B1A pesa 28.6 kilogramos (63 libras); se necesitan dos personas para levantar esta unidad sin peligro.

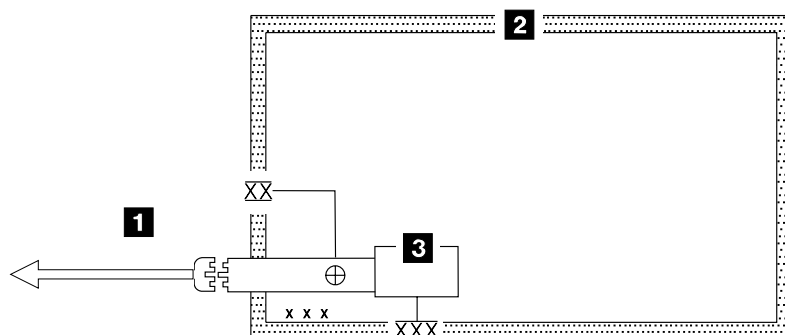


## Procedimiento de inspección de seguridad

Antes de proceder con esta inspección, asegúrese de que las condiciones eléctricas y de carácter general existentes son seguras.

Consulte “Cubiertas del dispositivo” (“Device Covers”) y “Etiquetas” (“Labels”) para saber donde se encuentran. Siga los pasos siguientes:

1. Desconecte la 3590.
2. Desconecte los cables de canal.
3. Consulte la Figure 12. Desconecte el cable de alimentación **1** de su fuente de alimentación.
4. Compruebe que no hay voltaje entre el receptáculo de la fuente de alimentación y la toma de tierra del edificio.
5. Compruebe que la resistencia es menor de 0.1 ohmios desde la toma de tierra del edificio hasta el recinto del dispositivo **2**.
6. Inspeccione el cable de alimentación **1** para detectar grietas, desgaste excesivo u otros desperfectos visibles.
7. Compruebe que la resistencia entre la toma de tierra del cable de alimentación y la 3590 es menor de 0.1 ohmios.
8. Inspeccione las cubiertas del recinto **3** para comprobar que todos los tornillos están instalados y firmes.



Explicación:

XX Arandela de seguridad dentada externa. Cable de tierra verde/amarillo que acaba en chasis o toma de tierra.

⊕ Cable de tierra que acaba en terminal de horquilla deslizable

xxx Paso redundante de toma de tierra a bastidor


XXX Arandela de seguridad dentada externa

A1145P040

Figure 12. Diagrama de toma de tierra CA (50 Hz y 60 Hz)

---

## Segurança

O símbolo geral de cuidado  identifica condições nas quais é necessário cuidado.

O símbolo de cuidado elétrico  identifica riscos elétricos onde é necessário cuidado máximo.

Execute esta inspeção antes da inspeção normal para um contrato de manutenção.

**Não acredite na segurança do 3590 até certificar-se de que é seguro.** Se houver qualquer condição insegura, verifique a gravidade do risco e se você pode continuar sem antes corrigir o problema. Os riscos de segurança possíveis são:

### Elétrico

Uma estrutura carregada eletricamente pode causar choque elétrico sério ou letal.

### Mecânico

Riscos, tais como a falta de uma tampa de segurança, são potencialmente prejudiciais para as pessoas.

### Químico

Não utilize solventes, produtos de limpeza ou outros produtos químicos não-aprovados para uso neste produto.

Qualquer um dos problemas acima relacionados deve ser resolvido antes de se iniciar a utilização do 3590.

Os seguintes avisos são traduzidos nos idiomas selecionados. Cada aviso contém um identificador (Cuidado=Cx).

C1

### CUIDADO

**O 3590 Modelo B11 com o ACF pesa 40,5 quilos (89 libras), portanto remova o ACF antes de levantar o 3590. O 3590 pesa 28,6 quilos (63 libras) sem o ACF acoplado; são necessárias duas pessoas para levantar esta unidade com segurança.**

C2

### CUIDADO

## Procedimentos Para Inspeção de Segurança

Antes de realizar os procedimentos de segurança, certifique-se de que o local e as condições elétricas existentes são seguras.

Consulte “Device Covers” e “Labels” para obter informações sobre localizações. Execute os seguintes passos:

1. Desligue o 3590.
2. Desconecte os cabos de canal.
3. Consulte Figure 13. Desconecte o cabo de alimentação **1** da sua fonte.
4. Confirme se não existe voltagem entre o compartimento na fonte de alimentação e o terra do prédio.
5. Confirme se a resistência é menor do que 0,1 ohm entre o terra do prédio e o compartimento do dispositivo **2**.
6. Inspeccione o cabo de alimentação **1** para verificar se existem fissuras, desgastes ou danos.
7. Confirme se a resistência entre o terra do cabo de alimentação e o 3590 é menor do que 0,1 ohm.
8. Inspeccione as tampas dos compartimentos **3** para certificar-se de que todos os parafusos estão instalados e apertados.

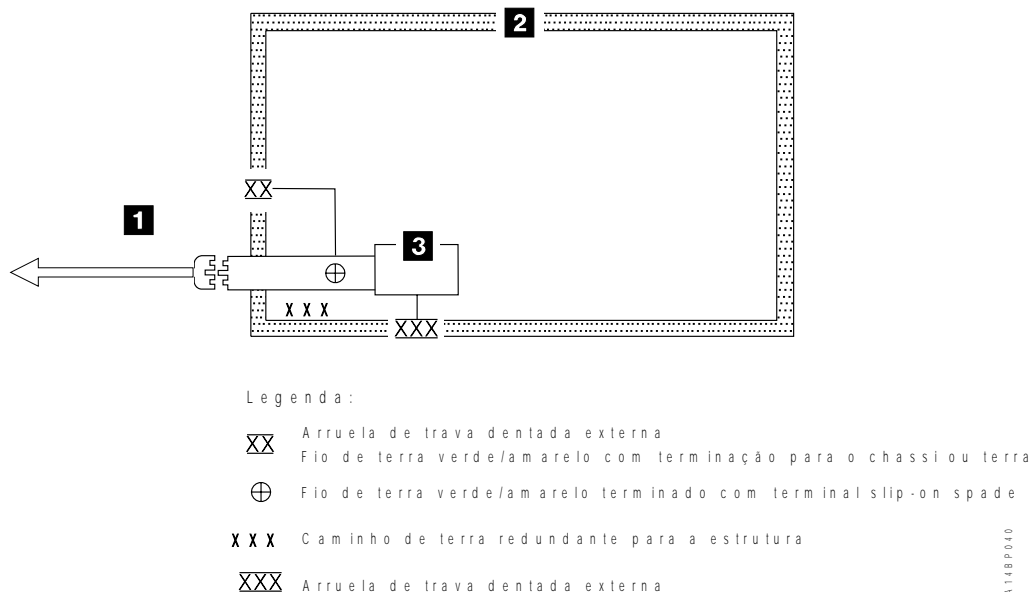


Figure 13. Diagrama de Aterramento AC (50 Hz e 60 Hz)

## Completion Report

- Safety inspection for A00 Controller Models
- General safety inspection
- Maintenance agreement qualification (MAQ)
- Safety inspection for 3590 drives - go to IBM 3590 Tape Subsystem A00 Controller Models

After the inspection, sign, date, and store the checklist with the Maintenance Agreement inspection.

NAME _____	DATE _____	SERIAL NUMBER _____
------------	------------	---------------------

### SAFETY HAZARDS

LIST ALL SAFETY HAZARDS. IF NONE, SAY NONE.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

This report completes the safety inspection.

1. Reconnect the device power cable into the customer's power receptacle.
2. Reconnect the channel cables to the subsystem.

**Contents**

A00 and A50 Controller Power Problems . . . . . MAPS-3



A00 and A50 Controller Power Problems

- This procedure helps you isolate power failures within the Model A14, D14, L14 or 3590 Subsystem in a rack that contains an A00 or A50 Controller.
- See the LOC\*CAR section for check, adjustment, removal, and replacement procedures.
- See “Power Supply” on page INTRO-6 for a description of 3590 power.
- When the repair is complete, perform a power-on of the A00 or A50 and of the affected drives to ensure that they all successfully run the POST test. Refer to “End of Call” on page PROC-2. for procedures.
- If the recommended repair actions do not fix the problem, call your next level of support.

We will now determine what device you have the power problem on, then send you to the proper MAP procedure:

001

If not done before, have the customer vary all the drives offline that are associated with this device.

Is your device a Model D14 or L14, or installed in a 3494 Library?

Yes No

002

Is this device a Model A14 with an A00 or A50 installed?

Yes No

003

Is this device a 3590 Subsystem in a rack with an A00 or A50 installed?

Yes No

004

You are working on a device that this MAP cannot handle. Go to the IBM 3590 Tape Subsystem Models B11 and B1A MI, P/N 05H9018, MAP section to isolate the power problem.

005

Continue at Step 028 on page MAPS-5.

006

The Model A14 power problems is handled in this MAP. Continue at Step 008.

007

This is a device in a 3494 Library. Go to the 3494 Library Maintenance Information START section and continue isolation of the power problem.

008

(From step 006)

You are here to isolate a power problem in a Model A14 that contains a A00 or a A50. The Model A14 has an Operator Panel on the rear of the device that has a part in controlling power to the device.

Observe the Operator Panel on the rear of the Model A14 frame. The System Power switch is a momentary rocker switch that when pressed up will power the device on, and when pushed down, will power the device off.

Is this a Power On problem with a device?

Yes No

009

The problem is that a device will not Power Off. Continue isolation at Step 024 on page MAPS-5

010

This is a Power On problem. Check that the EPO switch is turned to ON, and that no circuit breakers are tripped in the PCC.

**Note:** If any CB's are tripped, reset them. If they trip again, either a device plugged into the circuit is defective, or the PCC is defective.

(Step 010 continues)

## A00 and A50 Controller Power Problems (continued)

### 010 (continued)

Press the System Power switch to the On position.

#### Are the circuit breakers OK?

Yes No

011

Circuit breakers are tripping. Perform the following:

1. Unplug one device at a time from the PCC and try to power on again.
2. If all devices are unplugged, and the circuit breakers continue to trip, replace the PCC.
3. If unplugging the device stops the circuit breaker from tripping, go fix or replace the power supply on that device. For an A00 power problem, go to 7009 Compact Server Service Guide, Power Station Power Server SA23-2716 for isolation and repair. For a A50 power problem, go to Models 140 and 240 Service Guide, SA38-0512 for isolation and repair. For a 3590 drive problem, go to the IBM 3590 Tape Subsystem Models B11 and B1A MI MAP section to isolate problem.

When the repair is complete, go to "End of Call" on page PROC-2.

012

Circuit breakers are OK. With a CE meter, power on the device and measure nominal ac voltage at the output of the PCC.

#### Is nominal ac voltage present at all output plugs?

Yes No

013

Continue isolation at Step 017.

014

Power is OK at the output of the PCC.  
(Step 014 continues)

### 014 (continued)

#### Is the problem...The A00 or A50 won't power on?

Yes No

015

The problem is with one or more of the drives.

Continue isolation in the IBM 3590 Tape Subsystem Models B11 and B1A MI MAP section.

016

For the A00, continue isolation of the problem at 7009 Compact Server Service Guide, Power Station Power Server SA23-2716 and for the A50, continue isolation of the problem at Models 140 and 240 Service Guide, SA38-0512.

017

(From step 013)

Be sure that there is power coming into the device from the customer power source. Check that:

1. There is correct AC voltage at the source.  
Refer to "Power Supply" on page INTRO-6 for power requirements.
2. The power chord is plugged into the power source.
3. No wall or PCC circuit breakers are tripped and the EPO switch is not off.
4. The operator panel control cable is plugged into the PCC.
5. The devices are plugged into the PCC power output positions.

Observe the operator panel Power On LED when you press the System Power On switch to the On position.

#### Does the operator panel Power On LED turn on solid?

Yes No

018

(Step 018 continues)



**018** (continued)

**Does the operator panel Power On LED blink?**

**Yes    No**

**019**

Replace the following FRUs in the order listed:

1. PCC
2. Operator panel

Go to "End of Call" on page PROC-2.

**020**

Replace the following FRUs in the order listed:

1. Operator panel
2. PCC

Go to "End of Call" on page PROC-2.

**021**

The Power On LED is lit.

**Is there still a power problem?**

**Yes    No**

**022**

Problem is no longer present. Go to "End of Call" on page PROC-2.

**023**

A power problem still exists; Go to Step 025.

**024**

(From step 009)

The device fails to power off when the System Power switch is pressed in the down position. Replace the following FRUs in the order listed:

1. Operator panel
2. PCC

Go to "End of Call" on page PROC-2.

**025**

(Step **025** continues)

**025** (continued)

(From step 023)

The device powered on OK.

**Is this an intermittent problem?**

**Yes    No**

**026**

The device is working OK. Go to "End of Call" on page PROC-2.

**027**

Replace the following FRUs in the order listed:

1. Operator panel
2. PCC

Go to "End of Call" on page PROC-2.

**028**

(From step 005)

You are here to isolate a power problem in a 3590 Subsystem in a rack with a A00 or A50 installed.

**Is this a Power On problem with a device?**

**Yes    No**

**029**

The problem is that a device will not Power Off. Continue isolation at Step 037 on page MAPS-6

**030**

This is a Power On problem. Check that the EPO switch is turned to ON, and that no circuit breakers are tripped in the PCC.

**Note:** If any CB's are tripped, reset them. If they trip again, either a device on the circuit is defective, or the PCC is defective.

Press the System Power switch to the On position.

**Are the circuit breakers OK?**

**Yes    No**

**031**

Circuit breakers are tripping. Perform the following:

## A00 and A50 Controller Power Problems (continued)

1. Unplug one device at a time from the PCC and try to power on again.
2. If all devices are unplugged, and the circuit breakers continue to trip, replace the PCC.
3. If unplugging the device stops the circuit breaker from tripping, go fix or replace the power supply on that device. For an A00 power problem, go to 7009 Compact Server Service Guide, Power Station Power Server SA23-2716 and for a A50 power problem to Models 140 and 240 Service Guide, SA38-0512 for isolation and repair. For a 3590 drive problem, go to the IBM 3590 Tape Subsystem Models B11 and B1A MI MAP section for isolation.

When the repair is complete, go to "End of Call" on page PROC-2.

**032**

Circuit breakers are OK. With a CE meter, power on the device and measure nominal ac voltage at the output of the PCC.

**Is nominal ac voltage present at all output plugs?**

Yes No

**033**

Continue isolation at Step 038.

**034**

Power is OK at the output of the PCC.

**Is the problem...The A00 or A50 won't power on?**

Yes No

**035**

The problem is with one or more of the drives.

Continue isolation in the IBM 3590 Tape Subsystem Models B11 and B1A MI MAP section.

**036**

(Step 036 continues)

**036** (continued)

For the A00, continue isolation of the problem at 7009 Compact Server Service Guide, Power Station Power Server SA23-2716 and for the A50, continue isolation of the problem at Models 140 and 240 Service Guide, SA38-0512.

**037**

(From step 029)

The device fails to power off when the device is powered off. Replace the PCC.

Go to "End of Call" on page PROC-2.

**038**

(From step 033)

Be sure that there is power coming into the device from the customer power source. Check that:

1. There is correct AC voltage at the source. Refer to "Power Supply" on page INTRO-6 for power requirements.
2. The power chord is plugged into the power source.
3. No wall or PCC circuit breakers are tripped and the EPO switch is not off.
4. The devices are plugged into the PCC power output positions.

Observe the device when you power the rack subsystem on.

**Does the device power on?**

Yes No

**039**

Replace the PCC.

Go to "End of Call" on page PROC-2.

**040**

**Was this an intermittent problem?**

Yes No

**041**

The problem seems to be fixed for now. If it returns, call your next level of support.

**042**

(Step 042 continues)

**042** (continued)

Call your next level of support.

---





# Operator Panel

## Contents

Axx Service Terminal Connection and Menus . . . . .	PANEL-2
Getting Started . . . . .	PANEL-2
Axx Service Terminal Screens . . . . .	PANEL-4
Axx 3590 Subsystem Maintenance Menu . . . . .	PANEL-4
Axx Menu Tree . . . . .	PANEL-4



---

## Axx Service Terminal Connection and Menus

There are six (6) different frames that contain the Axx control Unit. The instructions for connecting the Service Terminal for each of these frames is under **Getting Started**.

- Axx in the A14 frame
- Axx in IBM Rack subsystems 9309, 7051R00, and 7202 or in any EIA compatible rack.
- Axx in the 3494 Tape library models D14 and L14

### Getting Started

**Note:** Before starting, ensure that the EBTERM Emulator software is loaded on your Service Terminal before continuing. Refer to "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11.

From the back of the A14 frame, or Rack, located on the right support next to the power controller, is a service panel with two connector positions. The service panel for a 3494 is located above the Library Manager in the Lxx Model. These connectors are labeled (from the left) **LIB** and **SER** for library connection and service connection. The cable from the **SER** connector is coiled and laying in the bottom of the box.

The following steps will get you to the main service menu on the Service Terminal:

1. If the modem is attached, disconnect it before continuing.
2. Connect the service cable to the 9 pin connector (P/N 05H3299) on the back of the Service Terminal you are using.
3. Power on your terminal
4. If using **EBTERM** (OS/2 Emulator)
  - a. Select the **EBTERM** icon
  - b. Select the **Modify** from the tool bar
  - c. In the window select **Direct Connect Mode**  
**Note:** A check mark(v) to the left of **Direct Connect Mode** indicates proper selection.
  - d. Select **Connect** from the tool bar
  - e. In the window select **3590-Axx & 3494-Bxx Subsystem Service**
5. If using **NetTerm** (Windows Emulator)
  - a. Select the **NetTerm** icon
  - b. Select **File** from the tool bar located at the top of the NetTerm window.
  - c. In the pop-up selection window select **Phone Directory...** This will bring up a Phone Directory window.
  - d. From the Phone Directory window select **3590-Axx & 3494-Bxx Subsystem Service**
  - e. Click on the **Connect** box at the bottom of the Phone Directory window  
**Note:** The connection status (Connected/Disconnected) is indicated by a colored ball in the lower left of the NetTerm window. The ball is green when NetTerm is in the connected state and is red when in the disconnected state.
6. The following screen will appear (see Figure 14 on page PANEL-3)

IBM 3590 ESCON CONTROL UNIT

Service Terminal

Available menus:

service

Service Menu

extended

Extended Service Menu (password required)

Please enter a menu name:

Figure 14. First Service Terminal Maintenance Screen

- At the prompt, from the screen shown above, (see Figure 14) type **service** and press **enter**

The Main Service Menu (see Figure 15 on page PANEL-4), is the first screen that will come and you can select the option that is the reason for connecting the Service Terminal.

## Axx Service Terminal Screens

### Axx 3590 Subsystem Maintenance Menu

This is the first screen shown after selecting the **Service Menu** from the IBM 3590 ESCON CONTROL UNIT screen (see Figure 14 on page PANEL-3).

**3590 Subsystem Maintenance**

Move cursor to desired item and press Enter.

Control Unit and Drive Online/Offline Control  
Service Information Message (SIM) Maintenance  
Subsystem Error Log  
Subsystem Diagnostics  
Subsystem Trace and Dump  
Microcode Maintenance  
Subsystem Configuration  
3590 Tape Drive Utilities  
Using SMIT (information only)

F1=Help  
F9=Shell

F2=Refresh  
F10=Exit

F3=Cancel  
Enter=Do

F8=Image

Figure 15. Main 3590 Subsystem Maintenance Screen

---

## Axx Menu Tree

Shown here is a Menu Tree showing a road map to the many screens that are provided for service of the 3590 subsystem.

1. **Control Unit and Tape Drive Online/Offline Control**
  - a. Display Control Unit, ESCON, and Tape Device Status
  - b. Vary Control Unit Offline
  - c. Vary Control Unit Online
  - d. Vary Tape Drive Offline
  - e. Vary Tape Drive Online
  - f. Force Control Unit Offline
2. **Service Information Message (SIM) Maintenance**
  - a. Show List/Detail of an OPEN Control Unit SIM
  - b. Change an OPEN Control Unit SIM to CLOSED
  - c. Show List/Detail of an OPEN Tape Drive SIM
  - d. Change an OPEN Tape Drive SIM to CLOSED
  - e. Show List/Detail of any OPEN or CLOSED SIM
  - f. Show/Change SIM & MIM Severity Reporting Level



- g. Show Microcode Detected Error (MDE) Description
- h. Clear SIM Log, Error Log, and Trace/Dump Files
- 3. Subsystem Error Log**
  - a. Generate an Error Report
  - b. Clean the Error Log:
- 4. Subsystem Diagnostics**
  - a. ARTIC960 ESCON Adapter Diagnostics
  - b. All Other Hardware Diagnostics
- 5. Subsystem Trace and Dump**
  - a. Start Subsystem Trace
  - b. Show Current Trace Parameters
  - c. Stop Subsystem Trace
  - d. Start Subsystem Dump
  - e. Clear (Disable) all Error Match Code (EMC) Settings
  - f. Show/Change Error Match Code (EMC) Settings
  - g. Select Trace/Dump Files and Copy to Diskette
  - h. Select Trace/Dump Files to Erase From Hard Disk
- 6. Microcode Maintenance**
  - a. Display Active Code level and Status
  - b. List Code Images Available for Activation
    - 1) List 3590 Subsystem Code Images
    - 2) List 3590-Bxx Code Images
  - c. Copy Code Image From Diskette
    - 1) Copy 3590 Subsystem Code from Diskette
    - 2) Copy 3590-Bxx Tape Drive Code from Diskette
  - d. Activate Code Image
    - 1) Activate 3590 Subsystem Code
    - 2) Activate 3590-Bxx Tape Drive Code
  - e. Delete Code image
    - 1) Delete 3590 Subsystem Code
    - 2) Delete 3590-Bxx Tape Drive Code
- 7. Subsystem Configuration Options**
  - a. Show/Change Date, Time, and Time Zone
  - b. Show/Change Vital Product Data (VPD)
    - 1) Show/Change Control Unit Vital Product Data (VPD)
    - 2) Display Tape Device Vital Product Data (VPD)
  - c. Control unit Definitions

- d. Show/Change ESCON Channel Path Definitions
- e. Show/Change Automatic REBOOT after System Crash

#### **8. Run PFE/Support Center Provided Functions**

This selection is used to run programs or functions that are provided to you by PFE Engineering Support or your Support Center. These programs or functions will be in diskette format and will require you to have the diskette in the RS/6000 diskette drive while running. Press the ENTER key to continue or F3 to return to the previous menu.

#### **9. 3590 Tape Drive Utilities**

- 1. Using SMIT (information only)

The Command Status Screen becomes active from time to time depending on the actions that the CE is performing with other menu items. This screen informs the CE of the status of the action being done. The Command Status Screen may not always contain the same information, it is a good practice to read the information carefully.

**If you are asked to use a specific menu to complete a procedure, look in the menu tree shown above to determine the correct menu path to choose.**

**Start**

**Contents**

Maintenance Starting Point . . . . . START-2

Entry Point With No SIM Information . . . . . START-6



## Maintenance Starting Point

Most calls have a SIM number available and in many cases that information is available to you before arriving at the account. If not the information can be obtained at the account. Start with the following table to find the correct entry to the maintenance package.

**Note:** If a repair procedure is required on a 3590 Tape Drive the failing drive must be taken offline prior to any repair action taken. See "Varying On/Off 3590 drives from the A00 or A50 Controller" on page PROC-31. If a repair procedure is required in the A00 Controller or the A50 Controller that cannot be accomplished without removing the CU from the machine, refer to "A00 Removal and Replacement" on page LOC\*CAR-2 for the A00 Controller control unit. For the A50 Controller control Unit refer to "A50 Removal and Replacement" on page LOC\*CAR-6. If the A00 Controller hard disk needs to be replaced, refer to "A00 Hard Disk Removal and Replacement" on page LOC\*CAR-4. If the A50 hard disk needs to be replaced, refer to "A50 Hard Disk Removal and Replacement" on page LOC\*CAR-6. for removal and recovery procedures.

Figure 16 (Page 1 of 5). 3590 Axx Start Table

If you are here for this reason	Perform this action
If you have "FFF" displayed on the Axx LCD panel,	Your system may have been affected by a power surge or close lightning strike. <b>RECYCLE THE POWER</b> before changing any parts.
You have the SIM message that was sent to the host console (refer to "I/O Subsystem Service Information Message" on page MSG-5)	<p>Decode the SIM ref codes 1-3 (refer to "Decoding SIM Refcodes" on page MSG-11)</p> <ul style="list-style-type: none"><li>• If an A00 SRN is decoded: Record the SRN (Refcode 2, lower nibble and Refcode 3) and go to the <b>POWERstation and POWERserver, Document number SA23-2765 'Start of call MAP'</b>.</li><li>• If an A50 SRN is decoded: Record the SRN (Refcode 2, lower nibble and Refcode 3) and go to the <b>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509 'Start of call MAP'</b>.</li><li>• If an Unknown CU hardware error is decoded:<ol style="list-style-type: none"><li>1. Record the AIX error log sequence number (Refcodes 2 and 3).</li><li>2. Go to "Prepare the A00 or the A50 Controller for Service" on page PROC-27 and return here when complete.</li><li>3. For A00 go to the <b>POWERstation and POWERserver Diagnostic Information for Micro Channel Bus System, document number SA23-2765: 'Start of call MAP'</b> and perform the procedure to verify correct system operation.</li><li>4. For A50 go to the <b>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509 'Start of call MAP'</b> and perform the procedure to verify correct system operation.</li><li>5. If this procedure fails to isolate the problem, then use the AIX error log entry to diagnose and fix this problem, see "Analyze the AIX Log Procedure" on page PROC-41.</li></ol></li><li>• If a Drive SIM is decoded: Determine the FID code (Refcode 1,lower nibble) and go to the <i>High Performance Tape Drive MI P/N 05H9018</i> START section to find the problem.</li><li>• If a Control Unit MDE (Microcode Detected Error) is decoded: Determine the MDE code (Refcode 2) and go to "3590 A00 or A50: Retrieving Engineering and Dump Data" on page PROC-28 to get Dump information and then call you next level of support</li></ul>

Figure 16 (Page 2 of 5). 3590 Axx Start Table

If you are here for this reason	Perform this action
You have the MIM message that was sent to the host console (see "Media Information Message" on page MSG-8).	Determine the Refcode from the MIM message and use the first 2 digits as the ASCII Message code to determine a description for the MIM Message. See "Service and Media Information Messages (SIMs and MIMs)" on page MSG-2 for further information.
You have the SIM sense record from a host EREP report (see "SIM EREP Report (Format 71)" on page MSG-13).	<p>Decode the SIM ref codes 1-3 (refer to "Decoding SIM Refcodes" on page MSG-11)</p> <ul style="list-style-type: none"> <li>• If an A00 SRN is decoded: Record the SRN (Refcode 2, lower nibble and Refcode 3) and go to the <b>POWERstation and POWERserver, Document number SA23-2765 'Start of call MAP'</b>.</li> <li>• If an A50 SRN is decoded: Record the SRN (Refcode 2, lower nibble and Refcode 3) and go to the <b>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509 'Start of call MAP'</b>.</li> <li>• If an Unknown CU hardware error is decoded: <ol style="list-style-type: none"> <li>1. Go to "Prepare the A00 or the A50 Controller for Service" on page PROC-27 and return here when complete.</li> <li>2. Record the AIX error log sequence number (Refcodes 2 and 3).</li> <li>3. Go to "Prepare the A00 or the A50 Controller for Service" on page PROC-27 and return here when complete.</li> <li>4. For A00, go to the <i>POWERstation and POWERserver Diagnostic Information for Micro Channel Bus System</i>, document number SA23-2765: <b>'Start of call MAP'</b> and perform the procedure to verify correct system operation.</li> <li>5. For A50, go to the <i>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509</i>, <b>'Start of call MAP'</b> and perform the procedure to verify correct system operation.</li> <li>6. If this procedure fails to isolate the problem, then use the AIX error log entry to diagnose and fix this problem, see "Analyze the AIX Log Procedure" on page PROC-41.</li> </ol> </li> <li>• If a Drive SIM is decoded: Determine the FID code (Refcode 1, lower nibble) and go to the <i>High Performance Tape Drive MI P/N 05H9018</i> START section to find the problem.</li> <li>• If a Control Unit MDE (Microcode Detected Error) is decoded: Determine the MDE code (Refcode 2) and go to "3590 A00 or A50: Retrieving Engineering and Dump Data" on page PROC-28 to get Dump information and then call your next level of support</li> </ul>
You have the MIM message that was sent to the host EREP report, see "ES/9000 EREP Reports" on page MSG-13.	Determine the Refcode from the MIM message and use the first 2 digits as the ASCII Message code to determine a description for the MIM Message. See "Service and Media Information Messages (SIMs and MIMs)" on page MSG-2 for further information.

Figure 16 (Page 3 of 5). 3590 Axx Start Table

If you are here for this reason	Perform this action
<p>The Operator tells you that an <b>Intervention Required</b> message was sent to the console.</p> <p><b>Note:</b> If you have an ERA code 48, use this record for the actions required. See "ES/9000 EREP Reports for ERA 48" on page MSG-20 to decode ERA 48</p> <p>View the detailed data for the appropriate SIM entry and record the Refcodes 1-3.</p>	<p>Connect the Service Terminal (see "Axx Service Terminal Connection and Menus" on page PANEL-2) and view the 3590 SIM log (see "Axx Menu Tree" on page PANEL-4).</p> <p>View the detailed data for the appropriate SIM entry and record the Refcodes 1-3.</p> <p>If multiple OPEN SIMs exist;</p> <ol style="list-style-type: none"> <li>1. Select the SIM entry with the occurrence that most closely corresponds to the time that the problem was first seen at the host.</li> <li>2. If this can not be determined, select the SIM entry with the earliest occurrence time.</li> </ol> <p>Decode the refcodes (see "Decoding SIM Refcodes" on page MSG-11).</p> <ol style="list-style-type: none"> <li>1. If an A00 SRN is decoded: Record the SRN (Refcode 2, lower nibble and Refcode 3) and go to the <b>POWERstation and POWERserver, Document number SA23-2765 'Start of call MAP'</b>.</li> <li>2. If an A50 SRN is decoded: Record the SRN (Refcode 2, lower nibble and Refcode 3) and go to the <b>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509 'Start of call MAP'</b>.</li> <li>3. If an Unknown CU hardware error is decoded: <ol style="list-style-type: none"> <li>a. Record the AIX error log sequence number (Refcodes 2 and 3).</li> <li>b. Go to "Prepare the A00 or the A50 Controller for Service" on page PROC-27 and return here when complete.</li> <li>c. For A00, go to the <i>POWERstation and POWERserver Diagnostic Information for Micro Channel Bus System</i>, document number SA23-2765 'Start of call MAP' and perform the procedure to verify correct system operation.</li> <li>d. For A50, go to the <i>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509</i>, 'Start of call MAP' and perform the procedure to verify correct system operation.</li> <li>e. If this procedure fails to isolate the problem, then use the AIX error log entry to diagnose and fix this problem. See "Analyze the AIX Log Procedure" on page PROC-41.</li> </ol> </li> <li>4. If a Drive SIM is decoded: Determine the FID code (Refcode 1 lower nibble) and go to the <i>IBM 3590 Tape Subsystem Maintenance Information Manual P/N 05H9018</i> <b>START</b> section and continue with isolation.</li> <li>5. If a Axx MDE (Microcode Detected Error) is decoded: Determine the MDE code (Refcode 2) and go to "3590 A00 or A50: Retrieving Engineering and Dump Data" on page PROC-28 to get Dump information. Then, call your next level of support.</li> </ol>
A00 or A50 won't go on line	Can be caused by a drive having the unused SCSI port online. This condition can be caused by the customer at the drive panel.
Library puts tape in wrong drive	This is either a host software problem or a data base problem and is not caused by the 3590 Model Axx subsystem.
Power problems	Go to the "A00 and A50 Controller Power Problems" on page MAPS-3 and determine if a power problem exists for the Axx. When repair is complete, return to "End of Call" on page PROC-2 and complete the call.

Figure 16 (Page 4 of 5). 3590 Axx Start Table

If you are here for this reason	Perform this action
A problem was reported to the host but you do not have the SIM information needed above	<p>Connect the Service Terminal (See “Axx Service Terminal Connection and Menus” on page PANEL-2) and view the 3590 SIM log (see “Axx Menu Tree” on page PANEL-4).</p> <p>View the detailed data for the appropriate SIM entry and record the Refcodes 1-3.</p>
you suspect a problem with the 3590 Axx or a drive connected through the 3590 Axx but you do not have any error information from the host.	<p>Connect the Service Terminal (see “Axx Service Terminal Connection and Menus” on page PANEL-2) and view the 3590 SIM log (see “Axx Menu Tree” on page PANEL-4).</p> <p>View the detailed data for the appropriate SIM entry and record the Refcodes 1-3.</p> <p>If multiple OPEN SIMs exist;</p> <ol style="list-style-type: none"> <li>1. Select the SIM entry with the occurrence that most closely corresponds to the time that the problem was first seen at the host.</li> <li>2. If this can not be determined, select the SIM entry with the earliest occurrence time.</li> </ol> <p>Decode the refcodes (see “Decoding SIM Refcodes” on page MSG-11).</p> <ol style="list-style-type: none"> <li>1. If an A00 SRN is decoded: Record the SRN (Refcode 2, lower nibble and Refcode 3) and go to the <b>POWERstation and POWERserver, Document number SA23-2765 'Start of call MAP'</b>.</li> <li>2. If an A50 SRN is decoded: Record the SRN (Refcode 2, lower nibble and Refcode 3) and go to the <b>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509 'Start of call MAP'</b>.</li> <li>3. If an Unknown CU hardware error is decoded: <ol style="list-style-type: none"> <li>a. Go to “Prepare the A00 or the A50 Controller for Service” on page PROC-27 and return here when complete.</li> <li>b. Record the AIX error log sequence number (Refcodes 2 and 3).</li> <li>c. For A00, go to the <i>POWERstation and POWERserver Diagnostic Information for Micro Channel Bus System</i>, document number SA23-2765 'Start of call MAP' and perform the procedure to verify correct system operation.</li> <li>d. For A50, go to the <i>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509</i>, 'Start of call MAP' and perform the procedure to verify correct system operation.</li> <li>e. If this procedure fails to isolate the problem, then use the AIX error log entry to diagnose and fix this problem. See “Analyze the AIX Log Procedure” on page PROC-41.</li> </ol> </li> <li>4. If a Drive SIM is decoded: Determine the FID code (Refcode 1 lower nibble) and go to the <i>IBM 3590 Tape Subsystem Maintenance Information Manual P/N 05H9018</i> <b>START</b> section and continue with isolation.</li> <li>5. If a A00 /A50 MDE (Microcode Detected Error) is decoded: Determine the MDE code (Refcode 2) and go to “3590 A00 or A50: Retrieving Engineering and Dump Data” on page PROC-28 to get Dump information. Then, call your next level of support.</li> </ol>
Set Error Match Code (EMC) actions	See “3590 A00 or A50: Set Error Match Codes” on page PROC-29.
Retrieve Dump/Engineering Data	See “3590 A00 or A50: Retrieving Engineering and Dump Data” on page PROC-28.
Set Service Mode on the A50 CU	See “Setting Service Mode in the A50 Controller” on page PROC-27.

Figure 16 (Page 5 of 5). 3590 Axx Start Table

If you are here for this reason	Perform this action
Update A00 AIX Code	See "Installing AIX in the A00 Controller Environment" on page PROC-2.
Update A50 AIX Code	See "Installing AIX in the A50 Control Unit Environment" on page PROC-4.
Analyze Error Log Data	See "ES/9000 EREP Reports" on page MSG-13
View 3590 A00 and A50 SIM log	See "3590 A00 or A50: View SIMs in the 3590 CU SIM Log:" on page PROC-30.
Close SIM(s) in 3590 A00 and A50 SIM log	See "3590 A00 or A50: View SIMs in the 3590 CU SIM Log:" on page PROC-30.
Vary devices online/offline from the 3590 A00 and A50 Service Terminal	See "Varying On/Off 3590 drives from the A00 or A50 Controller" on page PROC-31.
Run Diagnostics from the 3590 A00 and A50 Service Terminal	See "Running Diagnostics from the A00 or A50 Controller" on page PROC-35.

## Entry Point With No SIM Information

Check first to see if there is any FID information on the Tape Drive panel.

- If you find a 3590 tape drive with FID information displayed, go the *High Performance Tape Drive MI P/N 05H9018* START section to find the problem.

If the 3590 drive panel shows no error information, go to the back of the frame that contains the A00 or A50 to view the LED display on the front of the RS/6000 control unit.

**Note:** This LED displays a value used to direct the CE to the problem and its resolution.

If the display shows a steady number listed in the following table, go to the second column of the table and perform the listed action to resolve the problem.

If the displayed number is not in the following table:

- For the A00, go to the **POWERstation and POWERserver Diagnostic Information for Micro Channel Bus Systems (document number SA23-2765), "Start of Call Map"** and follow instructions.
- For the A50 go the **Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509 "Start of Call Map"** and follow instructions.



Figure 17 (Page 1 of 2). 3590 Axx Value Match Table

If You Have This value Displayed	Perform This Action
<b>1c1</b>	Common area check 1 (Not recovered). (See note below.)
<b>1c2</b>	Common area check 2 (Recovered). No CE action is required.
<b>2c1</b>	ATAPE (Device Driver for the 3590 area check 1 (Not recovered). (See note below.)
<b>2c2</b>	ATAPE area check 2 (Recovered). No CE action is required.
<b>3c1</b>	ATL (Automated Tape Lib. Ucode) area check 1 (Not recovered). (See note below.)
<b>3c2</b>	ATL area check 2 (Recovered). No CE action is required.
<b>4c1</b>	CU (Control Unit Process Ucode) area check 1 (Not recovered). (See note below.)
<b>4c2</b>	CU area check 2 (Recovered). No CE action is required.
<b>500</b>	Loading LP Code. (If on solid, see note below)
<b>501</b>	Loading EP Code. (If on solid, see note below)
<b>502</b>	Loading CDT. (If on solid, see note below)
<b>503</b>	Setting Subchannel. (If on solid, see note below)
<b>504</b>	Setting Adapter. (If on solid, see note below).
<b>505</b>	Go Online. (If on solid, see note below).
<b>506</b>	Online. (If on solid, see note below).
<b>507</b>	Offline. No action required-Indicates CU taken offline.
<b>508</b>	Logout. No action required-Informational indicator only.
<b>509</b>	Running Diagnostics No action required-Indicates ESCON diagnostics are currently running.
<b>520</b>	Tape Daemon Started. (If on solid, see note below).
<b>521</b>	Tape Daemon Started (If on solid, see note below).
<b>522</b>	Tape Daemon Started (If on solid, see note below).
<b>523</b>	Tape Daemon Started (If on solid, see note below).
<b>540</b>	Library Started (If on solid, see note below).
<b>560</b>	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
<b>561</b>	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
<b>562</b>	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
<b>563</b>	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
<b>5c1</b>	CADD (Channel Adapter Device Driver Ucode) area check 1 (Not recovered). (See note below.)
<b>5c2</b>	CADD area check 2 (Recovered). No CE action is required.
<b>7c1</b>	TAPE (Tape Ucode.) area check 1 (Not recovered). (See note below.)
<b>7c2</b>	TAPE area check 2 (Recovered). No CE action is required.
<b>8c1</b>	RAS (RAS Ucode) area check 1 (Not recovered). (See note below.)
<b>8c2</b>	RAS area check 2 (Recovered). No CE action is required.
<b>9c0</b>	Install Procedures Drive Code Update (Informational). Code is currently being downloaded to a drive and/or card within the control unit. This process may take up to five minutes per drive. The control unit will not go online until the step has completed.
<b>9c1</b>	Install Procedures check 1 (not recovered). (See note below.)

Figure 17 (Page 2 of 2). 3590 Axx Value Match Table

If You Have This value Displayed	Perform This Action
<b>9c2</b>	Install Procedures check 2 (Recovered). No CE action is required.
<b>u82</b>	LP check 1 Microcode error. Contact your next level of support for direction.
The value displayed is not in this table.	<ul style="list-style-type: none"><li>For the A00, go to the <b>POWERstation and POWERserver Diagnostic Information for Micro Channel Bus System (Document number SA23-2765)</b>, to "Start of Call" Map and follow instructions.</li><li>For the A50, go the <b>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509 "Start of Call" map</b> and follow instruction.</li></ul>

**Note:** Connect the Service Terminal (see "Getting Started" on page PANEL-2) and retrieve the dump data. (see "3590 A00 or A50: Retrieving Engineering and Dump Data" on page PROC-28). Call your next level of support.

# Installation

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## Before Installation

**Note:** If you are installing a 3590 Model C12, go to *IBM 3590 Tape Subsystem Models C12/C14 MI*, **INST** section under "Installation of the 3590 Model C12".

Perform the following steps for unpacking the subsystem:

- \_\_\_ 1. Open the shipping container and inventory the parts listed on the bills of material.
- \_\_\_ 2. If you are installing any devices in a rack, position the shipping container that contains the 3590 or other parts in front of the rack.

**Note:** If possible, save the packaging material for 3590 or other parts reshipment or relocation.

Check to make sure that you received the following items:

- \_\_\_ 1. Appropriate power cable
- \_\_\_ 2. Appropriate SCSI cables

This procedure describes all installation actions in detail. Read and checkoff the step when it is completed.

**Note:** Be aware that you will need assistance in lifting the drive or other heavy devices.

Check with the branch office or physical planning representative **to ensure the installation planning specifications have been met.**

**Make sure the customer has the correct Host software levels and correct Host PTFs for 3590 and Axx attachment.**

Make sure that the **correct SCSI cables and power cables** were ordered. Check that the correct length SCSI cables were ordered for connection to a host or to a control unit. Check that the correct terminators will be available.

You will be referred to *IBM 3590 Tape Subsystem Models B11 and B1A MI* for several procedures that are common to the 3590 drive models, so be sure to have that book available before you begin. Each time a reference is given, the **Maintenance Information Section** and **Procedure** to follow will be listed. You should go to the referenced book, and the appropriate section's Table of Contents (TOC) to locate the page where the **Procedure** is located. At the time of publication, the references to the names of all sections and procedures were correct. Since the two books have no **cross references** between them, and because the names of the procedures may vary slightly, it is best to rely on the TOC.

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## Tools

The following tools are contained in the ship group. For Model B1A drives, some tools in the list are in the 3494 ship group. Not all tools are shipped with all drives.

- One **blank scratch cartridge** P/N 05H4434 for testing the 3590 when the device is not in the library. When the device is library-attached, P/N 05H7539 is supplied.
- One **FMR cartridge** that contains the EC level of the microcode shipped with this device. (The P/N of the cartridge changes with each EC release of the code.)
- One **cleaner cartridge** P/N 05H4435 (P/N 05H7540 when in a library) for cleaning the tape path.
- One **SCSI wrap block** P/N 62G1324 for testing the SCSI hardware.

- One **RS-422 wrap block** P/N 39F3884 for testing the library manager port (always a 3494 or 3495 special tool).
- One **tape removal tool** P/N 6850663 for rewinding the tape onto the cartridge. Refer to *IBM 3590 Tape Subsystem Models B11 and B1A MI*, PROC section under "Magnetic Tape Attachment Procedure".
- One **library attachment wrap interposer tool** P/N 05H3895 (9-to-25 pin) for isolating cable problems (always a 3494 or 3495 special tool).
- **CE vacuum gauge adapter** P/N 05H9895 for testing the pneumatic system.
- **Gap set tool** P/N 05H4671 for adjusting the machine reel motor hub.
- **ACF motor alignment tool** P/N 05H4724 for setting the gear mesh gap.
- **Two terminators** P/N 61G8324 for terminating the two SCSI ports. On newer devices, terminator P/N 05H4793 is shipped. Uses for the new terminator are:
  - Terminating the unused SCSI port in a 3590. Use the two short screws P/N 05H4782 or the two long screws P/N 05H8983, as required. The two sets of screws are shipped with the terminator (P/N 05H4793).
  - Daisy-chaining a non-IBM device or an IBM device that does not have a hammer head cable to a 3590.
  - Using a host cable that does not have a hammer-head in a 3495 to connect the library control unit frame to a drive unit frame that is at the end of the string (no device cables are long enough). Use the short screws P/N 05H4782 that are shipped with the terminator.

The following items, not in the ship group, may be needed to complete the installation:

- Flat-blade screwdriver
- Nut-drivers (5.5 mm, 3/16 in., and 7 mm for rack installation)
- Wrench (11 mm)
- Metal scale or flat ruler at least 5 in. (125 mm) long.
- Pressure/vacuum gauge P/N 6850747.

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## Installation of Axx Control Unit with any Model 3590 drives

### Axx Configurations

The Axx ESCON controller allows the IBM 3590 High Performance Tape Subsystems to be directly attached to a host through an ESCON channel. The Axx provides the interface between the normally SCSI attached drives and the ESCON based host channel.

The Axx may be installed in the following environments:

#### ***IBM Model A14***

- Used as a stand-alone box with from 1 to 4 drives.
- Drives and Axx's may be assembled and tested in the factory
- Remote Assistance Feature available
- ACF units to be field installed.

#### ***IBM 3494 Tape Library***

- Models D14 or L14 library frame
- Mounting hardware included to make it field installable
- Remote Assistance Feature available

#### ***IBM Rack Subsystems***

- May be installed in Models 9309, 7015R00 and 7202.
- May be installed in any EIA compatible rack.
- Mounting hardware included to make it field installable.
- Remote Assistance Feature available

### Model A14 Installation Overview

The Model A14 may come from the factory with the following components:

1. Axx (one A00, one A00 and one A50, or two A50's)
2. Axx mounting hardware
3. Bulkhead (service panel plate)
4. Service cables (RS-232)
5. 1 to 4 3590 Drives and mounting hardware
6. SCSI cables for 1 to 4 drives
7. An ACF for each drive
8. Power control center (PCC)
9. Operator panel assembly
10. Operator panel cables
11. Special 'Y' cable for service if library attached
12. Cable retention hardware



If the machine was assembled and tested at the factory, installation will consist mostly of hooking up cables and testing. If drives and drive hardware must be installed, that too will be accomplished. If ACF devices are included, they must be installed and tested in the field. The Axx will be tested to verify that it works, and a wrap test of the Axx ESCON attachment will be done before the host cable is attached. Drives will be tested from the Axx to do simple read and write tests. Finally, the host ESCON cable needs to be connected, and the host connection confirmed.

Go to Figure 18, find the model name of the device you are here to install, and follow the installation procedures listed.

<i>Figure 18. &amp;Axx. Installation Activity Begins Here</i>	
<b>Name of Model or Device to be Installed</b>	<b>Go To This Procedure</b>
Model A14 with A00	"Model A14 Installation Procedures" on page INST-7
Model D14 with A00	"Model D14 Installation" on page INST-21
Model L14 with A00	"Model L14 Installation" on page INST-25
Rack Model with A00	"Rack Model with A00 controller Installation" on page INST-40
Model A14 adding an A50 with existing A00	"Adding One A50 Controller in A14 to existing A00 Controller" on page INST-46
Model A14 replacing A00 with one A50	"Replacing A00 Controller in A14 with one A50 Controller" on page INST-51
Model A14 replacing A00 with two A50's	"Adding the Second A50 Controller in a A14" on page INST-59
Update to A50's in a D14	"Installing a A50 Controller in D14" on page INST-62
Update to A50's in a L14	"Installing a A50 Controller in L14 Frame" on page INST-71
Update to A50 in a RACK model	"Installing A50 Controller in RACK" on page INST-76



## Model A14 Installation Procedures

You are here to install and checkout a Model A14. The A14 must have a minimum of one drive and one Axx with associated mounting hardware and cables installed from the plant of manufacture. You may be required to add additional drive mounting hardware and drive SCSI cables to complete the installation to your customers satisfaction.

Since an A14 may ship with or without drives installed, you will be asked to verify what hardware is installed. Depending upon what actual hardware is installed, you will be asked to install hardware or go to the next step.

The following tables will assist you in determining what is to be done, and where the procedures are located:

**Note:** Some customers may have drives that they want to install into a Model A14, and will have ordered necessary mounting hardware and cables for you to complete the job. You can install all these items with the following installation instructions.

Figure 19 has an entire list of all possible procedures to complete this installation. Do those procedures that fit this customers needs. Skip those that do not apply.

<i>Figure 19 (Page 1 of 2). Model A14 Installation Procedure Selection</i>	
<b>If Installation Procedure is Needed</b>	<b>Perform This Procedure</b>
Before you begin, read the information at "Before Installation" on page INST-3 and "Tools" on page INST-3.	"Before Installation" on page INST-3 and "Tools" on page INST-3
Verify that all cable retention hardware was shipped or is installed.	"Cable Retention Hardware Verification" on page INST-9
Install additional drive and drive support hardware (includes slides, drive supports, drives and SCSI cable attachment).	"Model A14 Drive and Drive Support Hardware Installation" on page INST-11
Install ACF devices on drives	"ACF Installation Procedures" on page INST-16
For all A14 Models, install service panel bracket.	Perform "Service Panel Installation—Model A14" on page INST-18.
For all Model A14 installations, install RS-232 cable.	Perform "A14 Installation of Service (RS-232) Cable to Service Panel" on page INST-19.
For all Model A14 installations, check the voltages.	Perform "Voltage Checks" on page INST-77.
Ensure that your Axx has the proper time and date set.	"Setting the Correct time on the A00 or the A50" on page PROC-38.
For all installations, check and adjust the Pneumatic System.	Perform procedure in <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , LOC*CAR section, under "Measurement and Adjustment of Pneumatic System".
For all Installations, set up the drives, but do not test at this time. Testing will be done later from the Axx.	Perform the procedure at <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, called "Installation Checkout—Drives", under Operator/CE Panel setup and tests, checking EC level, setting customer options, setting drive options, then return here. Tests will be run later.

Figure 19 (Page 2 of 2). Model A14 Installation Procedure Selection

If Installation Procedure is Needed	Perform This Procedure
For all Axxs installed, perform the "Power On Self Test" (POST).  <b>Note:</b> Before powering up the Axx ensure that all the drive power-on switches are in the power-on position, to ensure that the drives are properly configured.	Perform "Axx Stand-Alone Power On and Checkout" on page INST-79.
For all A14 installs, install the service panel and connect the cables.	Perform "Service Panel Installation—Model A14" on page INST-18 and "A14 Installation of Service (RS-232) Cable to Service Panel" on page INST-19.
For all A14 installs, checkout the service panel interface to the Axx.	Perform "A14 Installation Service Panel Checkout" on page INST-20.
For all A14 installs, if not done before, set up the service terminal with EBTERM or a terminal emulator.	Perform "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11, or use other terminal emulator setup.
After setting up EBTERM or a terminal emulator, be sure that your service terminal is connected to your Axx and then see the referenced procedure:	Perform "Getting Started" on page PANEL-2.
After your service terminal is connected, the control unit clock needs to be set to the correct time and zone.	Perform "Setting the Correct time on the A00 or the A50" on page PROC-38.
Run tests on the drives using the service terminal attached through the Axx. Perform short read and writes to a scratch cartridge.	"Running Diagnostics from the A00 or A50 Controller" on page PROC-35.
Run Wrap tests on the Axx using the Advanced Diagnostics in the referenced section:	"Running Diagnostics from the A00 or A50 Controller" on page PROC-35.
For all Axxs installed:	Perform "Attaching the Host ESCON Cable(s)" on page INST-80.
For all Axx installs:	Perform "Host Interface Checkout" on page INST-89.
For all Model A14 installs:	<ol style="list-style-type: none"> <li>1. Order diagnostic CD ROM P/N 40H3394 for future diagnostic and repair use if it was not sent with the ship group. You may need this in the future.</li> <li>2. Complete your installation reporting.</li> <li>3. This should complete this installation.</li> </ol> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. Ensure you validate the connection of each installed Axx through the modem by calling your next level of support and having them dial in to the Axx.</li> <li>2. Perform only those procedures that need to be done. If your machine was totally assembled and tested by manufacturing, the tape drives and Model A00 may require very little testing. Test all interfaces where cables had to be installed.</li> </ol>

## Cable Retention Hardware Verification

Before you begin the A14 frame installation, perform the following steps:

- \_\_\_ 1. If your A14 came populated with all the drives that are to be installed, remove the shipping braces as outlined in the Unpacking Instructions shipped with the box.
- \_\_\_ 2. Ensure that the rotating drive interlock plate, P/N 05H8986, shown in Figure 20 on page INST-9, is installed. The plate is installed on a frame member so as to block all but one drive as the service representative tries to pull drives toward the rear for service. This safety plate must be installed to maintain a balanced and safe environment.
- \_\_\_ 3. When the drives are returned to the operating position, ensure that the safetylock lock screw (screw on a wire lanyard) is installed in the slide, to keep the drives from shifting.

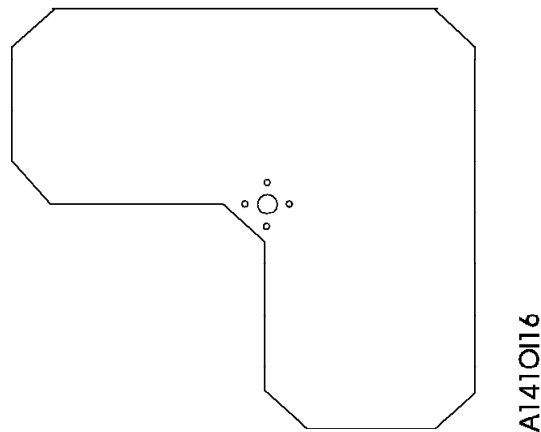


Figure 20. Rotating Drive Interlock Plate

Refer to Figure 21 on page INST-10 and Figure 22 on page INST-11 to determine if A14 frames cable retention and ACF guide hardware is present in the machine. Verify hardware installation, then continue with "Model A14 Drive and Drive Support Hardware Installation" on page INST-11.

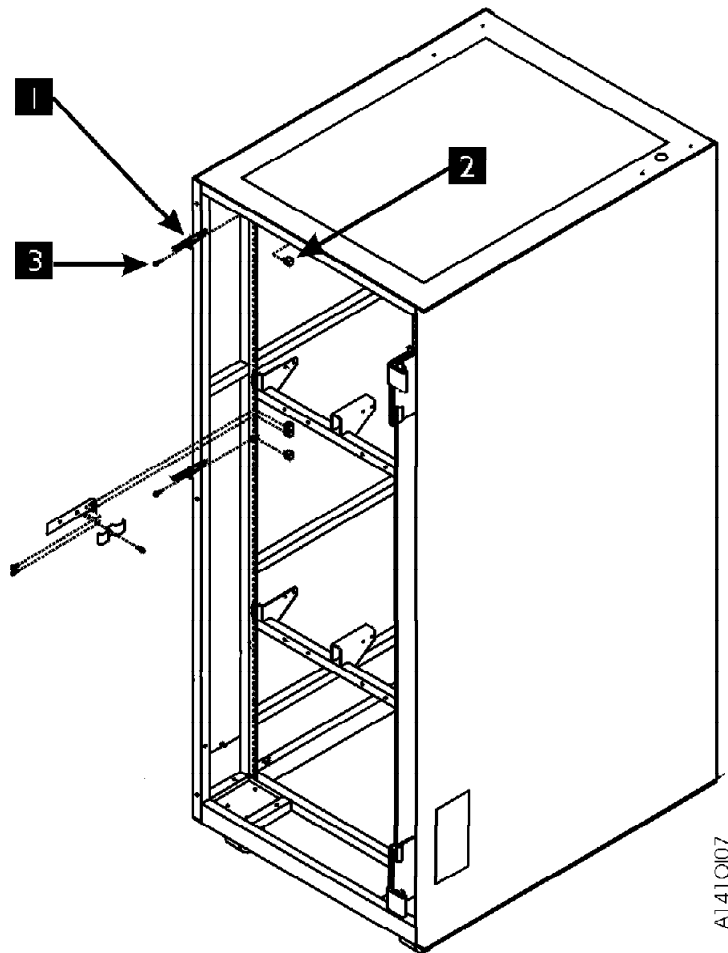


Figure 21. A14 ACF Guide Layout

- \_\_\_ 1. Refer to Figure 21, and verify that 2 ACF guides, P/N 05H8991, item **1**, secured with 2 nut clips P/N 74F1823, item **2** and 2 screws P/N 1624779, item **3** are present. Hole location for nut clips and screws are 63 and 105 from the bottom left side only.
- \_\_\_ 2. Refer to Figure 22 on page INST-11 and verify three cable clamp plates, P/N 05H2629, item **4**, are secured by 3 screws P/N 1624779, item **5**. The cable clamp bracket hole furthest from the securing nut clips is preferred but not necessary.
- \_\_\_ 3. Refer to Figure 22 on page INST-11 and verify that three cable clamp brackets, P/N 45G0181, item **1**, are secured with 6 nut clips P/N 74F1823, item **2**, and 6 screws P/N 1624779, item **3**. Frame holes 26, 27 and 68, 69 from the bottom, both right and left sides of frame are used to secure this hardware.

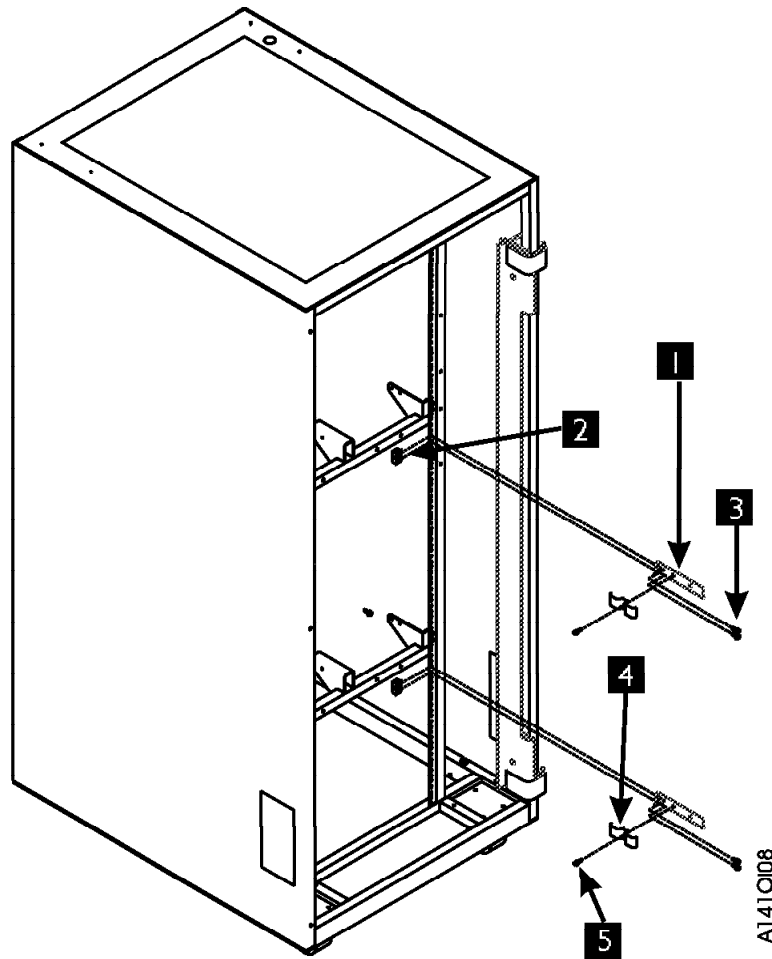


Figure 22. A14 Frame Cable Retention Hardware

## Model A14 Drive and Drive Support Hardware Installation

These procedures refer to Figure 23 on page INST-12, Figure 24 on page INST-12, Figure 25 on page INST-13 and Figure 26 on page INST-14.

Verify the hardware is installed, then proceed to with the next step.

1. "Slide Assembly Installation" on page INST-13
2. "Drive Support Bracket Installation" on page INST-14
3. "Drive Installation" on page INST-15
4. "SCSI Cable Attachment" on page INST-15

The following procedures, refer to Figure 23 on page INST-12 for an overview of the ACF, item **1**, drive, item **2**, drive support bracket, item **3**, and the slide mechanisms, item **4**. The figure shows one drive pulled out to the rear, with the components in an exploded view.

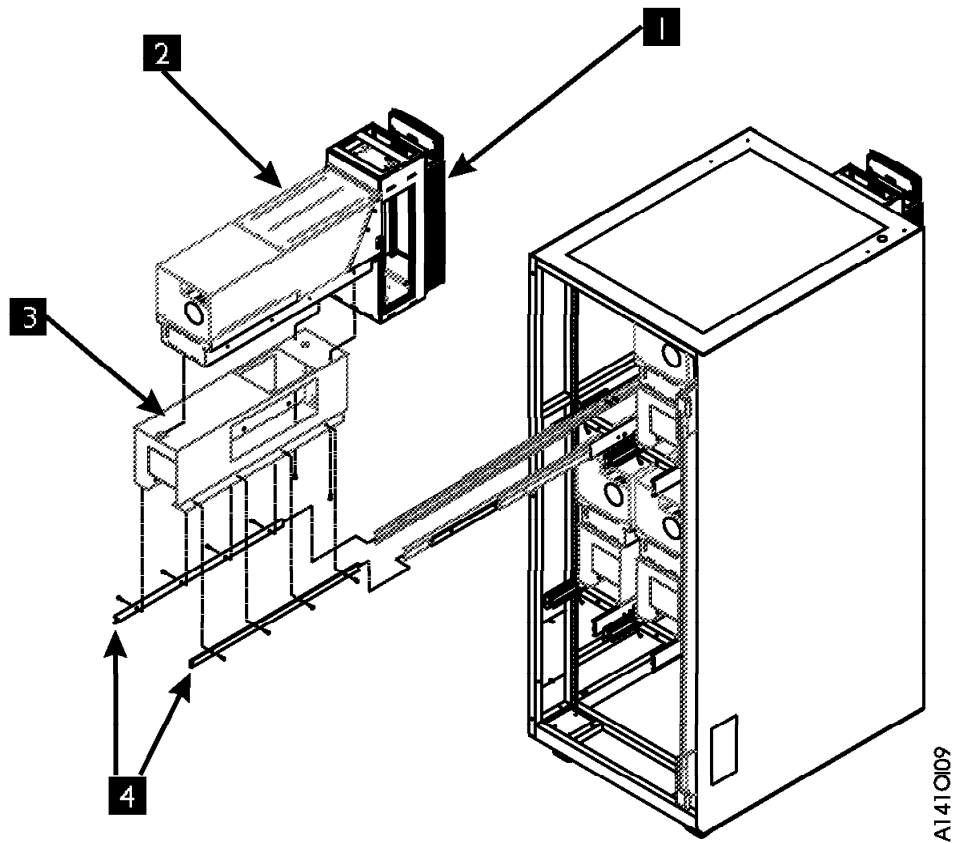


Figure 23. A14 Slide Assembly Installation

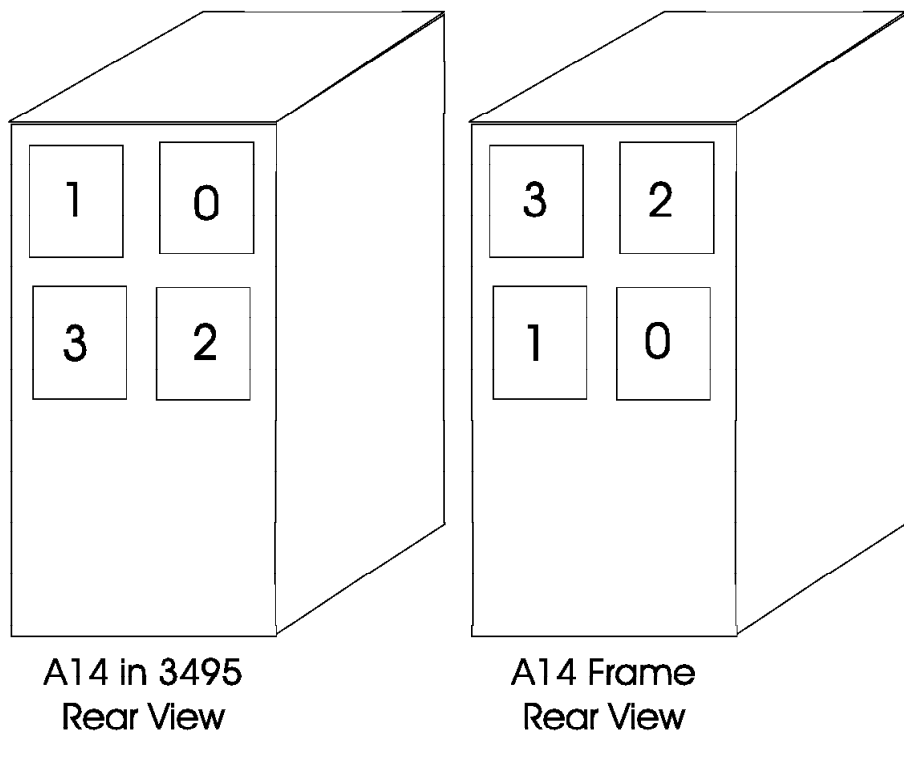


Figure 24. A14 Frame—Order of Drive Installation

If you are installing additional drives and drive hardware, refer to Figure 24 for the order that drives should be installed, then continue with the following procedure. If required, for model B11 continue at “ACF Installation Procedures” on page INST-16.

**CAUTION:**

**The 3590 Model B11 weighs 28.6 kilograms (63 pounds); it takes two persons to safely lift this unit.**

**Note:** This notice is translated into selected languages. See C2 in the INSP section.

**Slide Assembly Installation:** Figure 25 shows a high level view where the slide assemblies will be installed in the rear of the A14 frame. The figure shows only the left and center attachment points as viewed from the rear. Not shown in the picture are identical attachment points on the right side, as seen from the rear, and similar points located left and right as viewed from the front of the A14 frame.

Figure 26 on page INST-14 shows a rear view of a frame member with the attachment points. The left drive slides attach to locations **1** and **2**, the right drive slides attach to locations **3** and **4**. Identical points are located in the front of the A14 frame for the other end of the slide assemblies.

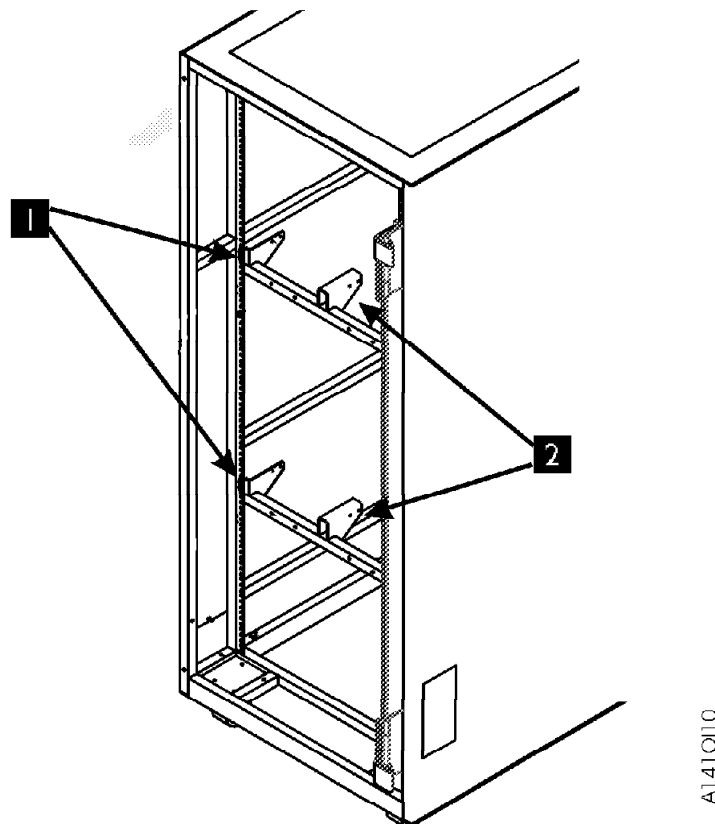


Figure 25. A14 Slide Installation

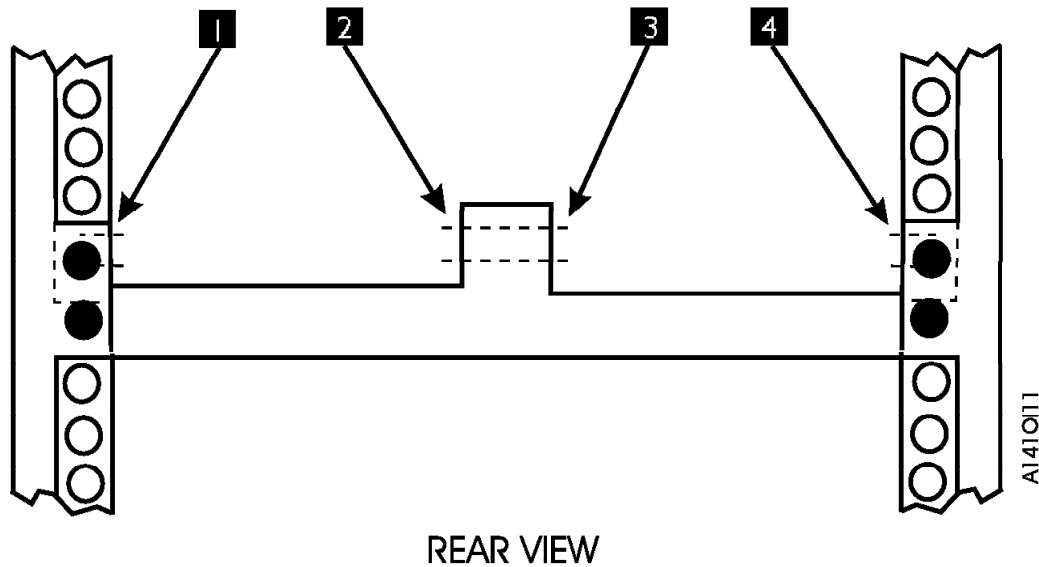


Figure 26. A14 Slide Mounting Surfaces

Before you start, see how the slides work. The inner slide has a locking mechanism that you press to release and the outer slides have a locking mechanism that you move to the center position to release. There is one pair of slides and one drive frame for each drive that is to be installed.

- \_\_\_ 1. Install two slides P/N 05H4503, selecting the next available position in the A14 frame. Secure the slides with 8 screws P/N 1624767.
  - \_\_\_ a. Install the slides so the slide locks (the cables with the screws) are to the rear of the frame. You may have to extend the slides to access the mounting holes.
  - \_\_\_ b. Loosely install the first screw in the front hole, the second and third screws in the rear, the fourth screw in the front slot, and then tighten the screws.

## Drive Support Bracket Installation

- \_\_\_ 1. Each slide has three sections. Pull the slides to the rear and remove the inner slide section from each slide. Remember how you took the slide apart, and install it back later the same way. **Do not** get the inner slide installed backwards. The slides must be installed in the same position as they were removed and the tapered ends must be at the front of the drive.
- \_\_\_ 2. Refer to Figure 23 on page INST-12 and install the inner slide sections, item, **4** on both sides of the drive support bracket P/N 05H4504, item **3**, using 8 screws P/N 1624767.

**Note:** Read this prior to performing the next step:

- a. Ensure that the ball-bearing retaining assemblies of the slides are located at the rear of the center slide when installing the drive support bracket.
  - b. Ensure that the middle section of the slide is fully extended and locked before you push the drive support bracket in place.
- \_\_\_ 3. **Read this complete step before proceeding.** Lift the drive support bracket, which now contains the inner slide section, into the slide mechanism. Hold the ball-bearing retainers to the rear while you guide the slides into the ball-bearing retainer assemblies and then push the drive support bracket in place. Guide the drive support bracket onto four or five ball bearings before you push it forward.



- \_\_\_ 4. If you have additional drive slides and support brackets to install, go back to "Slide Assembly Installation" on page INST-13 and install them before proceeding. When all slides and drive supports are installed, proceed to "Drive Installation" on page INST-15.

### **Drive Installation: CAUTION:**

**The 3590 Model B11 weighs 28.6 kilograms (63 pounds); it takes two persons to safely lift this unit.**

**Note:** This notice is translated into selected languages. See C2 in the INSP section.

1. **When picking up the 3590 drive, DO NOT use the cartridge feed slot as a handle to lift the 3590 drive! Damage may easily result to the loader door or loader.**
2. **Use the protrusion on the front of the drive enclosure under the cartridge feed slot or the bottom of the drive enclosure to lift the 3590 drive.**

- \_\_\_ 1. Move a drive support bracket to the rear service position, and prepare to install a drive.
- \_\_\_ 2. With assistance, lift the 3590 drive onto the top surface of the drive support bracket, and engage the rear of the drive under the tab at the rear of the support bracket. Secure the drive to the support bracket using 2 screws P/N 1624779 as shown in Figure 23 on page INST-12. Repeat these last two steps for each drive.
- \_\_\_ 3. When all drives are installed, **lock** the slides on all drives to ensure that they do not move during operation.

**SCSI Cable Attachment:** If you just installed tape drives and need to hook them up to the SCSI bus, refer to *IBM 3590 Tape Subsystem Models B11 and B1A MI*, INST section, under "SCSI Attachment" for directions on attaching SCSI cables, then return here.

If you came to this MI from Installation Instructions "Install 3590 B11 Drive Unit (FC4630) into an A14 Frame" go to "SCSI Cable Routing for Additional 3590 Drives." on page INST-17 for the SCSI cable service loop routing, and return here.

If you only installed a Axx, but no tape drives, perform the following:

- \_\_\_ 1. Refer to Figure 74 on page INST-82 for a rear view of the Model A00 box, then attach the SCSI cable that goes to the first drive in the string to the SCSI Connector in the rear of the Model A00, in slot 2. If a second SCSI cable is being installed to support two host attachments, install the second cable from the first drive in the string to the SCSI Connector in the rear of the Model A00, in slot 1.
- \_\_\_ 2. Remove the terminator from the last drive in the A14 and install it in the last drive to be installed. If two SCSI adapters will be used, perform the same operation on the second string by installing the second terminator in the last drive in that string.
- \_\_\_ 3. Attach SCSI cables from where the terminator was removed to the next drive and so on until all the drives are "daisy chained" and the last drive is terminated. Repeat the operation for a second SCSI chain if installed.
- \_\_\_ 4. When all the drives and SCSI cables are installed, go to step "ACF Installation Procedures" on page INST-16.



## ACF Installation Procedures

If ACF units are to be installed, install them now with the following procedures. If no ACF units are to be installed, install the safety locks (screws with wire lanyards) into the slides to keep the drives from shifting, then return to the step that brought you here.

- \_\_\_ 1. Move each drive to the rear, **one at a time** and install the ACF on the front of the drive. Refer to *IBM 3590 Tape Subsystem Models B11 and B1A MI*, INST section for procedure.
- \_\_\_ 2. Return the drive to its home position after each ACF installation.
- \_\_\_ 3. Install safety locks (screws with wire lanyards) into the slides to keep the drives from shifting during operations.
- \_\_\_ 4. Return to the step that brought you here.

## SCSI Cable Routing for Additional 3590 Drives.

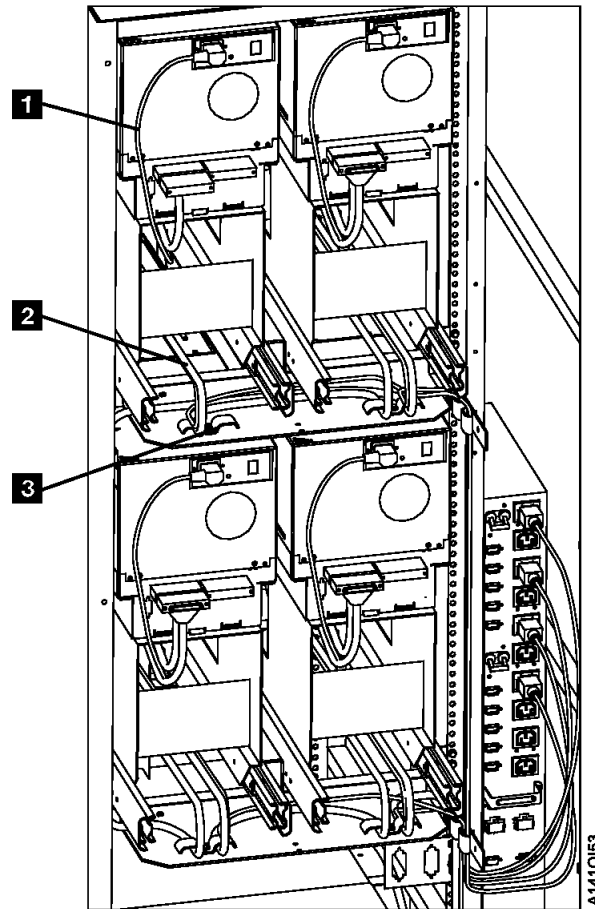


Figure 27. Drive SCSI Cable Routing

With every A14 frame shipped from the factory, at **least** one 3590 drive is installed. The factory installation of the SCSI cables including the service loops will show you how the routing and loops should be done. The SCSI cables **2** are routed from the service loops below the drive up through the drive support tray and clamped to the tray **3** and to the drive **1** as shown.

Refer to the existing drive(s) already installed in the A14 frame for exact locations and routing.

For drive to drive SCSI cable routing, refer to Figure 27 if your A14 frame does not have more that one existing 3590 drive.

**Service Panel Installation—Model A14:** The service panel used in the Model A14 is a small bracket with two holes which is installed in the vicinity of the A00 Controller. This panel is shown in Figure 28.

**Note:** If an A50 controller is added to or replaces the existing A00 CU, a new and different Service Panel will be installed and the location in the A14 changed. This panel is shown in Figure 29

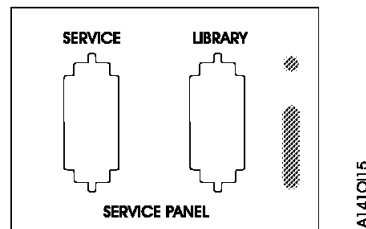


Figure 28. A00 Service Panel

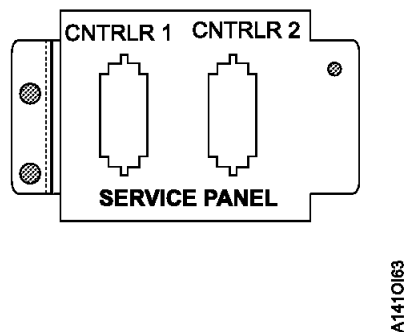
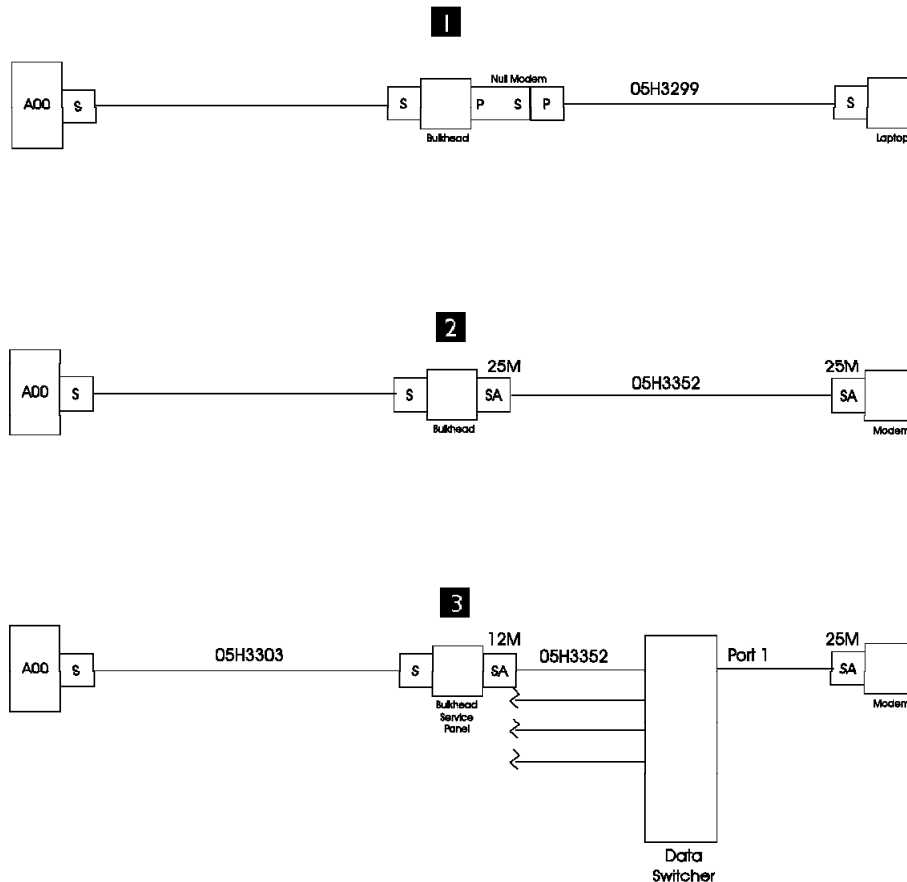


Figure 29. A50 or A00/A50 Mix Service Panel

The service panel is installed in most A14 frames in the factory, but may have to be installed in the A14 box if field retrofitted. The installation of the bracket, and wiring of the RS-232 "service" cables is covered in this section in case it is needed.

The service panel provides a single point in the A14 frame where the Axx installed in A14 may be accessed for service. The service representative may attach his/her service terminal at the service panel, using a Null Modem, to checkout the installed Axx or a modem may be installed so that the Axx may be serviced remotely. Figure 30 on page INST-19 shows three examples of how to hook up the service panel when the "Y" cable is not used.



## EXAMPLES

- 1** If Laptop is to be used
- 2** Normal without switch
- 3** With switch

## LEGEND

P = Pin  
 S = Socket  
 C = Converter P/N 50G0947  
 G = Gender changer P/N 05H7939  
 N = Null modem P/N 05H7876  
 SA = Snap adapter P/N 05H3357 (SA-12M)  
 SA = Snap adapter P/N 05H3368 (SA-25M)  
 Data switcher P/N 05H3350 (MDS-16)  
 Cable asm. RJ12 P/N 05H3352 (AC-100)

L1410/31

Figure 30. Service Panel Cabling without Y Cable

Several examples of service panel attachments, using the "Y" cable are shown in Figure 38 on page INST-34 and Figure 39 on page INST-36

**Note:** Whenever the service representative unhooks the modem to hook up a Null Modem and the service terminal, he/she should remember to hook the modem back up before leaving the account.

Install as required the A14 service panel bracket. The bracket is shown in Figure 28 on page INST-18.

**A14 Installation of Service (RS-232) Cable to Service Panel** Install the service (RS-232) cable from the rear of the A00 Controller serial port to the rear of the service panel. Refer to Figure 74 on page INST-82 for a view of the cable connectors on the A00 Controller. Also refer to Figure 80 on page INST-85 for a view of the cables as they are attached to the back of the A00 Controller or Figure 49 on page INST-50 : Connect the one end of the RS-232 cable to the service panel. The other end connects to the serial connector located on the rear of the Axx

**A14 Installation Service Panel Checkout:** Attach the service terminal or other service device to the service panel and ensure that communications can be established with the Axx.

**Note:** You must use a Null Modem on the end of the service terminal cable before it plugs into the service panel

**Note:** Whenever the service representative unhooks the modem to hook up a Null Modem and the service terminal, he/she should remember to hook the modem back up before leaving the account.

Verify your modem setup at "Setting Up EBTERM or Terminal Emulator for Setting Modem Password" on page PROC-45 or "Modem Initialization with Password" on page PROC-47

and ensure that the next level of support can access the device through the modem.

## Model D14 Installation

You are here to complete the install and checkout of a Model D14. Most of the installation was accomplished in the 3494 Maintenance Information that sent you here.

### Model D14 Installation—Overview

The Model D14 may come from the factory with the following components:

1. A00 controller mounting hardware
2. 0 to 1 A00 controller
3. Cables for the A00 controller if one is installed
4. Up to four 3590 Drives and mounting hardware
5. SCSI cables to the shipped and installed drives
6. Cable retention hardware.
7. Power control center (PCC)

Unless the 3494 is being retrofitted in the field, it was built and tested at the factory as ordered above. If drive and drive hardware is to be installed in the field, the 3494 Maintenance Information Install section will lead you to the appropriate procedures to accomplish this. While most of the installation is handled by the 3494 MI, a few items will be installed and checked out in this section. Figure 31 tells you what this section will direct you to do:

### Model D14 Installation—Procedures

**Note:** Some of the following may have been completed as part of the 3494 Installation Procedures. If a procedure has been completed, go to the next one.

Figure 31 begins a list of procedures to complete this installation. Do those procedures that fit this customers needs, and have not been done before, either in the factory or in the 3494 MI procedures:

Figure 31 (Page 1 of 2). Model D14 Installation Procedure In This Section	
Installation Procedure	Where it is Located
Before you begin, read the information at "Before Installation" on page INST-3 and "Tools" on page INST-3.	"Before Installation" on page INST-3 and "Tools" on page INST-3
Drive Shipping Braces and Secure Drives	"Model D14 Shipping Braces and Safety Hardware Check" on page INST-22.
A00 controller shelf hardware installation	"Model D14 Shelf Hardware Installation" on page INST-23.
A00 controller unpacking and installation	"Unpack and Install the A00 controller" on page INST-23.
A50 unpacking and installation	"Unpack and Install the A50 Controller" on page INST-24
Axx power-up and standalone checkout running POST.	"Axx Stand-Alone Power On and Checkout" on page INST-79.
Set up EBTERM or a terminal emulator in the Library Manager Terminal if not done before.	"Installing EBTERM or Terminal Emulator in a 3494 Library Manager" on page PROC-13.

Figure 31 (Page 2 of 2). Model D14 Installation Procedure In This Section

Installation Procedure	Where it is Located
Set up EBTERM or a terminal emulator in the Service Terminal	"Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11.
Ensure that your service terminal is attached to the back of the Axx and is setup as shown in the referenced procedure:	"Getting Started" on page PANEL-2.
Ensure that your Axx has the proper time and date set.	"Setting the Correct time on the A00 or the A50" on page PROC-38.
For all installations, check and adjust the Pneumatic System. <b>Note:</b> This may have been done earlier in this installation, but is mentioned here because of the importance of the adjustment. If not done already, do it now.	Perform the procedure in <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , LOC*CAR section, under "Measurement and Adjustment of Pneumatic System".
Drive checkout from Axx. <b>Note:</b> If installing multiple Model D14's, you may skip this step for now and perform the drive checkouts from the Lxx box later if you desire.	"Checkout of Drives from Axx Interface" on page INST-79.
ESCON wrap test; select Advanced Diagnostics from the menu at the referenced procedure, and select a test that performs a wrap of the ESCON adapter.	"Running Diagnostics from the A00 or A50 Controller" on page PROC-35.
ESCON host cable hookup	"Attaching the Host ESCON Cable(s)" on page INST-80.
ESCON host interface checkout	"Host Interface Checkout" on page INST-89.
Installation paperwork and closure.	<ol style="list-style-type: none"> <li>1. Order diagnostic CD ROM P/N 40H3394 for future diagnostic and repair use if it was not sent with the ship group. You may need this in the future.</li> <li>2. Complete your installation reporting.</li> <li>3. This should complete this installation.</li> </ol> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. Ensure you validate the connection of each installed Axx through the modem by calling your next level of support and having them dial in to the Axx.</li> <li>2. Some of the above may have been installed by the factory, by MES instructions, or by direction of the 3494 MI. Perform only those items that need to be done here.</li> </ol>

**Model D14 Shipping Braces and Safety Hardware Check:** If not done before, perform the following steps:

- \_\_\_ 1. If your D14 came populated with all the drives that are to be installed, remove the shipping braces that keep the drives from moving during the shipping process.
- \_\_\_ 2. Ensure that the drive safety locks are in place when not working on a drive. These locks are pins with cable lanyards attached that fit into a slide to keep it from moving.

Figure 32 on page INST-23 shows the A00 controller installed within the Model D14.



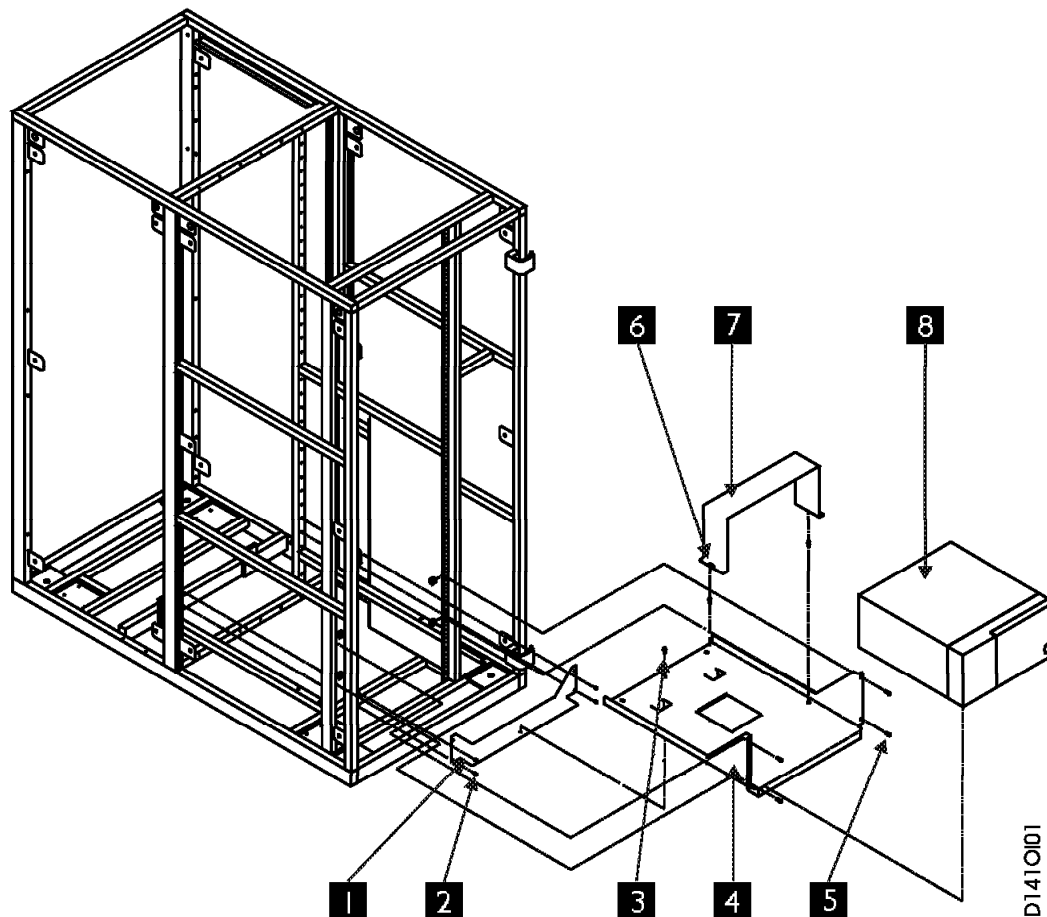


Figure 32. D14 Frame Installation of Model A00

**Model D14 Shelf Hardware Installation:** If the shelf, item **4** is already installed in the frame, go back to the step that brought you here, and take the next step.

If the shelf, item **4** needs to be installed, perform the following steps, before returning to the step that brought you here.

- \_\_\_ 1. If not done before, install the rear bracket P/N 05H7820, item **1** to the shelf bracket, P/N 05H7819, item **4** using three screws P/N 1624779, item **3**.
- \_\_\_ 2. Install the assembled item **1** and **4** to the D14 frame using six screws P/N 1624765, item **2** and six nut clips P/N 74F1823, in rear frame hole numbers 15, 18 and 25.
- \_\_\_ 3. Continue installation at the step that brought you here.

### Unpack and Install the A00 controller

- \_\_\_ 1. Unpack the A00 controller, item **8**, from its carton, lay it on the shelf, item **4** on its side, with the air vent pointing up and the A00 Controller door hinge down and against the shelf.
- \_\_\_ 2. Attach the following cables to the rear of the A00 Controller before sliding the unit into final position, and securing to shelf, item **4**. Refer to Figure 74 on page INST-82 for cable connections.
  - a. Special 'Y' cable, P/N 31F4126 to Serial connector Refer to Figure 80 on page INST-85 for a view of the "Y" cable coming from the back of the A00 Controller.

**Note:** In Figure 80 on page INST-85 refer to **3** for position of the converter.

- b. SCSI cable from 1st drive to adapter slot 2. If a second SCSI string is being installed, attach the second SCSI cable from the 1st drive to adapter slot 1.

**Note:** The fiber optic cable(s) from host CPU to Adapter slot 3 (and 4 if used) will be attached later after the A00 Controller has been checked out.

- c. AC power cable from Model A00 to power source.

- \_\_\_ 3. After cables are secured and strain relief is installed, slide the A00 Controller onto the shelf P/N 05H7819, item **4**. The door must open facing rearward in the Model D14.
- \_\_\_ 4. Secure in place using the A00 Controller retaining bracket P/N 05H8990, item **7**, and two screws, P/N 1624779, item **6**, but leave loose for now.
- \_\_\_ 5. Continue installation at Figure 31 on page INST-21.

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## Unpack and Install the A50 Controller

- \_\_\_ 1. Unpack the A50, from its carton, lay it on the floor at the rear of the A14 frame with the front of the A50 facing you.
- \_\_\_ 2. In the following table Figure 33 select the frame and A50 configuration you are here to install.
- \_\_\_ 3. To facilitate installation of the hardware for the A50 remove the front cover (drive side) in the A14 frame. Do this by pulling out the top two drives into the service position. Looking at the space between the cover and the A14 frame you will see where the screws holding the cover to the frame are located. Insert your hand and screw driver between the drive and the cover and remove the top two screws (one on each side). Save the screws for later use. Insert the top two drives into the normal position and pull the bottom two drives into the service position. Insert your hand and screw driver between the drive and the cover and remove the top lower screws (one on each side). Save the screws for later use. Insert the lower two drives into the normal position. Remove the front cover and set aside until installation and testing are complete.

**Note:** The front cover will have some resistance due to the design of the bayonet pins used to keep the cover from falling.

*Figure 33. A50 Installation Activity Begins Here*

Name of Model or Device to be Installed	Go To This Procedure
Model A14 adding an A50 with existing A00	"Adding One A50 Controller in A14 to existing A00 Controller" on page INST-46
Model A14 replacing A00 with one A50 CU	"Replacing A00 Controller in A14 with one A50 Controller" on page INST-51
Model A14 adding a second A50 CU	"Adding the Second A50 Controller in a A14" on page INST-59
Model D14 adding a A50 CU	"Installing a A50 Controller in the D14 Frame" on page INST-66
Model L14 a first A50 CU	"Installing a A50 Controller in L14 Frame" on page INST-71
RACK model adding the A50 CU	"Installing A50 Controller in RACK" on page INST-76

## Model L14 Installation

### Model L14 Installation—Overview

The Model L14 may come from the factory with the following components:

1. A00 Controller shelf hardware
2. A00 Controller and assorted cables
3. Zero to two 3590 drives and mounting hardware
4. SCSI cables for above drives
5. Power control center (PCC)
6. Service Panel (Local or Remote)
7. Cable retention hardware

If the machine was built at the factory as configured above, it will have been tested as well. The 3494 Maintenance Information will direct you to the proper procedures if drive or drive hardware must be installed. It will also direct you to install the service panel in the Lxx frame and route and connect RS-422 and RS-232 cables from the Dxx frames to the Lxx frame.

This section will direct you to perform a brief test of the L14 frame Axx and the service panel interface to each installed D14 frame Axx, perform a short test of the Lxx drives, if any, from the Axx, run an ESCON wrap test, connect the host cable, and confirm the host connection.

### Model L14 Installation—Procedures

You are here to complete the installation of a Model L14. Any drives to be installed in the L14 may be factory installed, or installed earlier as part of the 3494 MI Installation procedures. The A00 Controller may have been installed in the factory as well, but the procedure is given in this section in case it is needed.

Refer to Figure 34 and if the left column fits your situation, perform the procedure in the right column:

<i>Figure 34 (Page 1 of 3). Installation and Checkout Procedures—Model L14</i>	
<b>Installation Procedure Needed</b>	<b>Perform This Procedure</b>
Before you begin, read the information at “Before Installation” on page INST-3 and “Tools” on page INST-3.	“Before Installation” on page INST-3 and “Tools” on page INST-3
Install Model L14 A00 Controller shelf hardware if needed.	“Model L14 Shelf Hardware Installation” on page INST-28
Unpack and install the A00 Controller.	“Unpack and Install the A00 Controller—Model L14” on page INST-29.
For all Axx installed, power on and checkout the controller.	Perform “Axx Stand-Alone Power On and Checkout” on page INST-79.
Install service panel, (if not done by the 3494 MI).	“Service Panel Installation” on page INST-29.
Install RS-422 cables for Library Manager attachment (if not done in 3494 MI).	“RS-422 Cable Installation (Library Manager Attach)” on page INST-31.
Install RS-232 cables for service terminal attachment (if not done in 3494 MI).	“RS-232 Cable Installation(Service Interface Attachment)” on page INST-31.

Figure 34 (Page 2 of 3). Installation and Checkout Procedures—Model L14

Installation Procedure Needed	Perform This Procedure
Set up EBTERM or other terminal emulator on your Library Manager terminal if not done before.	"Installing EBTERM or Terminal Emulator in a 3494 Library Manager" on page PROC-13.
Set up EBTERM or other terminal emulator on the service terminal, if not done before.	"Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11.
Ensure that the service terminal is attached to the Axx and that the referenced procedure is followed:	"Getting Started" on page PANEL-2.
Ensure that your Axx has the proper time and date set.	"Setting the Correct time on the A00 or the A50" on page PROC-38.
For all installations where drives are being installed, check and adjust as necessary the Pneumatic System. <b>Note:</b> This may have been done earlier in this installation, but is mentioned here because of the importance of the adjustment.  If not done, do it now.	Perform the procedure in <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , LOC*CAR section, under "Measurement and Adjustment of Pneumatic System".
For all Installations, set up the drives if not done previously, but do not test the drives. This will be done later.	Perform the procedure at <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, called "Installation Checkout—Drives", under Operator/CE Panel setup and tests, checking EC level, setting customer options, and setting drive options.  <b>Note:</b> Do not run tests on the drives as that will be done later from the Axx.
For all L14 installs with drives, perform some short read and write operations on each drive, from the service terminal using the Axx interface. Each diagnostic is located under the Diagnostic Routines menu under Advanced Diagnostics.	Perform "Running Diagnostics from the A00 or A50 Controller" on page PROC-35.
For all L14 installs, checkout the service panel interface to the Axx.	Perform "Service Terminal or Library Manager Attachment" on page INST-32.
ESCON wrap test; select Advanced Diagnostics from the menu at the referenced procedure, and select a test that performs a wrap of the ESCON adapter.	"Running Diagnostics from the A00 or A50 Controller" on page PROC-35.
For all Axxs installed:	Perform "Attaching the Host ESCON Cable(s)" on page INST-80.
For all Axx installs:	Perform "Host Interface Checkout" on page INST-89.

Figure 34 (Page 3 of 3). Installation and Checkout Procedures—Model L14

Installation Procedure Needed	Perform This Procedure
For all Model L14 installs:	<ol style="list-style-type: none"><li>1. Order diagnostic CD ROM P/N 40H3394 for future diagnostic and repair use if it was not sent with the ship group. You may need this in the future.</li><li>2. This should complete this installation. Return to the 3494 MI to complete your installation reporting. This should complete the installation procedures.</li></ol> <p><b>Notes:</b></p> <ol style="list-style-type: none"><li>1. Ensure you validate the connection of each installed Axx through the modem by calling your next level of support and having them dial in to the Axx.</li><li>2. Perform only those procedures that need to be done. If your machine was totally assembled and tested by manufacturing, the tape drives and Axx may require very little testing. Test all interfaces where cables had to be installed.</li></ol>



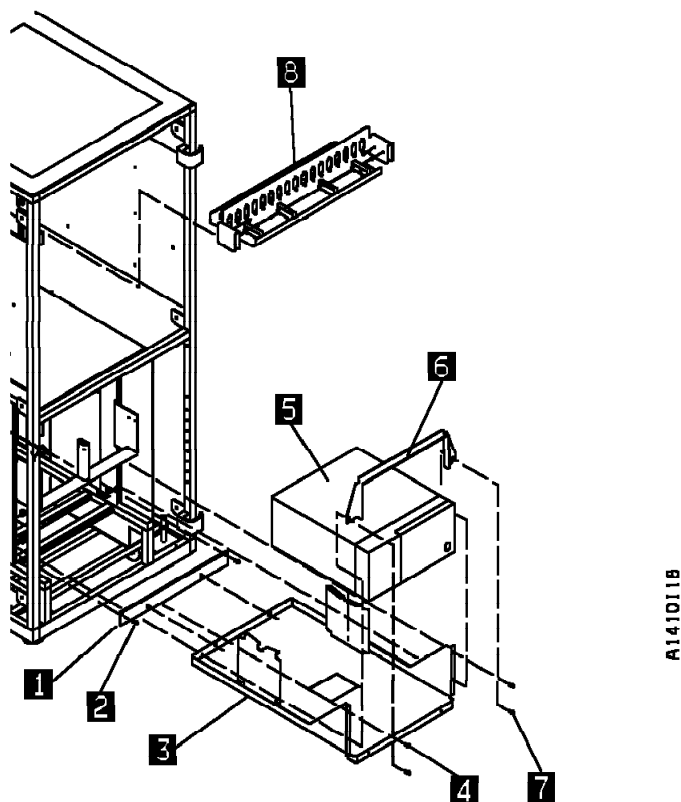


Figure 35. Model L14 Installation of A00 Controller

**Model L14 Shelf Hardware Installation:** Figure 35 shows the A00 Controller as it is assembled within the Model L14.

All new ships of the Model L14 hardware will include installation of the A00 Controller shelf hardware. Because some installations will be performed on older 3494 hardware in the field (a field retrofit), you may be required to install shelf hardware in the field.

If the shelf, item **3** needs to be installed, perform the following steps. Otherwise, return to the step that sent you here.

- \_\_\_ 1. If not done before, install the rear bracket P/N 05H7823, item **1** to the shelf, item **3**, using hole number 3 from the bottom on both the left and right sides, and with two screws P/N 1624779, item **2**.
- \_\_\_ 2. The service panel bracket, item **8** should have been installed as directed from the 3494 MI. Go to the 3494 MI for installation.

**Note:** The service panel comes in two configurations, as shown in Figure 36 on page INST-31, and Figure 38 on page INST-34.

- \_\_\_ 3. Install the assembled shelf, item **3**, P/N 05H7822 to the L14 frame by aligning the rear holes of the shelf into the guide pins in bracket item **1**. Secure to the frame with two screws P/N 1624765, item **4**, two screws P/N 1624765, item **7** and four nut clips P/N 74F1823, in rear frame hole numbers 5 and 12 on both right and left rear. Leave the bottom two screws, item **7** loose for now.
- \_\_\_ 4. Return to the step that sent you here.

**Unpack and Install the A00 Controller—Model L14:** If the A00 Controller is received already installed in the L14, go back to the step that sent you here. If it is not installed, perform the following procedures:

- \_\_\_ 1. Unpack the A00 Controller, item **5**, from its carton, lay it on the mounting plate, item **3** on its side, with the air vent pointing up and the A00 Controller door hinge down and against the mounting plate as shown.
- \_\_\_ 2. Attach the following cables to the rear of the A00 Controller before sliding the unit into final position, and securing to mounting plate, item **3**. Refer to Figure 74 on page INST-82 for cable connections, and also to Figure 80 on page INST-85.
  - a. Special 'Y' cable to Serial connector. (This cable is the RS-232 cable; the single end (bottom of "Y") attaches to the rear of the A00 Controller while the top of the "Y" will attach later, one leg to the cable going to the service panel, and the other left loose for future attachment to the library manager terminal). The other end of cable S2 goes to the ARTIC adapter, and the other end of cable S1 goes to the service terminal/service panel modem.
  - b. SCSI cable from 1st drive to adapter slot 2. If a second SCSI string is being installed, install the second SCSI cable from the 1st drive to adapter slot 1.
  - c. **Do Not attach** the fiber optic cable(s) from host CPU to Adapter slot 3 (and 4 if used).

**Note:** It may be easier to attach this cable now, but it should be delayed until later after the hardware has been checked out. The wrap test will not run with this cable installed.
  - d. AC power cable from A00 Controller to power source.
- \_\_\_ 3. After cables are secured and strain relief is installed, slide the A00 Controller unto the mounting shelf P/N 05H7822, item **3**. The door must open facing rearward in the L14 frame.
- \_\_\_ 4. Secure in place using front support clamp P/N 05H7824, item **6**, and two screws P/N 1624779, item **7** left loose earlier.
- \_\_\_ 5. Return to the step that brought you here.

**Service Panel Installation:** The service panel is installed in most L14 frames in the factory, but may have to be installed in the Lxx box if field retrofitted. The installation of the bracket, and wiring of the RS-232 "service" cables is handled by the 3494 MI Installation procedures. A brief explanation of the service panel configurations is given here, and testing will be performed later.

A service panel is provided and is to be installed into the Lxx frame. When the Axx is installed in D14 frames that are attached to a L10 or L12 frame (without an additional Model A00 installed in that frame), the service panel is still provided, but the far right position (FR1) is not used. The location of the service panel in the L10 and L12 frames will be the same as that of the L14 frame.

The same service panel is used for both the attachment of the service terminal/library manager, or Remote Assistance Feature. The only difference is in the cables and attachments.

- 1. Local CE Service (see Figure 36 on page INST-31)

2. Remote Assistance Feature (see Figure 38 on page INST-34)
3. Examples of several different service tool configurations are shown in Figure 38 on page INST-34 and Figure 39 on page INST-36

The service panel provides a single point in the Lxx frame where all A00 Controllers installed in D14 or L14 frames may be accessed for service. The service panel allows the service representative to manually attach the Library Manager terminal or a service terminal to any service panel position, and checkout each A00 Controller from the Lxx service panel. A Null Modem must be attached to the service terminal or Library Manager terminal when performing this manual test. If the Lxx device has a modem attached into the service panel, the Axx attached to that particular position may be checked out remotely. The Remote Assistance feature allows the Axx devices to be accessed remotely through a modem and electronic switch without the need for manual intervention to move to each position. With the Remote Assistance feature installed, the local CE may still connect his/her service terminal to the individual Axx devices by making sure the modem or WTI Electronic Switch is disconnected at the front of the service panel at any position to allow attachment of a service terminal or library manager terminal. In this approach, a Null Modem must be attached to the service terminal cable before it is plugged into the desired service panel position.

**Note:** Don't forget to hook the modem or WTI Electronic Switch back up to the service panel when you are done.

The Library Manager terminal is always attached via the "Y" cable to the ARTIC breakout box.



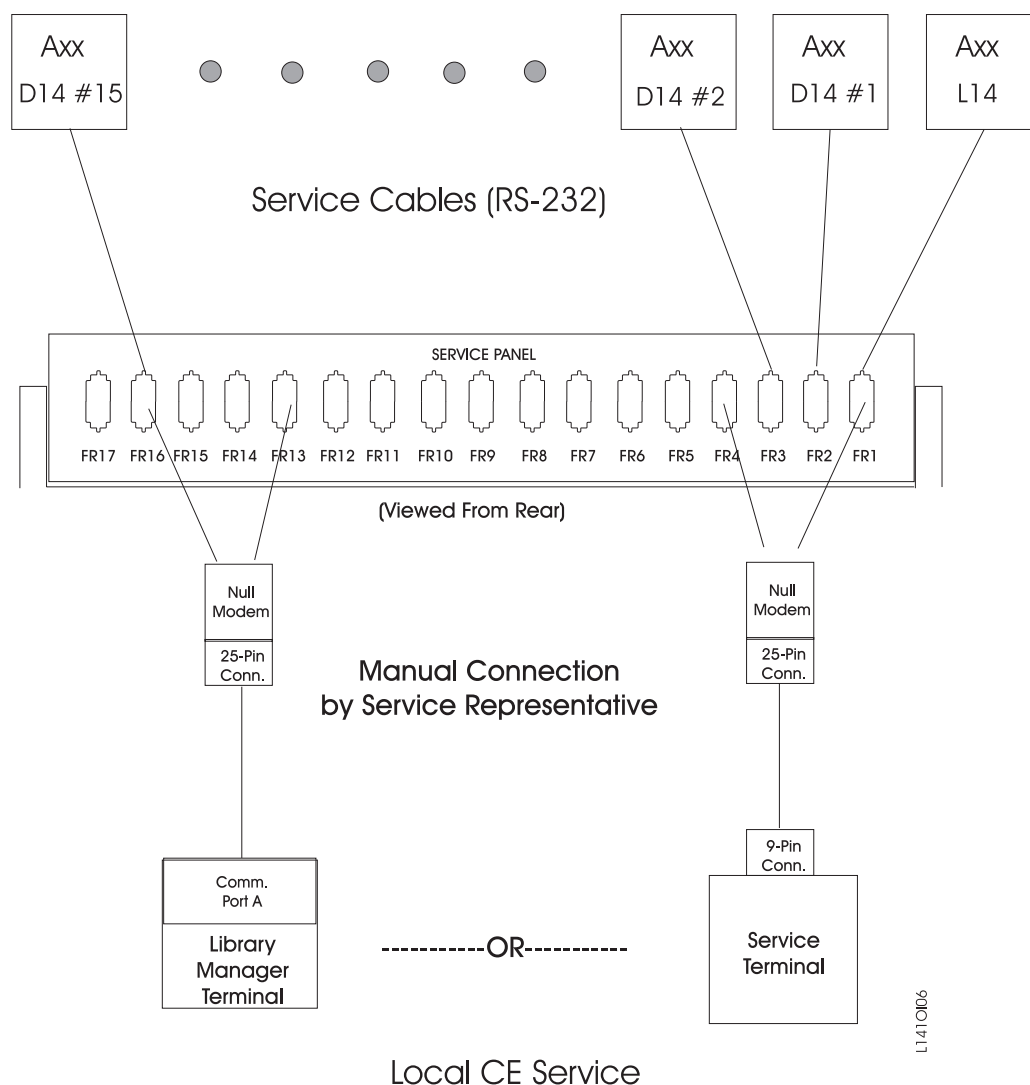


Figure 36. Axx Service Panel Attachment—Local CE Service(new style)

**RS-422 Cable Installation (Library Manager Attach):** RS-422 cable installation should have been done earlier, but if not, refer to the 3494 Maintenance Information under INST to route and attach these cables. While running the RS-422 cables through the cable trough, it is easier and quicker to run the RS-232 (service) cables at the same time.

**Note:** Be sure to ground both the RS-422 cables and RS-232 (service) cables as they leave the D14 frame. These cables must also be grounded when they enter the Lxx frame.

**RS-232 Cable Installation(Service Interface Attachment):** RS-232 cable installation should have been done earlier, but if not, refer to the 3494 Maintenance Information under INST to route and attach these cables. While running the RS-422 cables through the cable trough, it is easier and quicker to run the RS-232 (service) cables at the same time.

**Note:** Be sure to ground the RS-422 cables as they leave the D14 frame. These cables must also be grounded when they enter the Lxx frame.

If these cables are not installed, go to the 3494 MI to complete cable installation.

Refer to Figure 80 on page INST-85 for a view of the cables as they are attached to the back of the A00 Controller or Figure 49 on page INST-50 as they are attached to the back of the A50.

Refer to Figure 36 for attachment of the service terminal or library manager terminal, and Figure 38 on page INST-34 for attachment of the Remote Assistance feature.

If these cables are not installed, go to the 3494 MI to complete cable installation.

## Service Terminal or Library Manager Attachment

**Note:** The service panel hardware was installed and RS-232 service cables were attached from the 3494 MI Installation section. We will now check out the attachment.

If your customer ordered the Remote Assistance feature, feature code 2710, you should go to "Remote Assistance Feature Installation." If not, you will have a local CE service panel in your machine. Perform the following:

- \_\_\_ 1. Attach your Library Manager terminal to Comm Port A, through a Null Modem, or attach the service terminal to the service panel using the serial port and Null Modem.  
**Note:** You must use a Null Modem on the end of the service terminal cable before it plugs into the service panel
- \_\_\_ 2. Verify that each used position of the service panel is operating correctly.  
**Note:** If a modem is to be installed in this device, Whenever the service representative unhooks the modem to hook up a Null Modem and the service terminal, he/she should remember to hook the modem back up before leaving the account.
- \_\_\_ 3. If a modem is to be attached to this device, verify your modem setup at "Setting Up EBTERM or Terminal Emulator for Setting Modem Password" on page PROC-45 or "Modem Initialization with Password" on page PROC-47 and ensure that the next level of support can access the device through the modem.
- \_\_\_ 4. When finished checking out the service panel, return to the step that brought you here.

## Remote Assistance Feature Installation

**Note:** The service panel hardware was installed and RS-232 service cables were attached from the 3494 MI Installation section. We will now check out the attachment.

There are two remote assistance features that can be ordered. The instructions are explained for both shown in the list below:

- If your customer has ordered the Remote Assistance feature, code 2710, (refer to Figure 37 on page INST-33) and perform the following:
  - If your customer has ordered the Remote Assistance feature, code 2711 (refer to Figure 38 on page INST-34 and Figure 39 on page INST-36) Perform the following actions.
- \_\_\_ 1. Check and set the line voltage on the back of the WTI switch to the proper line voltage for your account (115V or 230V).
  - \_\_\_ 2. Remove the null modem from the 05H3299 cable which goes from the Library Manager to the service panel (the one you move for each Control Unit in the Library).
  - \_\_\_ 3. Plug the gender changer supplied in feature code 2711, two are supplied for the Lxx, and one is provided for the HA1.
  - \_\_\_ 4. Plug the LDRJ-25 connector into the gender changer, and the 05H9744 RJ-45 cable into the LDRJ-25M connector.
  - \_\_\_ 5. Do the one or both of the following procedures depending upon the library configuration.
    - (StarTwin level pop-down)

- a. At the tool bar on the Library Manager terminal, select "**Command**".
- b. In the pop-down window, select "**Service Access**".
- c. In the pop-up for service access, select "**Enable**".
- (Current level)
  - a. Get to a service window and a C: prompt.
  - b. At the C:> type "**slconfig**".
  - c. At the next C:> type "**slenable**".

The LM is now set up for remote service.

- \_\_\_ 6. Return to the step that sent you here.

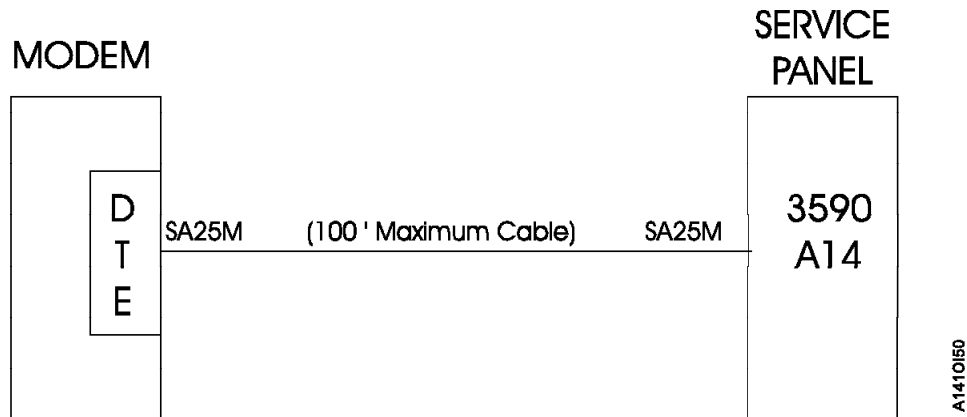


Figure 37. Axx Remote Service Panel Attachment using feature code 2710.

- \_\_\_ 1. Install the modem near an electrical and analog telephone source, and as near to the L14 (or L10, L12) frame as possible.
- \_\_\_ 2. Install the WTI Electronic Switch in the vicinity of the Lxx frame, and near the modem.
- \_\_\_ 3. See Figure 38 on page INST-34 and attach the following cables:



- **9** Cable RJ12 P/N 05H3352
- **11** MDS-16 Data Switcher P/N 05H3350
- **13** Cable (9-25 pin) P/N 05H3299
- **14** RS232 to RS422 Converter P/N 50B0947
- **15** Cable 94F6378

| For "Optional Configuration Settings" for **Remote Assistance Feature Using WTI APS-16 Data Switch**  
| see INST-37.

| Null Modem P/N 05H7876 will be required when connecting directly from Library Manager (cable P/N  
| 05H3299) to any of the service panel ports **Local Service**.





- | • **6** Snap Adapter LDRJ-25M P/N 05H9746
- | • **8** Special 'Y' Cable P/N 31F4128
- | • **10** APS-16 Data Switcher P/N 05H9742
- | • **12** Cable P/N 05H8743
- | • **13** Cable P/N 05H3299
- | • **14** RS232 to RS422 Converter P/N 50B0947
- | • **15** Cable P/N 94F6378

| Null Modem P/N 05H7876 will be required when connecting directly from Library Manager (cable P/N 05H3299) to any of the service panel ports **Local Service**.

**Note:** Remove Null Modem Adapter from Library Manager service cable. Use gender changer to connect LDRJ-25M adapter to the library manager service cable. The LDRJ-35M connector, gender changer, and service cable connector will lay in tray in front of the service panel. Also store the Null Modem Adapter in the tray (will be needed when the LM is used for local service).



1. Modem analog connector to telephone plug provided by the customer.
2. Power cord from the modem to the customer power source. Leave the power to the modem turned off for now.
3. Remove any Null Modems that may be attached to the cables.
4. Find the model number on the front of the WTI data switch. It will be either a Model MPS-16 or APS-16. Select the appropriate instructions below based on the model number of the data switch.

***If installing WTI Model MPS-16 data switch::*** Refer to Figure 40 on page INST-39

- \_\_\_ 1. Attach the cable between the WTI Electronic Switch and the modem. The SA25M connector plugs into the DTE port of the modem, and the RJ-11 (telephone type plug) attaches into Port #1 of the WTI electronic switch.
- \_\_\_ 2. Attach cables from the output of the electronic switch to each used position of the service panel. Port #2 should go to service panel connector FR1, port #3 to FR2, and so on as shown in Figure 38 on page INST-34.
- \_\_\_ 3. locate the "Setup" switches on the back of the WTI Electronic Switch and set according chart Figure 40 on page INST-39.
- \_\_\_ 4. Continue at "Common Procedures for both Models of data switch:."

***If installing WTI Model APS-16 data switch::*** Refer to Figure 40 on page INST-39

- \_\_\_ 1. Attach the 10 foot 9 pin to 25 pin modem cable between the WTI Electronic Switch and the modem. The 25 pin connector plugs into the DTE port of the modem, and the 9 pin connector attaches to Port #1 of the WTI Electronic Switch.
- \_\_\_ 2. Attach cables from the output of the electronic switch to each used position of the service panel. Port #3 should go to service panel connector FR1, port #4 to FR2, and so on as shown in Figure 39 on page INST-36.
- \_\_\_ 3. Locate the "Setup" switches on the back of the WTI Electronic Switch and set according to chart Figure 40 on page INST-39. **up**, and the remaining switches **down**.
- \_\_\_ 4. Continue at "Common Procedures for both Models of data switch:."

***Common Procedures for both Models of data switch::*** Refer to Figure 40 on page INST-39

- \_\_\_ 1. Attach the WTI switch to a customer power source.
- \_\_\_ 2. Power on the WTI data switch. Press and hold both the **SET** button and the **CLEAR** button on the front of the WTI data switch. Release only the **CLEAR** button, and then release the **SET** button.  
**Note:** This step needs to be done only once after changing the "Setup" switches on the back of the WTI data switch.
- \_\_\_ 3. Go to "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11 and set up the service terminal hardware to operate using EBTERM or terminal emulator, then return here.
- \_\_\_ 4. Power on the modem and initialize it for your environment using the procedure at "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11 or "Modem Initialization when using the WTI Data Switch" on page PROC-13 , or your terminal emulator documentation, then return here.
- \_\_\_ 5. Ensure that the next level of support can access the device through the modem.
- \_\_\_ 6. Power on the electronic switch and perform a test of each D14 and L14 (if installed) Axx to ensure that the switch and modem is working properly.
- \_\_\_ 7. Return to the step that sent you here.



The following table only applies until the Axx's change to SLIP with a baud of 38400.

*Figure 40. Matrix for WTI Switch Settings for Axx and B16 Controllers*

	<b>One Axx directly attached to modem, with no WTI Switch</b>	<b>Only Axx's on WTI Switch</b>	<b>Only B16's on WTI Switch</b>	<b>Mixed Axx's and B16's on WTI Switch</b>
Modem Settings	Use 3590-Axx set-up string (9600 baud).  LCD display on modem will show 9.6.	Use 3494-B16 set up string (38400 baud).  LCD display on modem will show 28.8.	Use 3494-B16 set up string (38400 baud).  LCD display on modem will show 28.8.	Use 3494-B16 set up string (38400 baud).  LCD display on modem will show 28.8.
Original Switch. WTI MDS-16 Switch Settings Refer to "Common Procedures for both Models of data switch:" on page INST-38	Not applicable. WTI switch not used.	WTI switch 1,2,3 and 7 up, all others down.  (38400 baud) (dtr)	WTI switch 1,2,3 and 7 up, all others down.  (38400 baud) (dtr)	WTI switch 1,2,3 and 7 up, all others down.  (38400 baud) (dtr)
New High Speed Switch  WTI APS-16 Switch Settings Refer to "Common Procedures for both Models of data switch:" on page INST-38	Not applicable. WTI switch not used.	WTI switches 2,4,5,6,and 7 on, switches 1,3 and 8 off.  (38400 baud) (DTR)	WTI switches 2,4,5,6 and 7 on, switches 1,3 and 8 off.  (38400 baud) (dtr)	WTI switches 2,4,5,6 and 7 on, switches 1,3 and 8 off.  (38400 baud) (dtr)
WTI individual port changes. Applies to both MDS-16 and APS-16 switches	Not applicable. WTI switch not used.	Use WTI /p command to change ONLY the Axx ports to a baud rate of 9600 and handshake to xon.	None required	Use WTI /p command to change ONLY the Axx ports to a baud rate of 9600 and handshake to xon.

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## Rack Model with A00 controller Installation

### Rack Model with A00 Controller Installation—Overview

The 3590 Subsystem installed in a rack, with a A00 Controller will never come from the factory assembled. This will always be field installed and may require all the components to be installed and tested: In any event, the hardware that will be shipped (with or without being installed) is summarized below:

1. A00 controller
2. Shelf for A00 controller and associated hardware
3. Up to four 3590 Drives
4. Up to four ACF Units
5. Drive mounting hardware (slides, mounting box, screws etc.)
6. Cable retention hardware and cables

When the frame is assembled in the field, the frame subassembly parts will need to be tested, the drives will be configured and checked out using the A00 Controller interface, a wrap test will be run on the A00 Controller ESCON interface to the host, and finally, the host ESCON cable will be connected, and the host connection confirmed.

Most drive and drive hardware installation will be the same as found in *IBM 3590 Tape Subsystem Models B11 and B1A MI*, INST section, in other rack mounted boxes. You will be sent to these areas when needed. Installation and test of the A00 Controller will be handled here, except for common procedures that affect all A00 Controller boxes.

If you are installing additional drives that were ordered as an MES, or are being installed after the initial Model A00 was installed, use the MES instructions to install and test them.

## A00 Controller Rack Mount Installation Procedures

Perform the following procedures as required:

Figure 41. Rack Installation Procedures Found Elsewhere in this Book <span style="float: right;">Frame</span>	
If You Need to Install These Items	Do These Procedures
Before you begin, read the information at "Before Installation" on page INST-3 and "Tools" on page INST-3.	"Before Installation" on page INST-3 and "Tools" on page INST-3
Install Rack A00 Controller shelf hardware.	"Rack Model A00 Controller Shelf Hardware Installation" on page INST-42.
Unpack and install the A00 Controller.	"Unpack and Install the A00 Controller" on page INST-43.
Familiarize yourself with the EIA rack hole alignment and which holes to install your hardware.	Review <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, under "Holes for EIA Units, Model B11".
Familiarize yourself with the drive numbering scheme.	Review <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, under "Device Numbering and EIA Units for Model B11".
Unpack 3590 Drives	Perform <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, under "Unpack the 3590".
Install 3590 B11 drive support hardware in a rack (drives 0,1 and or drive 2,3).	Perform <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, under "Install the Model B11 in a Rack".
Install 3590 B11 drives in a rack	Perform <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, under "Install Drives in a Rack".
Install ACF on drives in a rack	Perform <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, under "Install the ACF".
Install rack containing 3590 Model B11 drives. <b>Note:</b> This will occur only on a relocation of equipment.	Perform <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, under "Install Rack That Contains Model B11 Devices".
Installation checkout of rack installed Model B11 drives which includes the following procedures in <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, listed under "Installation Checkout—Drives": <ol style="list-style-type: none"> <li>1. Operator/CE Panel Setup and Tests</li> <li>2. Check EC Level</li> <li>3. Set Customer Options</li> <li>4. Set Drive Options</li> <li>5. SCSI Attachment</li> <li>6. Cables to Device</li> <li>7. SCSI Cables for Model B11</li> <li>8. Cable Guides for Model B11</li> <li>9. Decorative Covers (2 Drive Cover) for Rack-Mounted Model B11</li> </ol>	Perform <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, under "Installation Checkout—Drives".  <b>Notes:</b> <ol style="list-style-type: none"> <li>1. Ensure you validate the connection of each installed A00 Controller through the modem by calling your next level of support and having them dial in to the A00 Controller.</li> <li>2. Perform only those procedures that need to be done. If your machine was totally assembled and tested by manufacturing, the tape drives and Model A00 may require very little testing. Test all interfaces where cables had to be installed.</li> </ol>

## Rack Model A00 Controller Shelf Hardware Installation

If the shelf, item **4** is already installed in the frame, go back to the step that brought you here, and take the next step.

If the shelf, item **4** needs to be installed, perform the following steps, before returning to the step that brought you here.

Refer to Figure 42 and take note of the fact that the A00 Controller is installed facing the front of the Rack, instead of facing the rear as in all other A00 Controller installations.

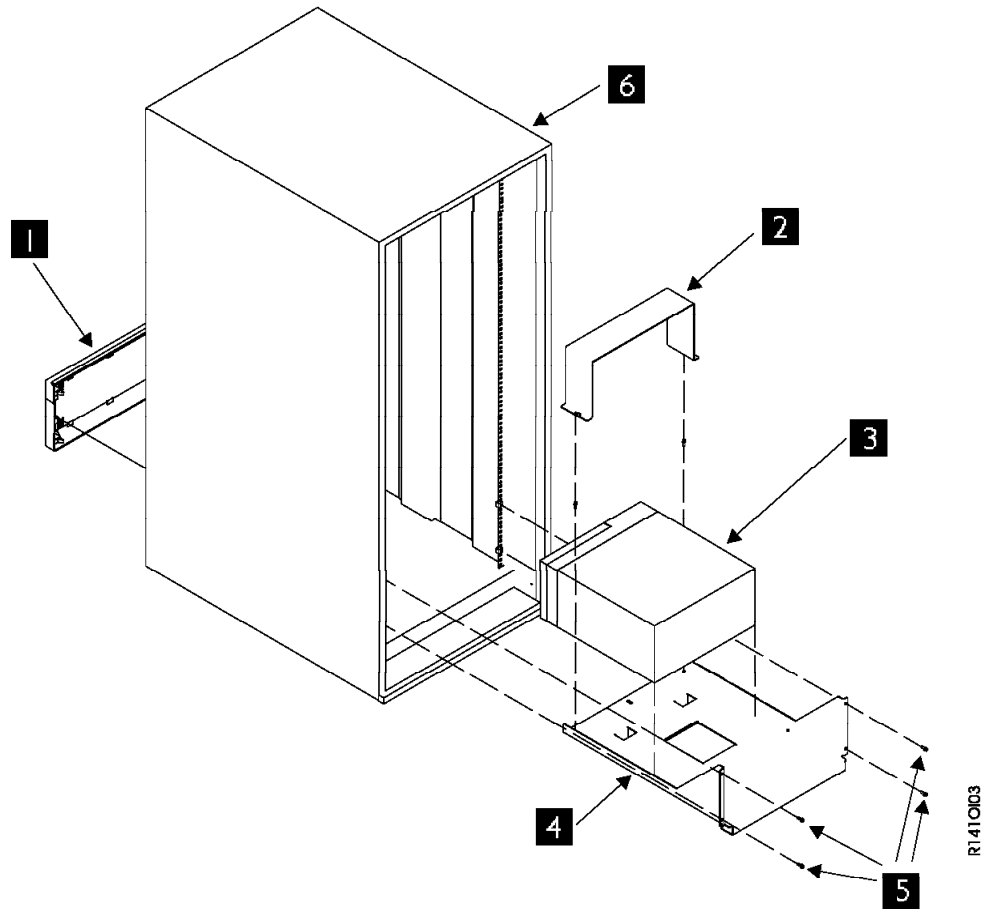


Figure 42. A00 Controller Shelf Installation

- \_\_\_ 1. If not done before, remove the front cover, item **1**. Lay it aside for now. This cover will be replaced later with one that contains perforations to improve air flow.
- \_\_\_ 2. Install the shelf, item **4** using 4 screws P/N 1624779, item **5** and nut clips, P/N 74F1823, in holes numbers 4 and 14 from the bottom on both the left and right side, rear only.
- \_\_\_ 3. Continue installation at the step that brought you here.

## Unpack and Install the A00 Controller

Refer to Figure 42 and perform the following:

- \_\_\_ 1. Unpack the A00 Controller, item **3**, from its carton, lay it on the shelf on its side, with the air vent pointing up and the A00 Controller door hinge down and against the shelf. The front cover of the A00 Controller must be facing toward the front of the Rack frame.
- \_\_\_ 2. Attach the following cables to the rear of the A00 Controller before sliding the unit into final position, and securing to shelf. Refer to Figure 74 on page INST-82 for cable connections. Also refer to Figure 80 on page INST-85 for a view of cables coming from the rear connectors of the A00 Controller.
  - a. SCSI cable from 1st drive to Adapter slot 2. If a second SCSI string is being attached, install the second SCSI cable from the 1st drive to Adapter slot 1.

**Note:** The fiber optic cable(s) from host CPU to Adapter slot 3 (and 4 if used) will be attached later after the A00 Controller has been checked out.

  - b. AC power cable from A00 Controller to power source.
- \_\_\_ 3. After cables are secured and strain reliefs are installed, slide the A00 Controller onto the shelf.
- \_\_\_ 4. Secure in place using the A00 Controller retaining bracket P/N 05H8990, item **7**, and two screws, P/N 1624779, but leave loose for now.
- \_\_\_ 5. Replace the front cover (the one with the perforations), item **1**.
- \_\_\_ 6. Continue installation at the step that sent you here.

## A00 Controller Rack Installation

You will be asked to verify that certain procedures are correct, or that certain hardware is installed, but if the procedure is complete, you will also be given a 'go to' to branch around the procedure.

## Model A00 Installation Checkout Procedure—Rack Frame

Perform all the following procedures that apply:

<i>Figure 43 (Page 1 of 2). Choosing the Correct Installation Checkout Procedures—Rack Frame</i>	
If this is your situation	Do These Procedures
For all Model A00 racks, follow the rack voltage check procedures that come with the rack subsystem.	—
Ensure that your Axx has the proper time and date set.	"Setting the Correct time on the A00 or the A50" on page PROC-38.
For all Model A00 racks:	Perform procedure in <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , LOC*CAR section, under "Measurement and Adjustment of Pneumatic System".
1. Installed drives or 2. Installed SCSI cables  <b>Note:</b> For all Installations, set up the drives, but do not test at this time. Testing will be done later from the A00 Controller.	Perform the procedure at <i>IBM 3590 Tape Subsystem Models B11 and B1A MI</i> , INST section, called "Installation Checkout—Drives", under Operator/CE Panel setup and tests, checking EC level, setting customer options, setting drive options, then return here. Tests will be run later from the service terminal through the A00 Controller.

Figure 43 (Page 2 of 2). Choosing the Correct Installation Checkout Procedures—Rack Frame

If this is your situation	Do These Procedures
For all A00 Controller racks	Perform "Service Panel Installation—Rack Model" on page INST-44
For all A00 Controller racks	Perform "Axx Stand-Alone Power On and Checkout" on page INST-79.
For all A00 Controller racks	Perform "Rack Installation of Service (RS-232) Cable to Service Panel" on page INST-45
For all A00 Controller racks	Perform "Rack Installation Service Panel Checkout" on page INST-45.
For all Axx frames, run the ESCON wrap tests using Advanced Diagnostics menu at the referenced procedure:	Perform "Running Diagnostics from the A00 or A50 Controller" on page PROC-35.
For all Axx frames	Perform "Attaching the Host ESCON Cable(s)" on page INST-80.
For all Axx frames	Perform "Host Interface Checkout" on page INST-89.
<b>Note:</b> Perform only those procedures that need to be done. Test all interfaces where cables had to be installed.	

**Service Panel Installation—Rack Model:** The service panel used in the Rack Model is a small bracket with two holes which is installed in the vicinity of the Axx. Refer to Figure 44. The service panel allows connection of a cable (RS-232) from the rear of the Axx to the back of the service panel. The front of the service panel is used by the service representative to plug in his/her service terminal (through a Null Modem) to perform service on the Axx. The service panel may also be used to install a modem to provide remote assistance.

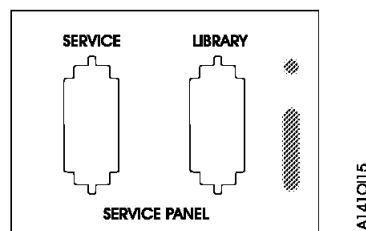


Figure 44. Service Panel Old Design

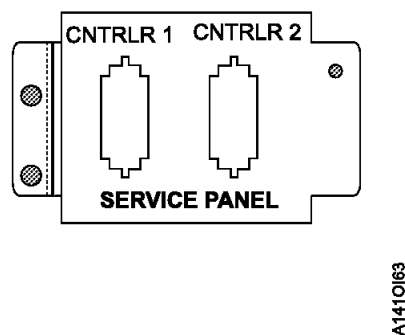


Figure 45. Service Panel New Design

The service panel is installed in the field. The service panel provides a single point in the rack frame where the A00 Controller installed in the rack may be accessed for service. The service representative

may attach his/her service terminal at the service panel, using a Null Modem, to checkout the installed A00 Controller, or a modem may be installed so that the Axx may be serviced remotely.

**Note:** Whenever the service representative unhooks the modem to hook up a Null Modem and the service terminal, he/she should remember to hook the modem back up before leaving the account.

Install as required the rack service panel bracket, above the mounting tray in the first available holes on the right hand side on the rear of the rack. The bracket is shown in Figure 44 on page INST-44. Install the service (RS-232) cable from the rear of the A00 Controller serial port to the rear of the service panel. Refer to Figure 74 on page INST-82 for a view of the cable connectors on the A00 Controller.

**Rack Installation of Service (RS-232) Cable to Service Panel:** Connect the one end of the RS-232 cable to the service panel. The other end connects to the serial connector located on the rear of the A00 Controller. Refer to Figure 74 on page INST-82 for the location of the serial connector.

Also refer to Figure 80 on page INST-85 for a view of the cables as they are attached to the back of the A00 Controller.

**Rack Installation Service Panel Checkout:** Attach the service terminal or other service device to the service panel and ensure that communications can be established with the A00 Controller.

**Note:** You must use a Null Modem on the end of the service terminal cable before it plugs into the service panel

**Note:** If a modem is part of the installation, whenever the service representative unhooks the modem to hook up a Null Modem and the service terminal, he/she should remember to hook the modem back up before leaving the account.

Verify your modem setup at "Setting Up EBTERM or Terminal Emulator for Setting Modem Password" on page PROC-45 or "Modem Initialization with Password" on page PROC-47 and ensure that the next level of support can access the device through the modem.

**Adding One A50 Controller in A14 to existing A00 Controller:** This installation section will accomplish the following:

- Remove the existing bulkhead from the A14 frame including nut clips and screws.
- Remove Power Panel cover by removing 3 screws
- Remove existing Operator panel
- Install the new bulkhead at the top of the A14 frame using nut clips in holes 6 and 8
- Install two sliders for the A50
- Install a tray to hold the A50
- Attach cables to the A50
- Install articulating SCSI cable arm
- Install new Operator Panel
- Plug and dress cables including the SCSI cables
- Install new bulkhead and service cable from the existing A00 CU
- Check out the machine

- \_\_\_ 1. Remove 3 screws from power cover (Operator Panel) and remove power cover from the A14 rear cover.
- \_\_\_ 2. Remove the existing bulking from the A14 and the service cable to the existing A00 and discard

## Installation of the A50 Control Unit

in the A14 Frame

**Note:** For the reverse keys called out in the steps below, refer to Figure 46 on page INST-47

- \_\_\_ 1. Install the new Operator Panel on the rear cover
- \_\_\_ 2. Install articulating arm **1** , **do not use any retention.**
- \_\_\_ 3. Install the sliders **4** **5** and **6** , for the upper A50 referred to as controller 2. Sliders are installed in hole 14 on both sides of the A14 frame.
- \_\_\_ 4. Install the tray **3** to control unit 2 sliders (upper sliders), and the cable clamp **2** hardware.
- \_\_\_ 5. Install the new service bulkhead **8** on the A14 frame.



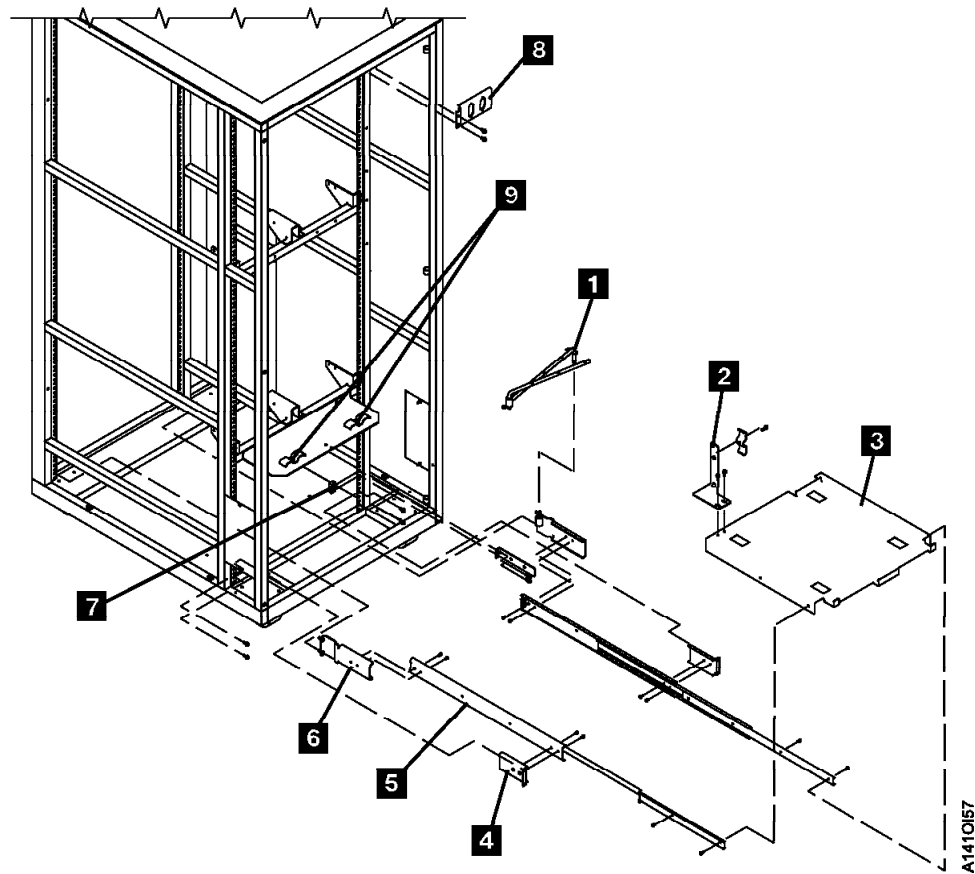
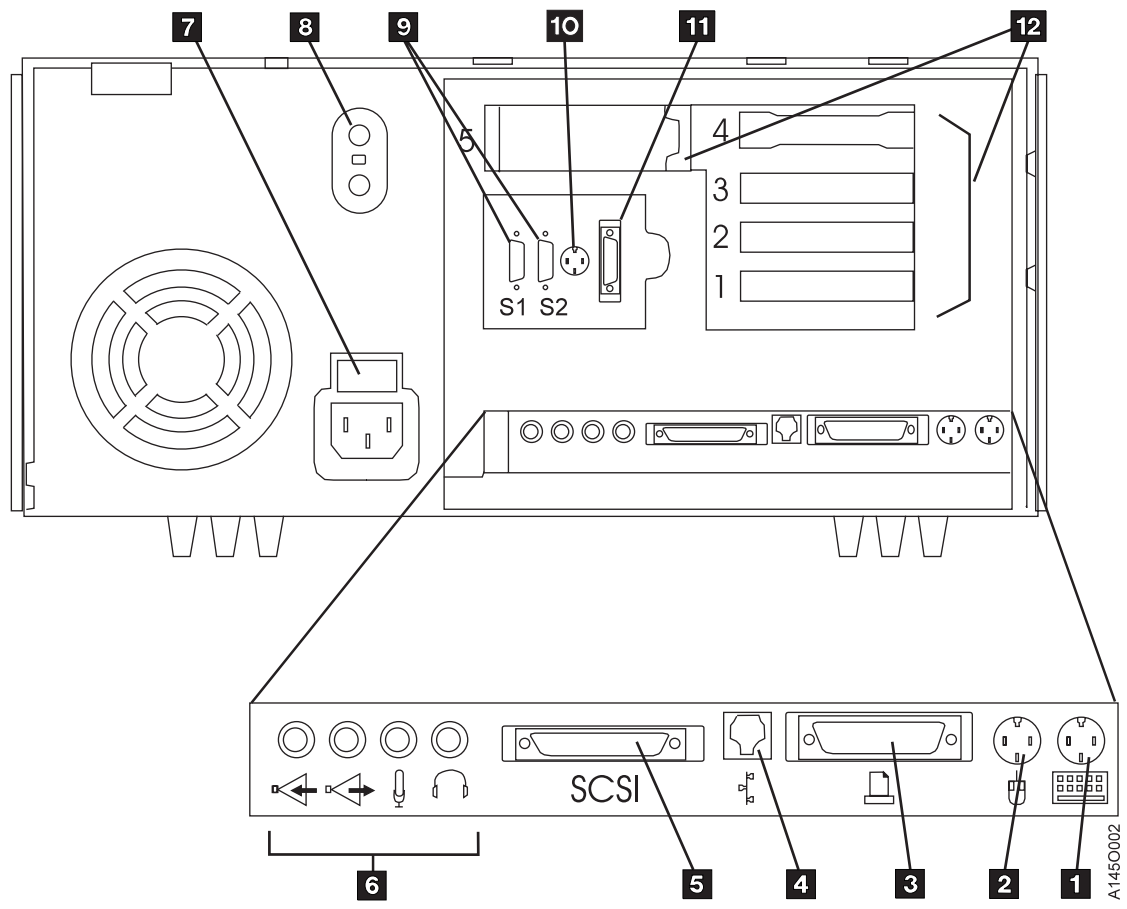


Figure 46. A50 Mounting Hardware in A14 Frame

- \_\_\_ 6. Set Control Unit 1 (lower A50) on the floor at the rear of the A14 frame.
- | \_\_\_ 7. Attach SCSI 0 cable to the back of the A50 in adapter slot 1, **12**. Refer to Figure 47 on  
| page INST-48.
- | \_\_\_ 8. Attach ESCON 0 cable to the back of the A50 in adapter slot 2, **12**. Refer to Figure 47 on  
| page INST-48.
- | \_\_\_ 9. Attach SCSI 1 cable to the back of the A50 in adapter slot 4, **12**. Refer to Figure 47 on  
| page INST-48.
- | \_\_\_ 10. Attach ESCON 1 cable to the back of the A50 in adapter slot 3, **12**.
- | **Note:** This cable is only present if installing Feature Code 3312.  
| Refer to Figure 47 on page INST-48.
- | \_\_\_ 11. Attach service terminal cable to the back of the A50 in **S1**(left connector facing from the rear) **9**.  
| Refer to Figure 47 on page INST-48.
- | \_\_\_ 12. Attach Op Panel cable to the back of the A50 in **3**. Refer to Figure 47 on page INST-48.



A145O002

Figure 47. A50 Cable Plug Locations

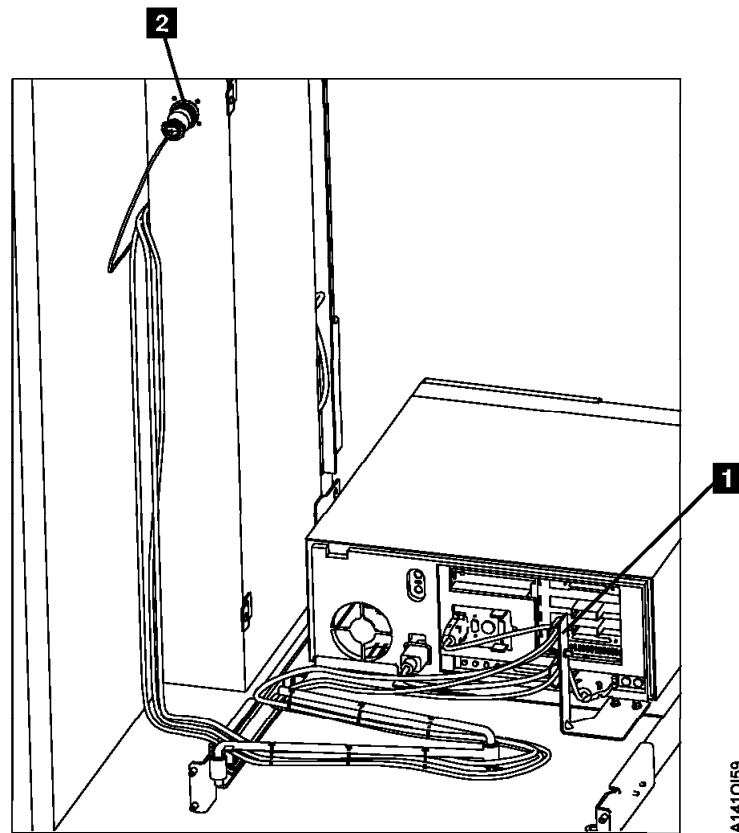


Figure 48. A50 Rear view with Cable Connections

- \_\_\_ 13. Route the service terminal cable to the side of the A14 and up the frame. Refer to Figure 48
- \_\_\_ 14. Route the Op Panel cable to the side of the A14, up the frame and over to the Operator Panel. Refer to Figure 48
- \_\_\_ 15. Set the A50 on the tray and slide onto clips to secure.
- \_\_\_ 16. Clamp cable in cable clamp provided on the tray. Refer to Figure 49 on page INST-50, **1**
- \_\_\_ 17. Install articulating arm. Refer to Figure 49 on page INST-50
- \_\_\_ 18. Route SCSI cables from A50 along the articulating arm and clamp in place leaving large loops of cable at each side of frame. Refer to Figure 50 on page INST-50

**Note:** SCSI cable from A50 always goes to drive 2 (upper left drive from the rear). The SCSI cable from A00 always goes to drive 0 (lower left drive from the rear).

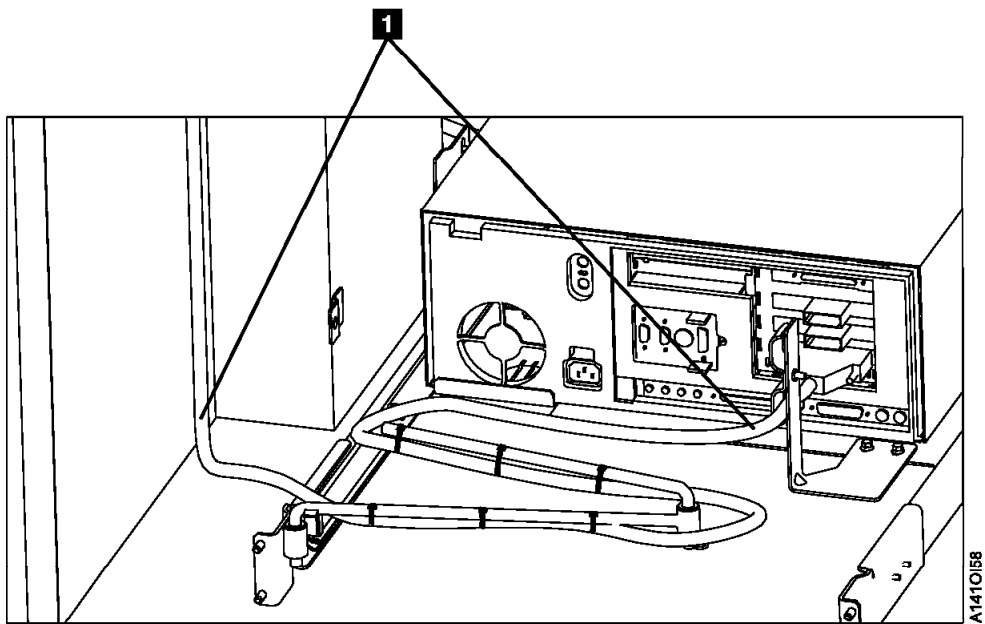


Figure 49. A50 Cable Locations

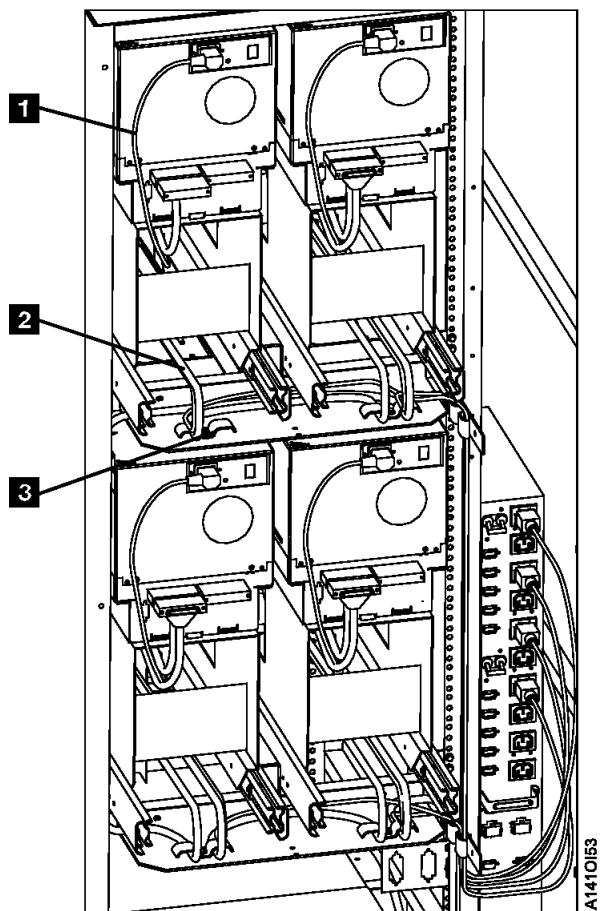


Figure 50. SCSI Cable Locations for Single A50

- \_\_\_ 19. Dress the cables up the side of the frame to the operator panel and the bulkhead. Use cable clamps as needed to dress the cables to the articulating arm. Refer to Figure 49 and Figure 48 on page INST-49
- \_\_\_ 20. Go to “Axx Stand-Alone Power On and Checkout” on page INST-79 to check out the A50 controller and “Checkout of Drives from Axx Interface” on page INST-79 to check out the drive to controller interfaces. Return here when check out is complete.
- \_\_\_ 21. Replace the front cover removed at the beginning of adding the new A50 hardware (see “Unpack and Install the A50 Controller” on page INST-24). Return the subsystem to the customer.

*Figure 51. A50 With FC 3311 (Single SCSI, Single ESCON)*

Adapter Slot	Adapter Plug
1	SCSI
2	(unused)
3	ESCON
4	(unused)

*Figure 52. A50 With FC 3312 (Dual SCSI, Dual ESCON)*

Adapter Slot	Adapter Plug
1	SCSI 0 Card P/N 40H2842 FRU P/N 52G3380
2	SCSI 1 Card P/N 40H2842 FRU P/N 52G3380
3	ESCON 1 FRU P/N 51H8701
4	ESCON 2 FRU P/N 51H8701

*Figure 53. A00 With new P/N 05H3090 SCSI Card*

Adapter Slot	Adapter Plug
1	ESCON 1 FRU P/N 51H8701
2	ESCON 2 FRU P/N 51H8701
3	SCSI 0 Card/FRU P/N 05H3090
4	SCSI 1 Card/FRU P/N 05H3090

Replace front cover removed at the beginning (see “Unpack and Install the A50 Controller” on page INST-24)

## Replacing A00 Controller in A14 with one A50 Controller

This installation section will accomplish the following:

- Remove the A00 and all retention hardware from the A14 frame
- Remove all existing cables between the A00 and the A14 frame except for the **existing ESCON** cables.
- Remove retaining bracket and two screws from frame
- Remove the existing bulkhead from the A14 frame including nut clips and screws.

- Remove Power Panel cover by removing 3 screws
- Install the new bulkhead at the top of the A14 frame using nut clips in holes 6 and 8
- Install two sliders for the A50
- Install a tray to hold the A50
- Attach cables to the A50
- Install articulating SCSI cable arm
- Remove existing Operator panel
- Install new Operator Panel
- Plug and dress cables including the SCSI cables
- Check out the machine

### Removal of the existing A00 from the A14 Frame

**Note:** All of the existing cables that physically attach at the back of the A00 will be removed completely from the A14 frame except the **ESCON** and the **SCSI cables from drive to drive**

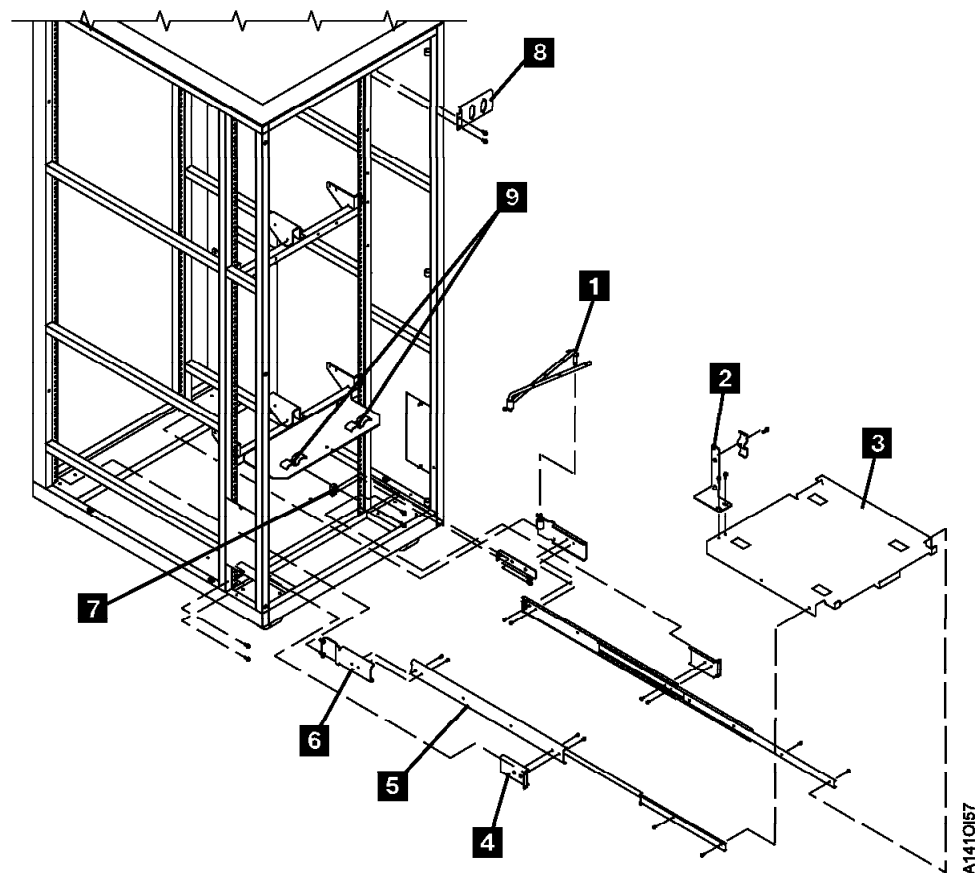


Figure 54. A50 Mounting Hardware in A14 Frame

1. Remove 3 screws from power cover (Operator Panel) and remove power cover from the A14 rear cover.
2. Remove A00 mounting hardware and pull the A00 from the A14 frame

- \_\_\_ 3. Remove any cable retention that is holding any cables to the back of the A00 control unit. Refer to Figure 55 on page INST-53 **8**
- \_\_\_ 4. Remove all of the existing cables from the back, (front of the A14), of the A00 Control Unit. (Refer to Figure 55 for the cable locations.)
- \_\_\_ 5. Remove the Power cable **1** from the A00
- \_\_\_ 6. Remove the Power cable from the PCC
- \_\_\_ 7. **Do Not** remove the ESCON cables from the A14 frame, they will be used again. The ESCON cables **must** be removed from the A00 control unit.

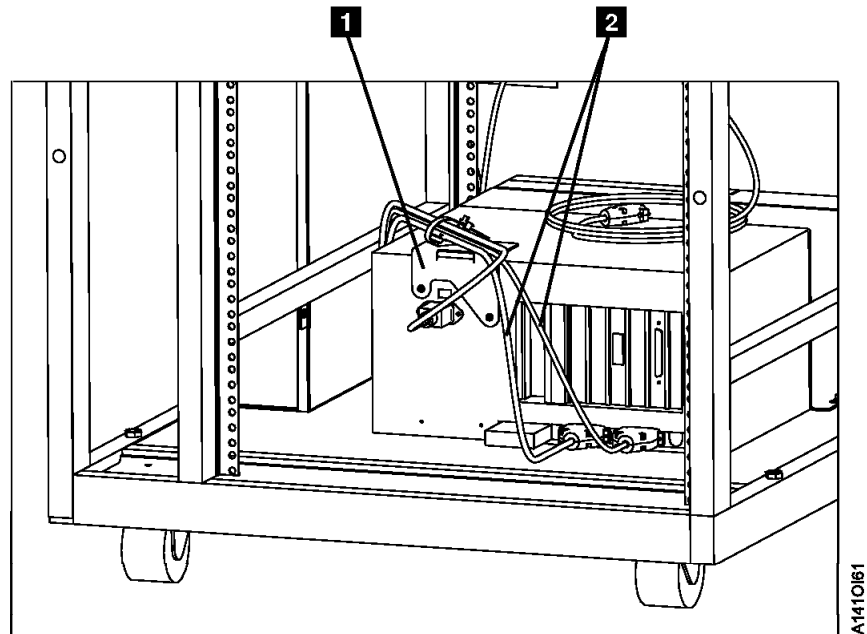


Figure 55. Rear A00 Controller Cable Connections

- \_\_\_ 8. Remove the SCSI cables from the A00 to Drive 0 and Drive 1 that are in the service position. (Refer to Figure 56 on page INST-54)
- \_\_\_ 9. Completely remove the SCSI cables removed in the previous step from the A14 frame.

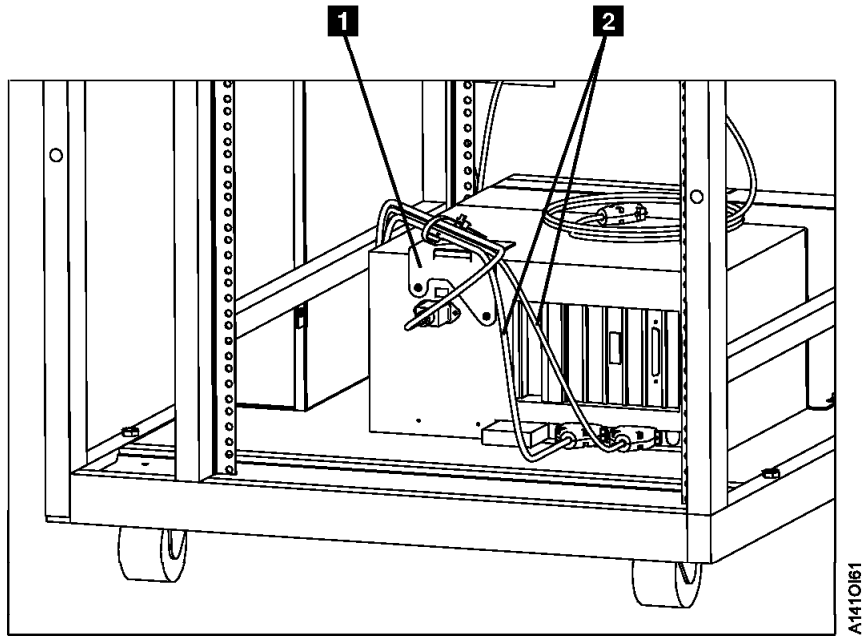


Figure 56. Drive SCSI Cable Routing

- \_\_\_ 10. Remove the Service cables to the Service panel.
- \_\_\_ 11. Completely remove the Service cables from the A14 frame.
- \_\_\_ 12. Remove the cables from the Operator Panel on located on the rear cover.
- \_\_\_ 13. Remove the cables removed from the previous step from the A14 frame.
- \_\_\_ 14. Remove the service panel from the A14 frame.

At this point all of the A00 cables, A00 control unit and support hardware, the Operator panel and the service bulkhead should have been removed from the A14 frame. If this is not the case, make sure that it is completed before continuing.

### Installation of the A50 Control Unit in the A14 Frame

**Note:** For the reverse keys called out in the steps below, refer to Figure 57 on page INST-55

- \_\_\_ 1. To facilitate installation of the hardware for the A50 remove the front cover (drive side) in the A14 frame. Do this by pulling out the top two drives into the service position. Looking at the space between the cover and the A14 frame you will see where the screws holding the cover to the frame are located. Insert your hand and screw driver between the drive and the cover and remove the top two screws (one on each side). Save the screws for later use. Insert the top to drives into the normal position and pull the bottom two drives into the service position. Insert your hand and screw driver between the drive and the cover and remove the top lower screws (one on each side). Save the screws for later use. Insert the lower to drives into the normal position. Remove the front cover and set aside until installation and testing are complete.

**Note:** The front cover will have some resistance due to the design of the bayonet pins used to keep the cover from falling.

- \_\_\_ 2. Install the new Operator Panel on the rear cover
- \_\_\_ 3. Install articulating arm **1**, **do not use any retention.**
- \_\_\_ 4. Install the sliders **4** **5** and **6**, for the lower A50 referred to as controller 1. Sliders are installed in hole 2 on both sides of the A14 frame.



- \_\_\_ 5. Install the sliders **4** **5** and **6**, for the upper A50 referred to as controller 2. Sliders are installed in hole 14 on both sides of the A14 frame.
- \_\_\_ 6. Install the tray **3** to control unit 2 sliders (upper sliders), and the cable clamp **2** hardware.
- \_\_\_ 7. Install the tray **3** to control unit 3 sliders (lower sliders), and the cable clamp **2** hardware.
- \_\_\_ 8. Install the new service bulkhead **8** on the A14 frame.

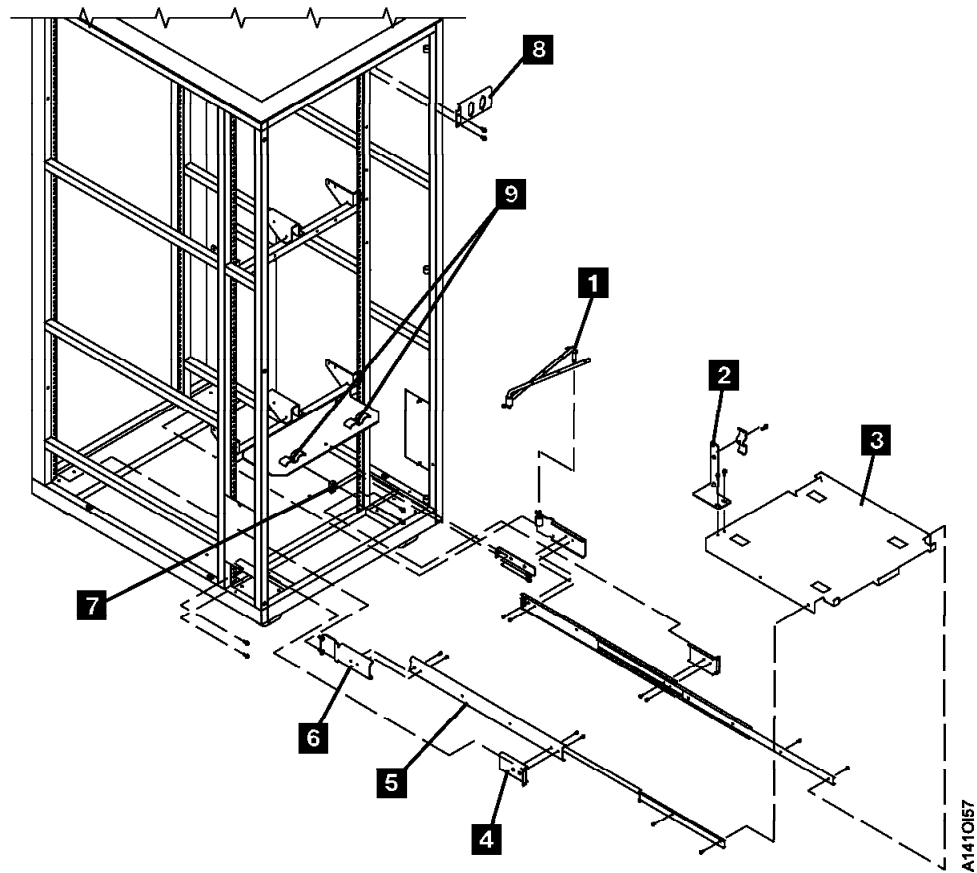


Figure 57. A50 Mounting Hardware in A14 Frame

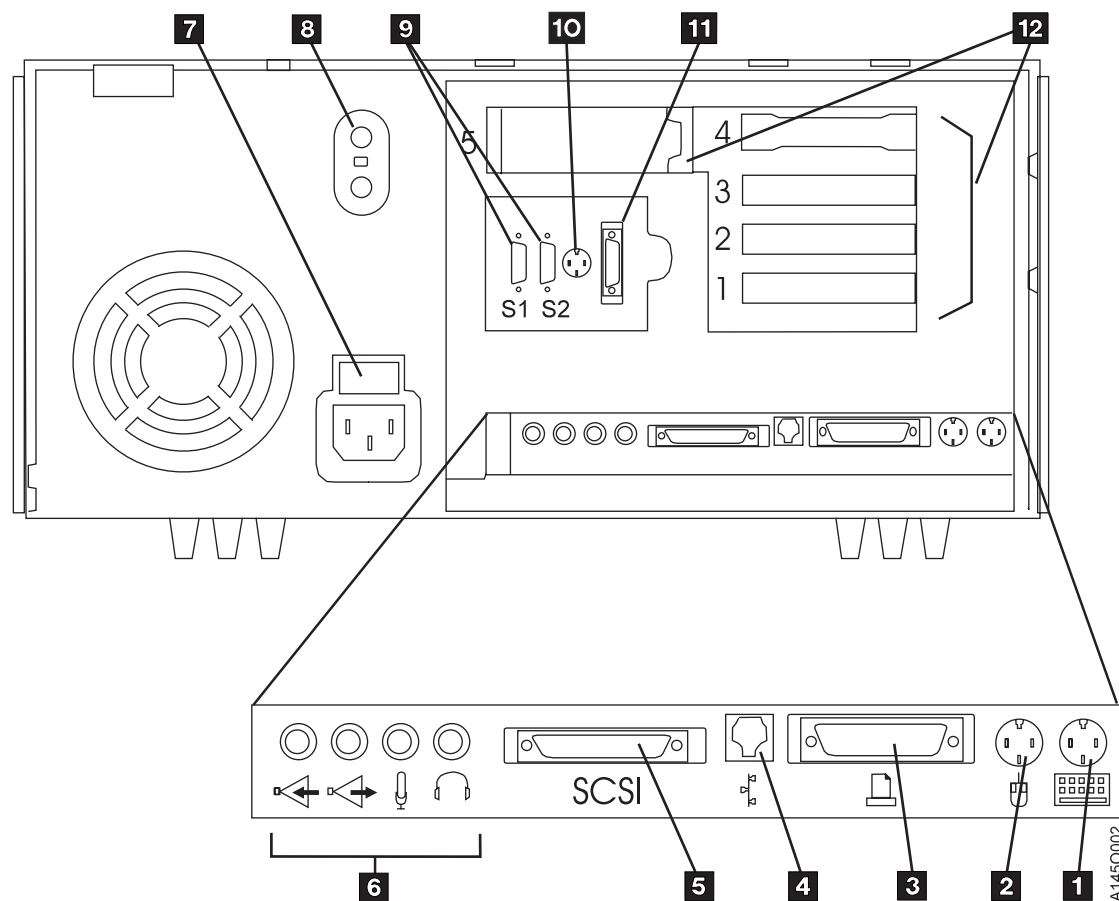


Figure 58. A50 Cable Plug Locations

- \_\_\_ 9. Set Control Unit 1 (lower A50) on the floor at the rear of the A14 frame.
- \_\_\_ 10. Attach SCSI 0 cable to the back of the A50 in adapter slot 1. Refer to Figure 61 on page INST-59, Figure 62 on page INST-59 and Figure 63 on page INST-59
- \_\_\_ 11. Attach ESCON 0 cable to the back of the A50 in adapter slot 2. Refer to Figure 61 on page INST-59, Figure 62 on page INST-59 and Figure 63 on page INST-59
- \_\_\_ 12. Attach SCSI 1 cable to the back of the A50 in adapter slot 4. Refer to Figure 61 on page INST-59, Figure 62 on page INST-59 and Figure 63 on page INST-59
- \_\_\_ 13. Attach ESCON 1 cable to the back of the A50 in adapter slot 3,
 

**Note:** This cable is only present of installing Feature Code 3312.

Refer to Figure 59 on page INST-57, Figure 62 on page INST-59 and Figure 63 on page INST-59
- \_\_\_ 14. Attach service terminal cable to the back of the A50 in **9** position 0. Refer to Figure 59 on page INST-57.
- \_\_\_ 15. Attach Op Panel cable to the back of the A50 in **3**. Refer to Figure 59 on page INST-57.

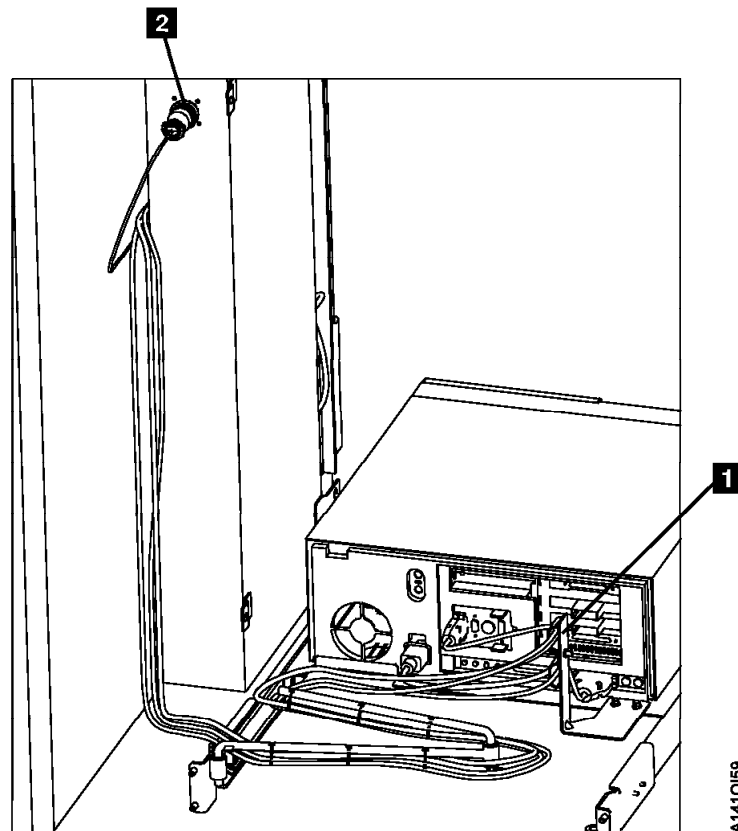


Figure 59. A50 Rear view with Cable Connections

- \_\_\_ 16. Route the service terminal cable to the side of the A14 and up the frame. Refer to Figure 59
- \_\_\_ 17. Route the Op Panel cable to the side of the A14, up the frame and over to the Operator Panel. Refer to Figure 59
- \_\_\_ 18. Set the A50 on the tray and slide onto clips to secure.
- \_\_\_ 19. Clamp cable in cable clamp provided on the tray. Refer to Figure 61 on page INST-59
- \_\_\_ 20. Install articulating arm. Refer to Figure 61 on page INST-59
- \_\_\_ 21. Route SCSI cables from A50 (both A50's if Feature Code 3312 is used) along the articulating arm and clamp in place leaving large loops of cable at each side of frame. Refer to Figure 60 on page INST-58

**Note:** SCSI cable from CU 1 (upper A50) always goes to drive 2 (upper left drive from the rear). The SCSI cable from CU 0 (lower A50) always goes to drive 0 (lower left drive from the rear).

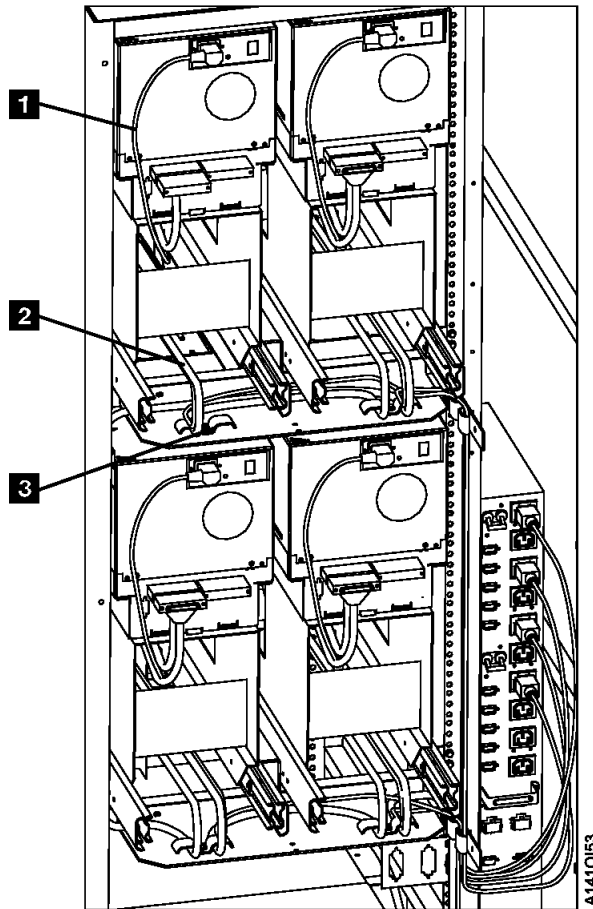


Figure 60. SCSI Cable Locations for Single A50

- \_\_\_ 22. Dress the cables up the side of the frame to the operator panel and the bulkhead. Use cable clamps as needed to dress the cables to the articulating arm. Refer to Figure 61 on page INST-59 and Figure 59 on page INST-57
- \_\_\_ 23. Go to "Axx Stand-Alone Power On and Checkout" on page INST-79 to check out the A50 controller and "Checkout of Drives from Axx Interface" on page INST-79 to check out the drive to controller interfaces. Return here when check out is complete.
- \_\_\_ 24. Replace the front cover removed at the beginning of adding the new A50 hardware (see 1 on page INST-54). Return the subsystem to the customer.

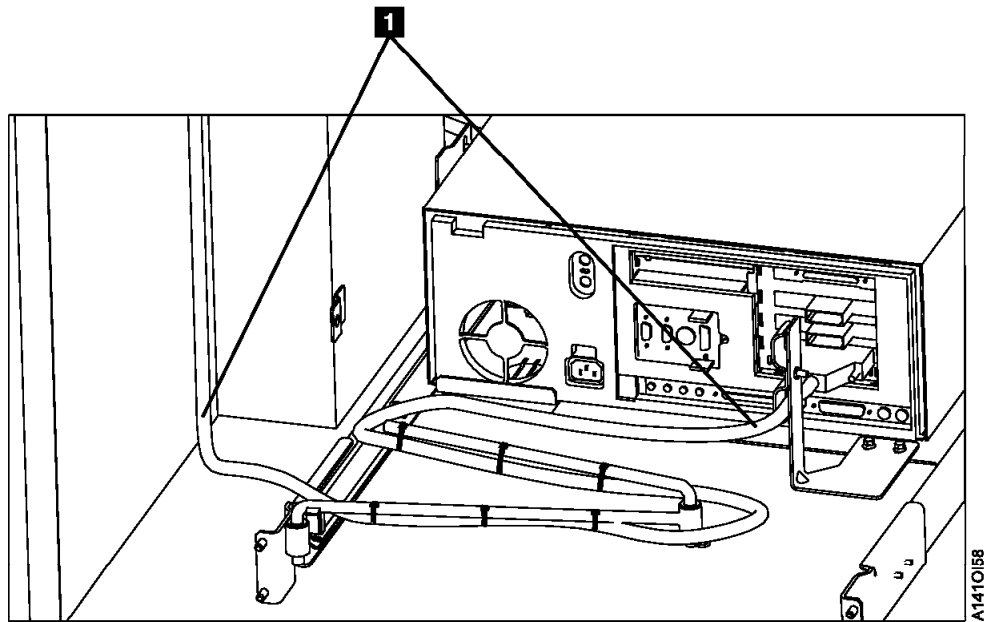


Figure 61. A50 Cable Locations

Figure 62. A50 With FC 3311 (Single SCSI, Single ESCON)	
Adapter Slot	Adapter Plug
1 12	SCSI
2 12	ESCON
3	(unused)
4	(unused)

Figure 63. A50 With FC 3312 (Dual SCSI, Dual ESCON)	
Adapter Slot	Adapter Plug
1 12	SCSI 0
2 12	ESCON 1
3 12	ESCON 2
4 12	SCSI 1

Adding the Second A50 Controller in a A14

This installation section will accomplish the following:

1. Attach cables to the A50's
2. Check out the machine

**Adding the Second A50 Control Unit in the A14 Frame:** If you are here to add a second A50 to this A14, all SCSI cables and needed hardware should already be installed in this frame. If for some reason everything is not present, return to "Installation of the A50 Control Unit" on page INST-54 and determine what needs to be completed before adding the second physical A50 controller.

- \_\_\_ 1. Set Control Unit 1 (lower A50) on the floor at the rear of the A14 frame.
- \_\_\_ 2. Attach SCSI 1 cable to the back of the A50 in adapter slot 4. Refer to Figure 65 on page INST-61 and Figure 66 on page INST-61
- \_\_\_ 3. Attach Terminal cable to the back of the A50 in position 0. Refer to Figure 65 on page INST-61 and Figure 66 on page INST-61
- \_\_\_ 4. Attach ESCON 1 cable to the back of the A50 in adapter slot 3. Refer to Figure 65 on page INST-61 and Figure 66 on page INST-61
- \_\_\_ 5. Attach Terminal cable to the back of the A50 in position 0. Refer to Figure 65 on page INST-61 and Figure 66 on page INST-61
- \_\_\_ 6. Attach Op Panel cable to the back of the A50 in. Refer to Figure 65 on page INST-61 and Figure 66 on page INST-61
- \_\_\_ 7. Set the A50 on the upper tray and slide onto clips to secure.
- \_\_\_ 8. Clamp cables in cable clamp provided on the tray.
- \_\_\_ 9. Go to "Axx Stand-Alone Power On and Checkout" on page INST-79 to check out the A50 controller and "Checkout of Drives from Axx Interface" on page INST-79 to check out the drive to controller interfaces. Return here when complete.
- \_\_\_ 10. Return the subsystem to the customer.

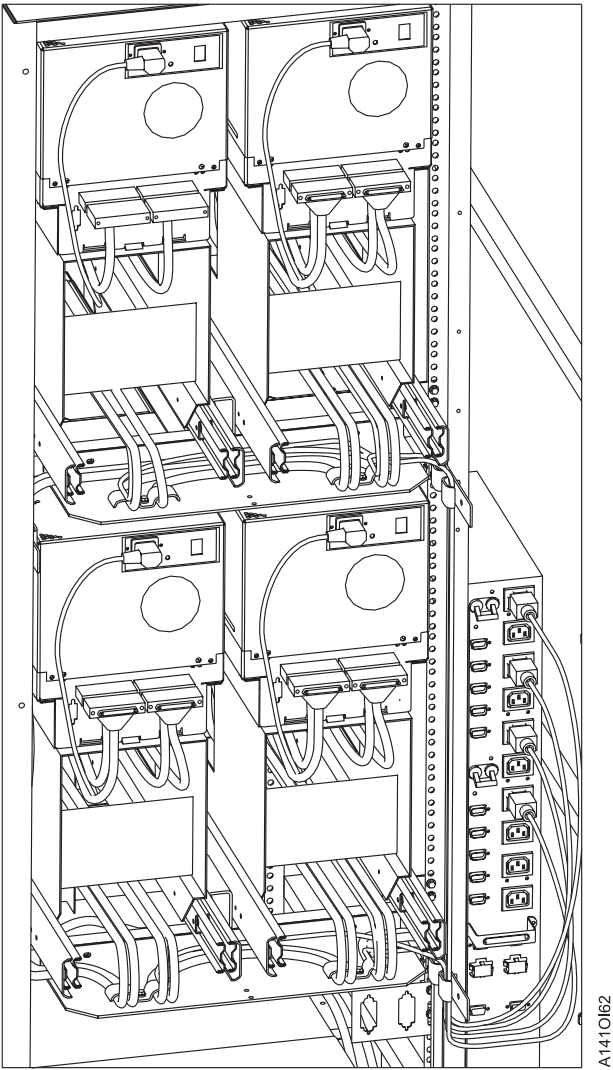


Figure 64. Two A50 SCSI Cable Routing

Figure 65. A50 With FC 3311 (Single SCSI, Single ESCON)	
Adapter Slot	Adapter Plug
1 <b>12</b> see Figure 58 on page INST-56	SCSI
2 <b>12</b> see Figure 58 on page INST-56	ESCON
3	(unused)
4	(unused)

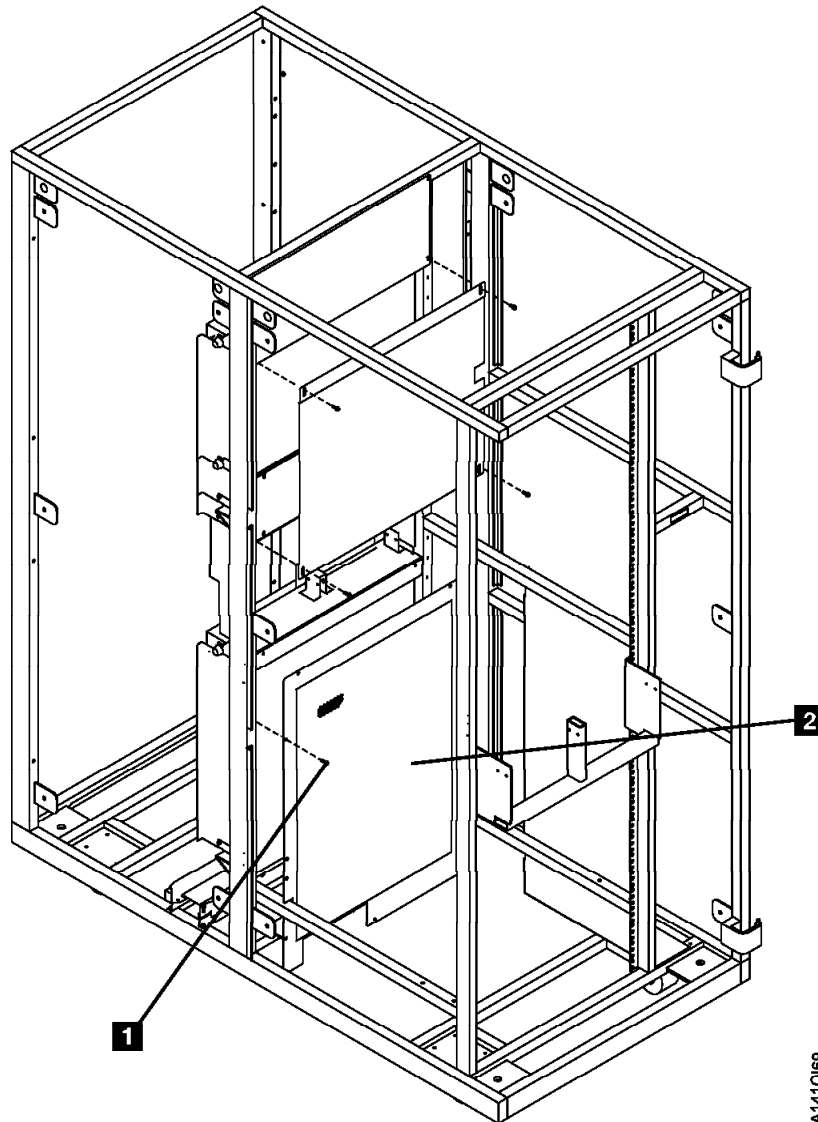
Figure 66. A50 With FC 3312 (Dual SCSI, Dual ESCON)	
Adapter Slot	Adapter Plug
1 <b>12</b> see Figure 58 on page INST-56	SCSI 0
2 <b>12</b> see Figure 58 on page INST-56	ESCON 1
3 <b>12</b> see Figure 58 on page INST-56	ESCON 2
4 <b>12</b> see Figure 58 on page INST-56	SCSI 1

## Installing a A50 Controller in D14

See Figure 67 on page INST-62 when performing the following steps.

**Note:** From the rear of the drive unit, perform the following steps.

- \_\_\_ 1. Remove the nine screws **1** that secure the lower RFI panel **2**.
- \_\_\_ 2. Slide the two drive at the top of the panel out and pull the RFI panel out from the top until it clears the drive.
- \_\_\_ 3. Pull the panel out. Discard the screws and RFI panel.



A1410169

Figure 67. Lower RFI Panel - Rear View

- \_\_\_ 4. Using nine screws install the new bottom RFI panel **2**
  - \_\_\_ a. Counting from the bottom, leave the second and third screw holes (on both sides) empty. They will be used in a later step when the shelf adapter bracket is installed.
- \_\_\_ 5. Using four screws **8** (P/N 1624776, supplied), install the slide mounting bracket **9** (P/N 05H7446, supplied) locating pin into pin hole #52 (both left and right). **See Figure 68 on page INST-64 when performing the following steps.**



- \_\_\_ 6. Align the *2nd slot* on the adapter plate **2** (P/N 05H3148, supplied) to the *eighth slot* down (from the top, both left and right) on the lower RFI panel. Use four screws (**9**) (P/N 1624767, supplied) to attach the adapter plate.
- \_\_\_ 7. Insert the articulated arm **1** (P/N 05H9208, supplied) into the articulating mounting support hole within the adapter plate **2**.
- \_\_\_ 8. Install the two nut clips **20** (P/N 74F1823, supplied) through holes #10 and #11 (from the bottom) on the **right side only**.
- \_\_\_ 9. Assemble the slide assemblies:
  - \_\_\_ a. Using four screws **14** (P/N 1621190, supplied), attach the two slide mounting brackets **7** (P/N 05H9320, supplied) to the two slides **5** (P/N 05H9172, supplied).
  - \_\_\_ b. Using four screws **21** (P/N 1621190, supplied), attach the two slide mounting brackets **6** (P/N 05H9315, supplied) to the slides **5**.
- \_\_\_ 10. Install the slide assemblies:
  - \_\_\_ a. Push in the first slide until it comes in contact with the studs on the adapter plate **2**. Install two screws **19**, (P/N 1624778, 4 supplied) in rack hole #13 and #16 (counting from the bottom on the left side).
  - \_\_\_ b. Push in the second slide until it comes in contact with the studs on the adapter plate **9**. Install two screws **19**, in rack hole #13 and #16 (counting from the bottom on the right side).
- \_\_\_ 11. Proceed to the **INST** Section of the 3590 MI's for the purpose of installing the following:
  - \_\_\_ a. The 3590 Model B1A(s); AND
  - \_\_\_ b. The 3590 Model B1A SCSI cables to accommodate inter-drive cabling between the 3590 Model A50 and each 3590 Model B1A; AND
  - \_\_\_ c. Refer to the "Unpack and Install the A50 Controller" process, and attach the RS422 and RS232 hardware contained within FFBM 05H8121; AND
  - \_\_\_ d. Route the RS422 and RS232 cables through the bottom left side in the bottom RFI panel
    - \_\_\_ 1) Take up all of the cable slack.
    - \_\_\_ 2) At the clamp point, strip the insulation and clamp the cables.
- \_\_\_ 12. Proceed to the **INST** Section of the 3494 MI's for the purpose of installing the following:
  - \_\_\_ a. The service cable (RS232 cable) panel hardware contained within FFBM 05H8101; AND
  - \_\_\_ b. the ARTIC adapter cable (RS422 cable).
- \_\_\_ 13. Using two screws **10** (P/N 6124778, supplied), attach the strain relief bracket **3** (P/N 05H2934, supplied) to the lower base plate **4** (P/N 05H9318, supplied).
- \_\_\_ 14. Using screw **12** (P/N 1624779, supplied), attach the cable clamp plate **11** (P/N 05H2629, supplied) to the strain relief bracket.
- \_\_\_ 15. Extend the two slides **5** into their service positions.
- \_\_\_ 16. Place the base plate **4** between the two slides, and install using four screws **15** (P/N 1621190, supplied).
- \_\_\_ 17. Using two screws **16** (P/N 1624779, supplied), attach the cable clamp bracket **8** (P/N 45G0181, supplied) to the two nut clips.
- \_\_\_ 18. Using screw **18** (P/N 1624779, supplied), attach the cable clamp plate **17** (P/N 05H2629, supplied) to the cable clamp bracket.



- \_\_\_ 19. Carefully inserting its feet into the square openings, place the A50 controller **13** on the base plate.
- \_\_\_ 20. Place the controller into its operating position.

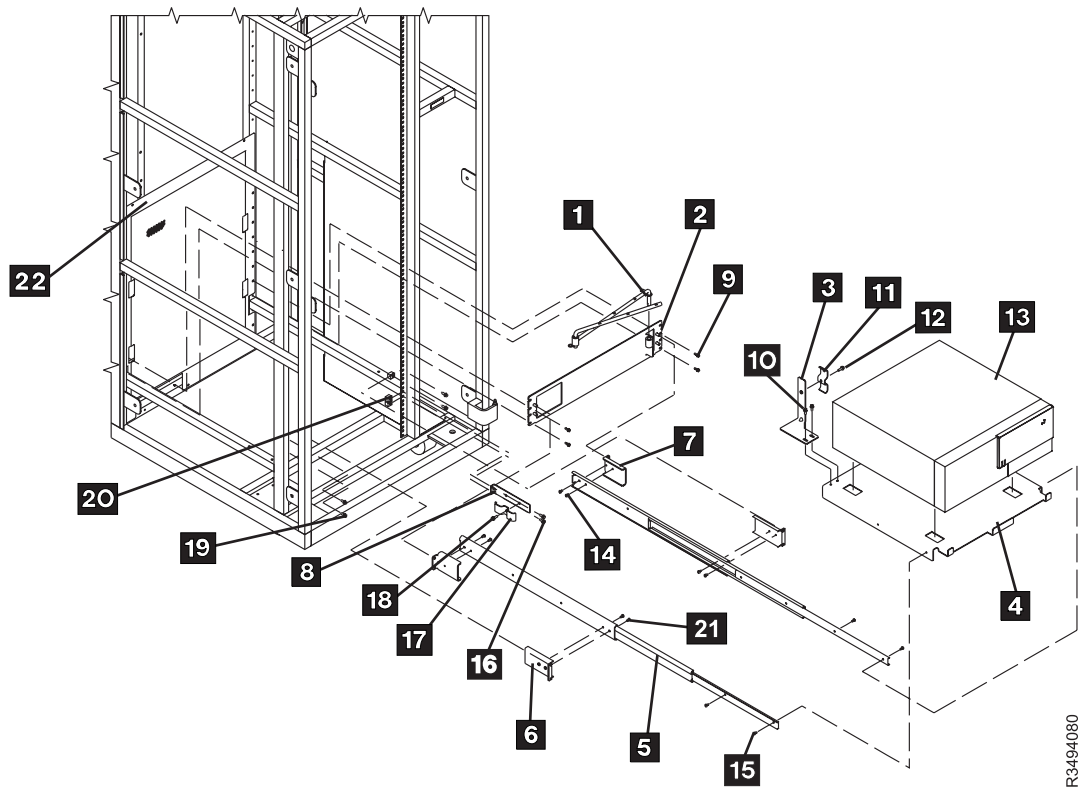


Figure 68. Installing the First 3590 A50 Controllers

- \_\_\_ 21. On the lower right corner of the rear control unit door, check to see if the correct power rating label (P/N 05H7609, supplied) is already in place. If appropriate, remove the old label (P/N 05H4113), and replace with the new label.
  - a. The old label has *P/N 05H4113* in the lower left corner, and **NO REFERENCE** to CU nor DU power ratings.
  - b. The new label has *P/N 05H7609* in the lower left corner, and reflects *CU = 6 AMPS MAX* and *DU = 7 AMPS MAX* on the same label.
- \_\_\_ 22. If previously removed, reinstall the side cover.
- \_\_\_ 23. Proceed to Section "Test Procedure" on page INST-70.



## Installing a A50 Controller in the D14 Frame

### Notes:

1. This section deals with those installations where the total MES installation strategy involves the installation of TWO 3590 Model A50 controllers.
2. From the rear of the drive unit, perform the following steps.

See Figure 69 on page INST-67 (for items **1** through **22**) Figure 70 on page INST-68 (for items **23** through **38**) when performing the following steps.

1. Align the *2nd slot* on the first adapter plate **2** (P/N 05H3148, 2 supplied) to the *eighth slot* down (from the top, both left and right) on the lower RFI panel. Use four screws (**3**) (P/N 1624767, 8 supplied) to attach the adapter plate.
2. Align the *top slot* on the second adapter plate **24** (P/N 05H3148) to the *third slot* down (from the top, both left and right) on the lower RFI panel. Use four screws (**25**) (P/N 1624767) to attach the adapter plate.
3. Insert the first articulated arm **1** (P/N 05H9208, 2 supplied) into the articulating mounting support hole within the adapter plate **2**.
4. Insert the second articulated arm **23** into the articulating mounting support hole within the adapter plate **24**.
5. Install two nut clips **20** (P/N 74F1823, supplied) through holes #10 and #11 (from the bottom) on the **right side only**.
6. Assemble the slide assemblies:
  - a. Using eight screws (**14** and **33**) (P/N 1621190, supplied), attach the four slide mounting brackets (**7** and **32**) (P/N 05H9320, supplied) to the four slides (**5** and **26**) (P/N 05H9172, supplied).
  - b. Using eight screws (**21** and **34**) (P/N 1621190, supplied), attach the four slide mounting brackets (**6** and **37**) (P/N 05H9315, supplied) to the slides (**5** and **36**).
7. Install the slide assemblies:
  - a. Push in the first slide until it comes in contact with the studs on the lower adapter plate **2**. Using two screws **19**, (P/N 1624778, 8 supplied) install in rack hole #13 and #16 (counting from the bottom on the left side).
  - b. Push in the second slide until it comes in contact with the studs on the lower adapter plate **9**. Using two screws **19**, install in rack hole #13 and #16 (counting from the bottom on the right side).
  - c. Push in the third slide until it comes in contact with the studs on the upper adapter plate **24**. Using two screws **38**, install in rack hole #28 and #31 (counting from the bottom on the right side).
  - d. Push in the fourth slide until it comes in contact with the studs on the upper adapter plate **24**. Using two screws **38**, install in rack hole #28 and #31 (counting from the bottom on the left side).
8. Using two screws **10** (P/N 6124778, supplied), attach the strain relief bracket **3** (P/N 05H2934, supplied) to the lower base plate **4** (P/N 05H9318, supplied).
9. Using screw **12** (P/N 1624779, supplied), attach the cable clamp plate **11** (P/N 05H2629, supplied) to the strain relief bracket.
10. Extend the two lower slides **5** into their service positions.

- \_\_\_ 11. Place the base plate **4** between the two slides, and install using four screws **15** (P/N 1621190, supplied).
- \_\_\_ 12. Carefully inserting its feet into the square openings, place the A50 controller **13** on the base plate.
- \_\_\_ 13. Place the controller into its operating position.
- \_\_\_ 14. Using two screws **26** (P/N 6124778, supplied), attach the strain relief bracket **27** (P/N 05H2934, supplied) to the upper base plate **23** (P/N 05H9318, supplied).
- \_\_\_ 15. Using screw **29** (P/N 1624779, supplied), attach the cable clamp plate **28** (P/N 05H2629, supplied) to the strain relief bracket.
- \_\_\_ 16. Extend the two upper slides **24** into their service positions.
- \_\_\_ 17. Place the base plate **31** between the two slides, and install using four screws **35** (P/N 1621190, supplied).
- \_\_\_ 18. Using two screws **16** (P/N 1624779, supplied), attach the cable clamp bracket **8** (P/N 45G0181, supplied) to the two nut clips.
- \_\_\_ 19. Using screw **18** (P/N 1624779, supplied), attach the cable clamp plate **17** (P/N 05H2629, supplied) to the cable clamp bracket.
- \_\_\_ 20. Carefully inserting its feet into the square openings, place the A50 controller **30** on the base plate.
- \_\_\_ 21. Place the controller into its operating position.

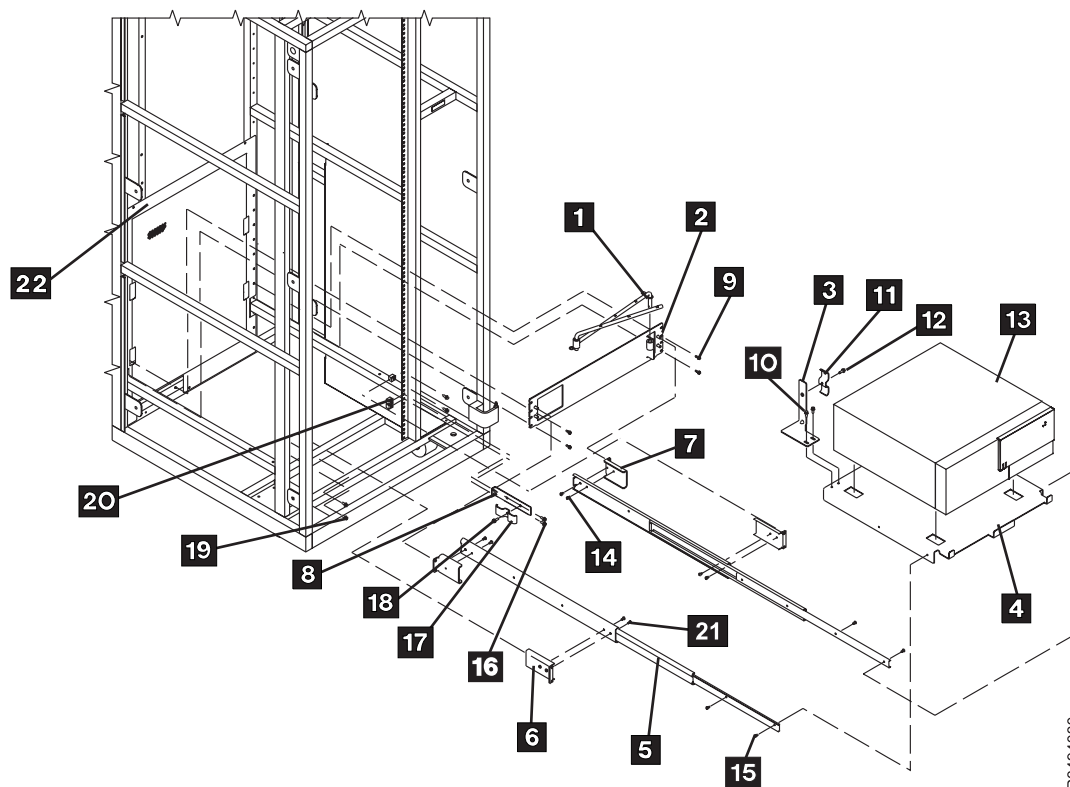


Figure 69. Installing the First of Two 3590 A50 Controllers

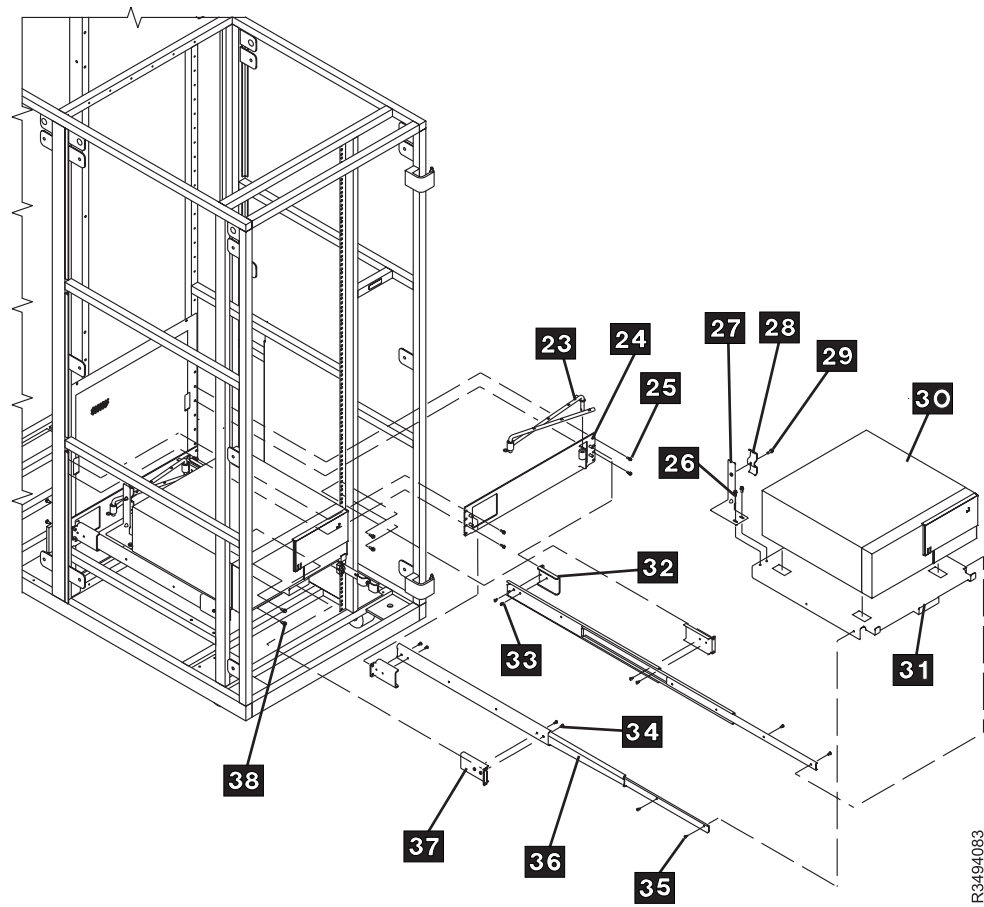


Figure 70. Installing the Second of Two 3590 A50 Controllers

- \_\_\_ 22. Place the cartridges that were removed into the new storage.
- \_\_\_ 23. On the lower right corner of the rear control unit door, check to see if the correct power rating label (P/N 05H7609, supplied) is already in place. If appropriate, remove the old label (P/N 05H4113), and replace with the new label.
  - \_\_\_ a. The old label has *P/N 05H4113* in the lower left corner, and **NO REFERENCE** to CU nor DU power ratings.
  - \_\_\_ b. The new label has *P/N 05H7609* in the lower left corner, and reflects *CU = 6 AMPS MAX* and *DU = 7 AMPS MAX* on the same label.
- \_\_\_ 24. Proceed to the **INST** Section of the 3590 MI's for the purpose of installing the following:
  - \_\_\_ a. The 3590 Model B1A(s); AND
  - \_\_\_ b. The 3590 Model B1A SCSI cables to accommodate inter-drive cabling between the 3590 control units and the 3590 tape units; AND
  - \_\_\_ c. Refer to the "Unpack and Install the A50 Controller" process, and attach the RS422 and RS232 hardware contained within FFBM 05H8121; AND
  - \_\_\_ d. Route the RS422 and RS232 cables through the bottom left side in the bottom RFI panel
    - \_\_\_ 1) Take up all of the cable slack.
    - \_\_\_ 2) At the clamp point, strip the insulation and clamp the cables.
- \_\_\_ 25. Proceed to the **INST** Section of the 3494 MI's for the purpose of installing the following:
  - \_\_\_ a. The service cable (RS232 cable) panel hardware contained within FFBM 05H8101; AND
  - \_\_\_ b. the ARTIC adapter cable (RS422 cable).
- \_\_\_ 26. If previously removed, reinstall the side cover.
- \_\_\_ 27. Proceed to Section "Test Procedure" on page INST-70.



---

## Test Procedure

**Warning:** Selection of "Teach New" will erase the customer's data base. Therefore it is important that you DO NOT automatically select the default option when performing step 1.

- \_\_\_ 1. Select "Teach - Current Configuration" option on the Teach Pulldown Menu.
- \_\_\_ 2. If the 3494 subsystem will now contain **BOTH** 3490E AND 3590 drives, put the 3590 CE cartridge in cell 1A19. If a customer volume is in cell 1A19, move the customer volume to an unused storage cell. Do not put the customer volume in a high-capacity output cell or in the error recovery cell.

**Note:** The 3590 CE cartridge must have a CE volume label and a type label *J*.

If you are converting all of the frames in the library to 3590 frames, remove the old CE cartridge and place the 3590 CE cartridge in cell 1A20.

- \_\_\_ 3. Run the "Model A50 Installation Checkout Procedure".
- \_\_\_ 4. Run "Verify Installation" on the Service pulldown menu.
- \_\_\_ 5. "Open Door Verification" will re-inventory the storage.



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## Installing a A50 Controller in L14 Frame

### Change Drive Cover Plate

**Note:** Skip the following step, and proceed to step 2 if this 3494 control unit does not have one 3590 model B1A already installed.

- \_\_\_ 1. From the rear of the control unit, press the drawer release latch and pull the drawer to the service position.

**See Figure 71 on page INST-72 when performing the following steps.**

**Note:** Perform the following steps from the front of the control unit.

- \_\_\_ 2. Remove the front two screws **1** from the teach bracket **2**, and tilt the bracket up. Set the screws to the side for reinstallation in a future step.

**Note:** Perform the following steps from the rear of the control unit. For ease of removal and installation, it is recommended that one C.E. be stationed on either side of the drive cover plate at the time of its replacement.

- \_\_\_ 3. Remove the fourteen screws **3** that are securing the current drive cover plate ( **4** or **6** ).

- \_\_\_ a. Set the drive cover plate to the side for disposition

- \_\_\_ b. Set the screws to the side for installation in the next step.

- \_\_\_ 4. Using the fourteen screws removed in the previous step, install the new drive cover plate ( **4** or **5** ) (PN 05H4204 or PN 05H1955, supplied).

**Note:** Perform the following steps from the front of the control unit.

- \_\_\_ 5. Tilt the teach bracket **2** down, and secure with the two screws removed in Step 2.



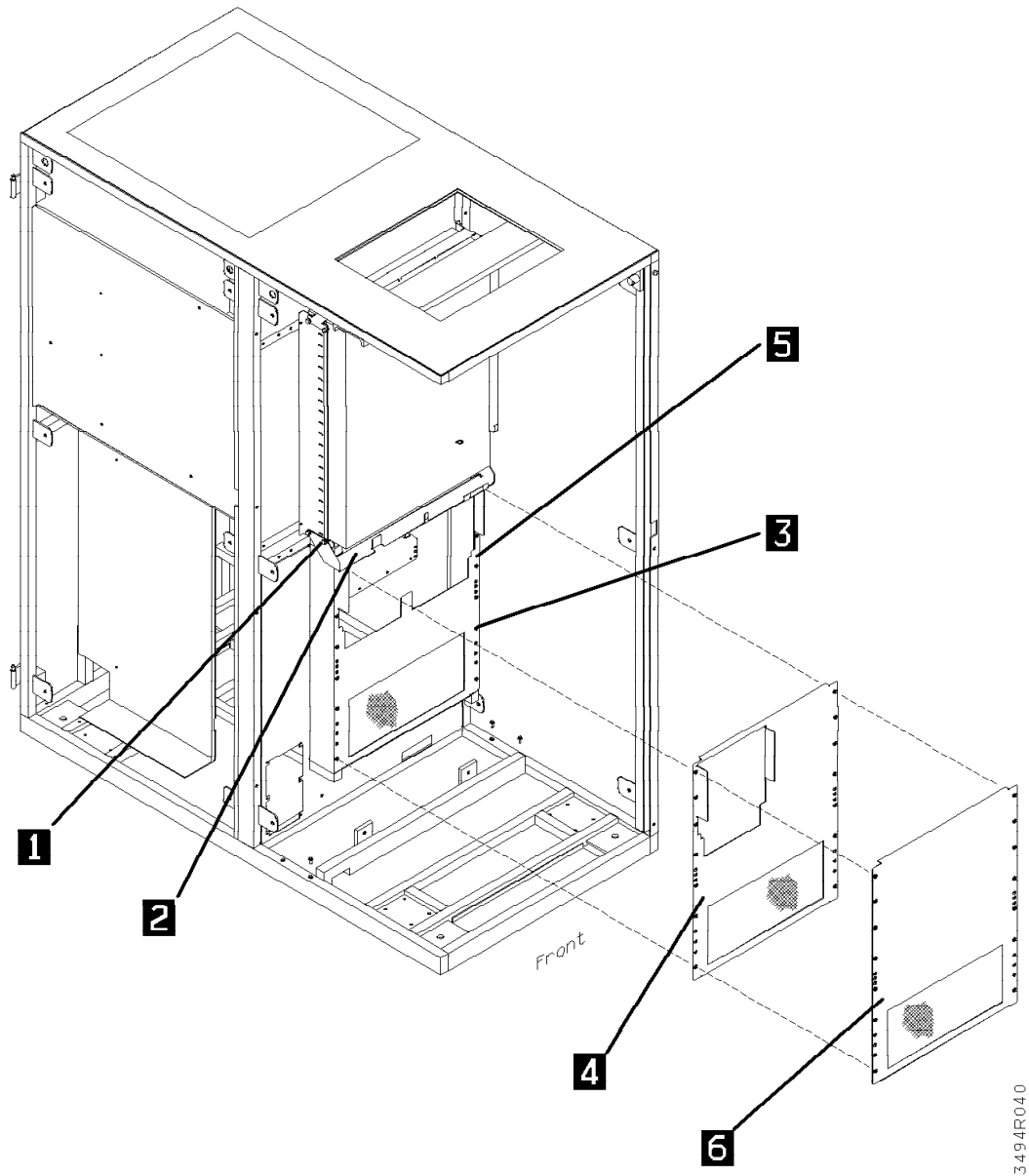


Figure 71. Change Drive Cover Plate

**Note:** Skip the following step, and proceed to step 7 if the drawer **was not** previously (within step 1 on page INST-71) placed into the service position.

- \_\_\_ 6. Press the drawer release latch and push the drawer to the operating position.
- \_\_\_ 7. Prior to proceeding to Section "Test Procedure" on page INST-70, proceed to the INSTALL section of the 3590 Maintenance Information manual for instructions pertinent to the installation of the 3590 B1A drive, including checkout and host cabling.



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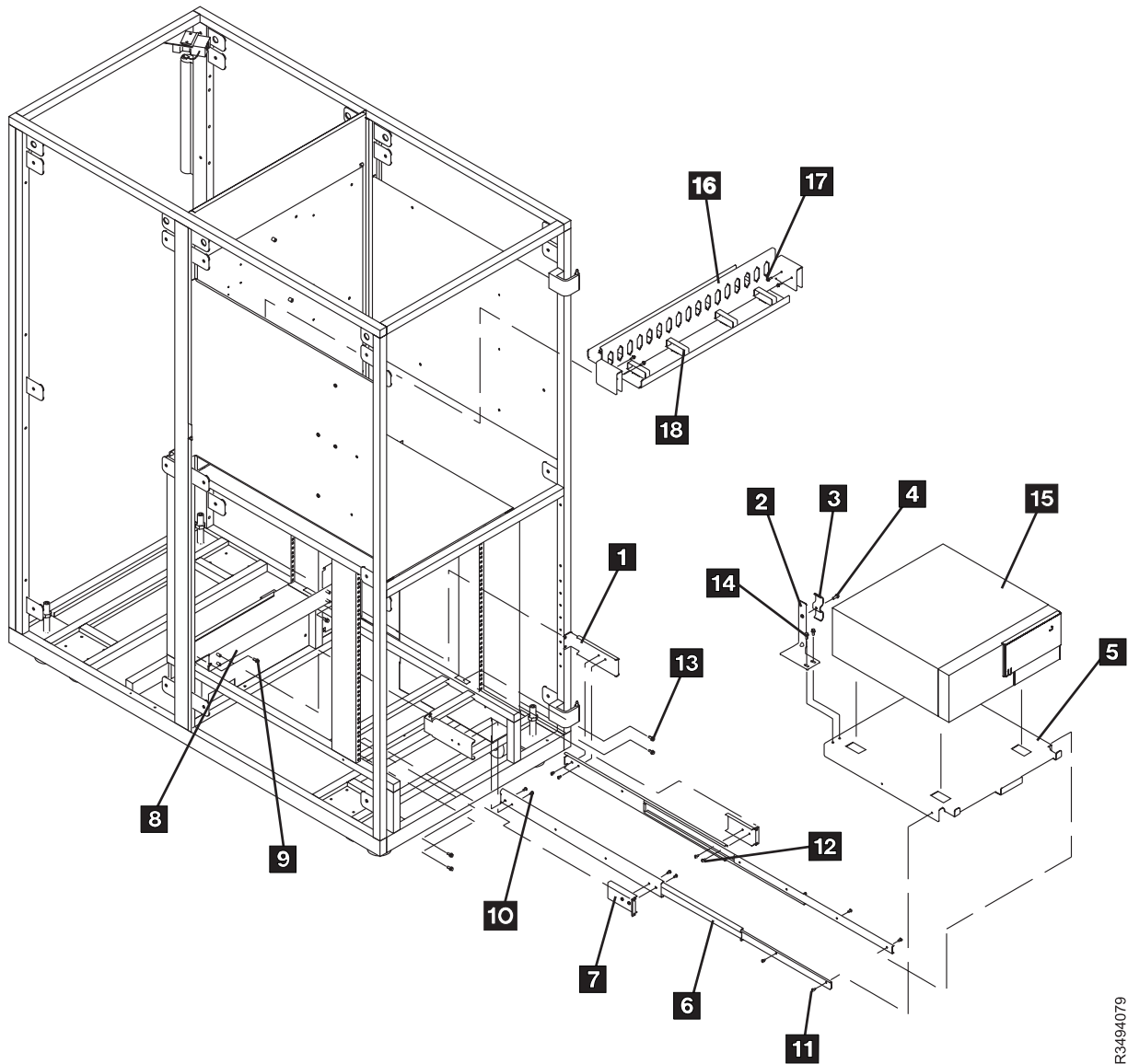
## Control Unit Installation in RACK

**Note:** For the purpose of installation within **this instruction** pin holes are to be counted from **the bottom of the rack up** towards the top of the rack. Pin holes are defined as the larger holes used by M5 or M6 screws that secure various brackets; and not the smaller holes used by M4 screws that installed the storage arrays and RFI panels.

**See Figure 72 on page INST-75 when performing the following steps.**

**Note:** Perform the following step from the rear of the control unit.

- \_\_\_ 1. Align the adapter plate **8** (P/N 05H3182, supplied) to the slot (from the top, both left and right) within the 19" rack hole pattern. Use two screws **9** (P/N 1624778, supplied) to attach the adapter plate.
- \_\_\_ 2. Assemble the slide assemblies:
  - \_\_\_ a. Using four screws **12** (P/N 1621190, supplied), attach the two slide mounting brackets **6** (P/N 05H9317, supplied) to the two slides **4** (P/N 05H9172, supplied).
  - \_\_\_ b. Using four screws **10** (P/N 1621190, supplied), attach the two slide mounting brackets **1** (P/N 05H9316, supplied) to the two slides **4**.
- \_\_\_ 3. Install the slide assemblies:
  - \_\_\_ a. Push in the first slide until it comes in contact with the studs on the adapter plate **8**.  
Using two screws **13** (P/N 1624778, 4 supplied), install in rack hole and (counting from the bottom on the left).
  - \_\_\_ b. Push in the second slide until it comes in contact with the studs on the adapter plate **8**.  
Using two screws **13**, install in rack hole and (counting from the bottom on the right).
- \_\_\_ 4. Using two screws **14** (P/N 1624778, supplied), attach the strain relief bracket **2** (P/N 05H9234, supplied) to the base plate **5** (P/N 05H9318, supplied).
- \_\_\_ 5. Using two screws **4** (P/N 1624779, supplied), attach the cable clamp plate **3** (P/N 05H2629, supplied) to the strain relief bracket **2**.
- \_\_\_ 6. Extend the two slides **6** into their service position.
- \_\_\_ 7. Place the base plate **5** between the two slides, and install using four screws **11** (P/N 1622190, supplied).
- \_\_\_ 8. Carefully inserting its feet into the square openings, place the A50 controller **15** on the base plate.
- \_\_\_ 9. Place the controller into its operating position.
- \_\_\_ 10. Proceed to the **INST** Section of the 3590 MI's for the purpose of:
  - \_\_\_ a. installing the 3590 Model B1A(s); AND
  - \_\_\_ b. attaching the RS422/RS232 hardware (referring to the "Unpack and Install the 3590 Controller" process) contained within FFBM 05H8120.
- \_\_\_ 11. Proceed to the **INST** Section of the 3494 MI's for the purpose of:
  - \_\_\_ a. installing the service cable (RS 232 cable) panel hardware within FFBM 05H8101; AND
  - \_\_\_ b. installing the ARTIC adapter cable (RS422 cable).
- \_\_\_ 12. Proceed to Section "Test Procedure" on page INST-70.



R349-4079

Figure 72. Model L14 Installation of A50 Controller

## Test Procedure

**Warning:** Selection of "Teach New" will erase the customer's data base. Therefore it is important that you DO NOT automatically select the default option when performing step 1 on page INST-70.

- | ☐ 1. Connect the MoST
- ☐ 2. Select "Teach - Current Configuration" option on the Teach Pulldown Menu.  
**Note:** Skip the following step if the 3590 Model A50 was previously installed.
- ☐ 3. Run "Model A50 Installation Checkout Procedure".
- ☐ 4. Run "Verify Installation" (on the Service Pulldown menu) for the drive just installed.

## Installing A50 Controller in RACK

**Note:** If the RACK has an existing A00 controller installed, it must be completely removed with existing hardware and attached cables before continuing.

---

### A50 Control Unit Installation

See Figure 72 on page INST-75 when performing the following steps.

**Note:** For the purpose of installation within **this instruction** pin holes are to be counted from **the bottom of the rack up** towards the top of the rack. Pin holes are defined as the larger holes used by M5 or M6 screws that secure various brackets; and not the smaller holes used by M4 screws that installed the storage arrays and RFI panels.

**Note:** Perform the following step from the rear of the control unit.

- \_\_\_ 1. Assemble the slide assemblies:
  - \_\_\_ a. Using four screws attach the two slide mounting brackets **7** (P/N 05H9315, supplied) to the two slides **4** (P/N 05H9172, supplied).Install the slide assemblies:
  - \_\_\_ a. Push in the first slide until it is flush with the RACK.
  - \_\_\_ b. Install in rack hole 2 (counting from the bottom on the left).
  - \_\_\_ c. Push in the second slide until it is flush with the RACK.  
Using two screws install in rack hole 2 (counting from the bottom on the right).
- \_\_\_ 2. Using two screws attach the strain relief bracket **5** (P/N 05H9234, supplied) to the base plate **3** (P/N 05H9318, supplied).
- \_\_\_ 3. Using two screws attach the cable clamp plate (P/N 05H2629, supplied) to the strain relief bracket **5**.
- \_\_\_ 4. Extend the two slides **4** into their service position.
- \_\_\_ 5. Place the base plate **3** between the two slides, and install using four screws.
- \_\_\_ 6. Carefully inserting its feet into the square openings, place the A50 controller **2** on the base plate.
- \_\_\_ 7. Place the controller into its operating position.
- \_\_\_ 8. Install the articulating arm **1** to the right slide mounting bracket **6**. Do not use any retention hardware.
- \_\_\_ 9. Proceed to the **INST** Section of the 3590 MI's for the purpose of:
  - \_\_\_ a. installing the 3590 Model B1A(s); AND
  - \_\_\_ b. attaching the RS422/RS232 hardware (referring to the "Unpack and Install the 3590 Controller" process) contained within FFBM 05H8120.
- \_\_\_ 10. Proceed to the **INST** Section of the 3494 MI's for the purpose of:
  - \_\_\_ a. installing the service cable (RS 232 cable) panel hardware within FFBM 05H8101; AND
  - \_\_\_ b. installing the ARTIC adapter cable (RS422 cable).
- \_\_\_ 11. Proceed to Section "Test Procedure" on page INST-75.

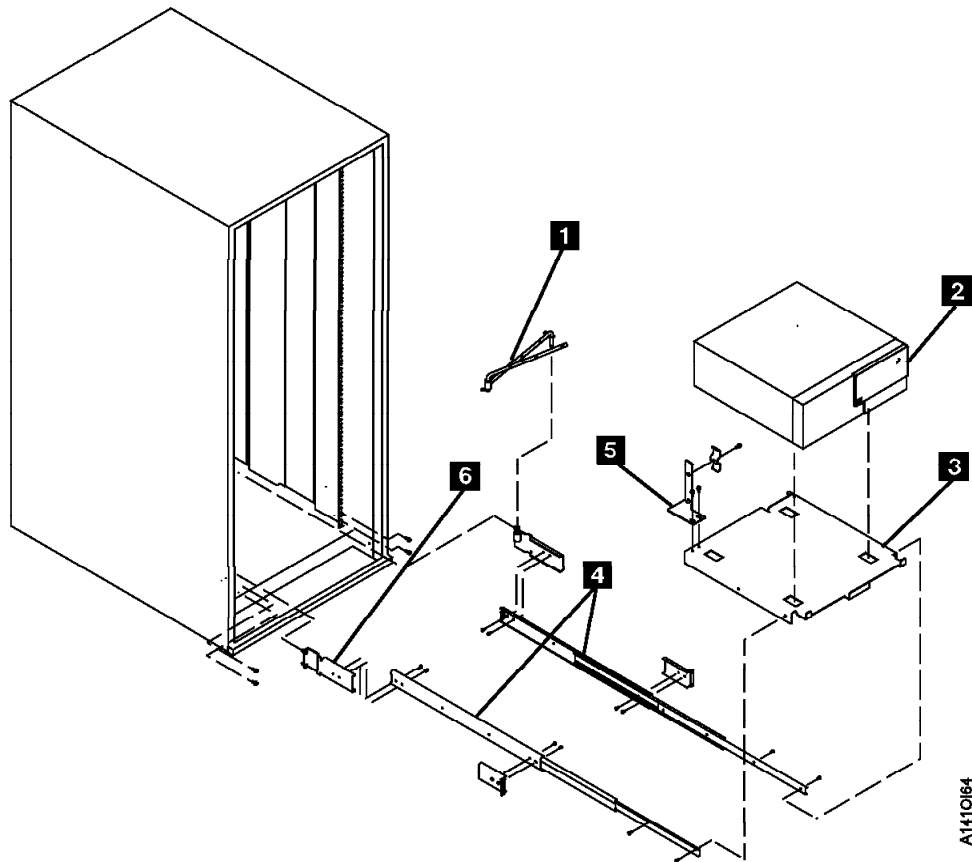


Figure 73. RACK Model Installation of A50 Controller

12. Run “Axx Common Installation Procedures”

## Axx Common Installation Procedures

**Voltage Checks:** The 3590 Axx is designed for connection to IT (impedance-grounded neutral) power subsystems.

**Warning:** High grounding conductor current. Grounding circuit continuity is vital for safe operation of machine. Never operate machine with grounding conductor disconnected.

1. Determine the type of connector on the customer receptacle.

**Note:** In some World Trade countries no connector is used and the cable is wired directly to the building power source.

### CAUTION:

If any of the conditions in the following text are not as described, *do not proceed with the installation and do not allow anyone to come into contact with the metal parts.* Contact the customer to have the improper voltage or resistance conditions corrected before proceeding.

### DANGER

Use only test probes to touch the shell of a metal outlet until the customer corrects any improper voltage or resistance.

- \_\_\_ 2. If the outlet case is conductive (metal), measure for 0 V ac from building ground to the outlet case. For details, see "Safe-to-Handle Check" under "Miscellaneous Safety Tips" in *Electrical Safety for IBM Customer Engineers*.
- \_\_\_ 3. Measure for 0 V ac from the ground pin of the outlet to building ground. For details, see "Power Receptacle Safety Check" in *Electrical Safety for IBM Customer Engineers*.
- \_\_\_ 4. Measure for less than 1-ohm resistance from the ground pin of the outlet to building ground and from the ground pin of the 3590 Model A00 drive frame power cord to the drive frame.  
**Note:** Digital meters may give unstable readings if leakage current is flowing in the building ground circuit. If the reading is unstable or is greater than 1 ohm, contact your installation planning representative.
- \_\_\_ 5. Measure the customer-supplied voltage. The nominal voltage is single-phase 200 to 240 V ac. The minimum is 180 V ac and the maximum is 259 V ac RMS. Write the voltage here:

V ac

- \_\_\_ 6. Have the customer switch off the branch circuit CBs before connecting the drive frame power cord into the outlet.
- \_\_\_ 7. Connect customer power to the drive frame.
- \_\_\_ 8. Have the customer switch on the branch circuit CBs.



**Axx Stand-Alone Power On and Checkout:** The Axx is ready to be powered up and checked out, but first, **Power on all the drives in this frame so that when the Axx comes up, it will configure all the drives as present.** Perform the following:

1. Power on all the drives in this frame.
2. Set the power switch on the A00 Controller system unit to Off.
3. Set the mode switch to the **Normal** or **OK** position.
4. Wait 10 seconds.
5. Turn on system power.
6. Verify that the A00 Controller Power Light is **On**.
7. Your system unit should now perform POST Diagnostics and a normal initial program load (IPL).
8. Wait until one of the following occurs:
  - a. The same number is displayed in the three-digit display for more than three minutes (error condition).
  - b. The number **888** flashes in the three-digit display (error condition).
  - c. The three-digit display is blank for more than 1 minute at the end of the test (normal completion).

Here is a summary on what to expect. For more information, refer to *7009 Compact Server Service Guide*, SA23-2716 for the power on procedure, how to run diagnostics, and maintenance analysis procedures (MAPs) in case a problem is found.

**Operator Panel Display:** The operator panel display performs the following functions:

1. Tracks and controls the progress of the BIST, POST, and configuration programs.
2. Displays a crash message when the system control program comes to an abnormal end.
3. Displays a diagnostic program message when there is no console display present.

When a flashing 888 is displayed in the operator panel display, a crash message or a diagnostic message is waiting to be read.

**Automatic Diagnostic Tests:** All of the automatic diagnostic tests run after the system unit is turned on and before the AIX operating system is loaded. The automatic tests also run when the system is reset after a check stop.

The automatic diagnostic tests display numbers in the three-digit display to track test progress. If a test stops, the number for that test remains displayed to identify the unsuccessful test.

If the test runs successfully, return to the step that sent you here. If a failure occurs, go to *7009 Compact Server Service Guide*, SA23-2716 for the power on procedure, how to run diagnostics, and maintenance analysis procedures (MAPs) in case a problem is detected, and resolve the problem with that manual.

**Checkout of Drives from Axx Interface:** Perform a checkout of each drive in the frame you are installing:

If you are here from installing the second SCSI adapter in the A00 controller, you will be testing the previously unused SCSI Port 1 of each of the installed drives. Port 1 of each drive must have its address set.

**Note:** Do **NOT** change the tape drive SCSI Port 0 address on any of the drives.

Do the following before proceeding with the checkout below:

1. Continue with installation at "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11, then return here.
2. Set the SCSI Port 1 address for each of the drives according to the SCSI address table (see Figure 85 on page INST-90). Use the procedure in *IBM 3590 Tape Subsystem Models B11 and B1A MI*, PROC section, under "Set Address Menu", to set the address from each of the drive's operator panel. The table shows full configuration of 6 drives. Your configuration may have less than 6 drives
1. Refer to "Running Diagnostics from the A00 or A50 Controller" on page PROC-35 and select utilities that exercise the read and write circuits of each tape drive installed. The diagnostics are listed under Diagnostic Routines in the Advanced Diagnostics area of the procedure.
2. Select the tape utility to access the read/write tests.
3. Run the write and read options.
4. Load and Unload tape each time.
5. Remove the scratch cartridge when complete.
6. Return to the step that sent you here.

**Attaching the Host ESCON Cable(s):** Refer to Figure 74 on page INST-82 and attach the host ESCON cable(s) using the following procedure:

- \_\_\_ 1. If this installation is part of a 3494 subsystem, you must make sure that the VPD has been set up to make the connection between the Axx and the Library. This can be done as follows:
  - a. From the main maintenance menu, select **Subsystem Configuration** Refer to Figure 15 on page PANEL-4
  - b. From the Subsystem Configuration menu, select **Show/Change Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
  - c. From the Show/Change Vital product menu, select **Show / Change Control Unit Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
  - d. From the Show / Change Vital product menu, select **Add/Change Control Unit Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
  - e. From the Add/Change Vital Product menu, select **Library Interface** Select Library Interface and press F4. Refer to "Axx Menu Tree" on page PANEL-4
  - f. In the pop-up window, change the setting from **/dev/null** to **/dev/tty1** Refer to "Axx Menu Tree" on page PANEL-4

**Note:** There is now a connection between the Axx and the Library. You can exit the maintenance menus by pressing the F10 key.

- \_\_\_ 2. Use the following procedure to route and attach the customer host ESCON cable to the Model A00 ESCON adapter in slot 2. If a second host ESCON cable is to be installed, attach it to the ESCON adapter in slot 3. See Figure 74 on page INST-82, Figure 76 on page INST-84, and Figure 77 on page INST-84.
  - a. Lay the ESCON host cable over the top of the A50, slightly hanging down the back.
  - b. Move the A50 out far enough to install the ESCON cable(s) to the back of the Model A00 Adapter Slots 2 & 3 (see Figure 75 on page INST-83. The following legend describes Figure 80 on page INST-85:
    - 1** Keyboard Port: For keyboard prot
    - 2** Mouse Port: For mouse connection
    - 3** Parallel Port: For connecting a parallel printer or other parallel devices.

**4** 10BaseT Ethernet Port: For attaching your computer to an Ethernet/Twisted pair connection through a 10BaseT connector.

**5** External SCSI Port: For connecting external SCSI Devices.

**6** Audio Ports:

- Headphone
- Microphone
- Audio line out
- Audio line in

**7** Voltage-Selection Switch: Select either 115-V or 230-V setting.

**8** Security Tether Attachment: Attachment point for security tether.

**9** P-Pin Serial Ports: For a TTY terminal, Modem, or other serial device.

**Note:**

S1 on the left, view from the rear of the A50 for (Service Terminal Connection). 25 to 9 pin adapter (P/N 40H6328) required for connection.

S2 on the right, view from the rear of the A50 for (LM Artic Connection). 25 to 9 pin adapter (P/N 40H6328) required for connection.

**10** Table Port: For attaching a digitizing table to your computer.

**11** 10Base5 Ethernet Port: for attaching your computer to an Ethernet thick connection (or Ethernet thin connection, using an optical transceiver through a 10Base5 connector).

**12** Expansion Slots: For adding ISA and PCI adapters.

- c. When complete, move the A50 back onto the shelf bracket, and secure the holding bracket with the two screws provided.

- \_\_\_ 3. Perform the procedure at "Host Interface Checkout" on page INST-89, then return here.
- \_\_\_ 4. Save the ESCON Wrap Plug for future service if needed.
- \_\_\_ 5. Order Diagnostic CD ROM, P/N 40H3394 for future diagnostic and repair use if it was not sent with the shipping group. **You may need this on hand in the future.**

Now return to the 3494 INST section and complete installation from that manual. Use that manual's Post Installation Reporting.

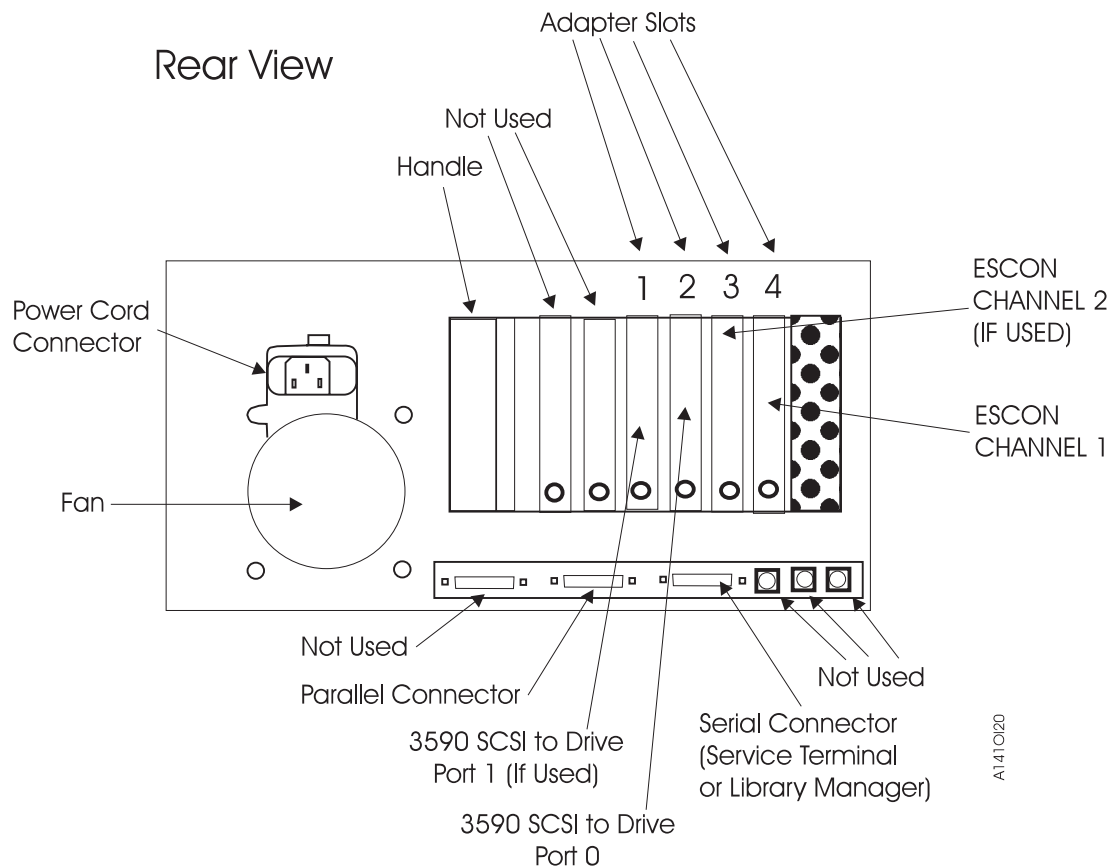


Figure 74. A00 Controller Cable Connections

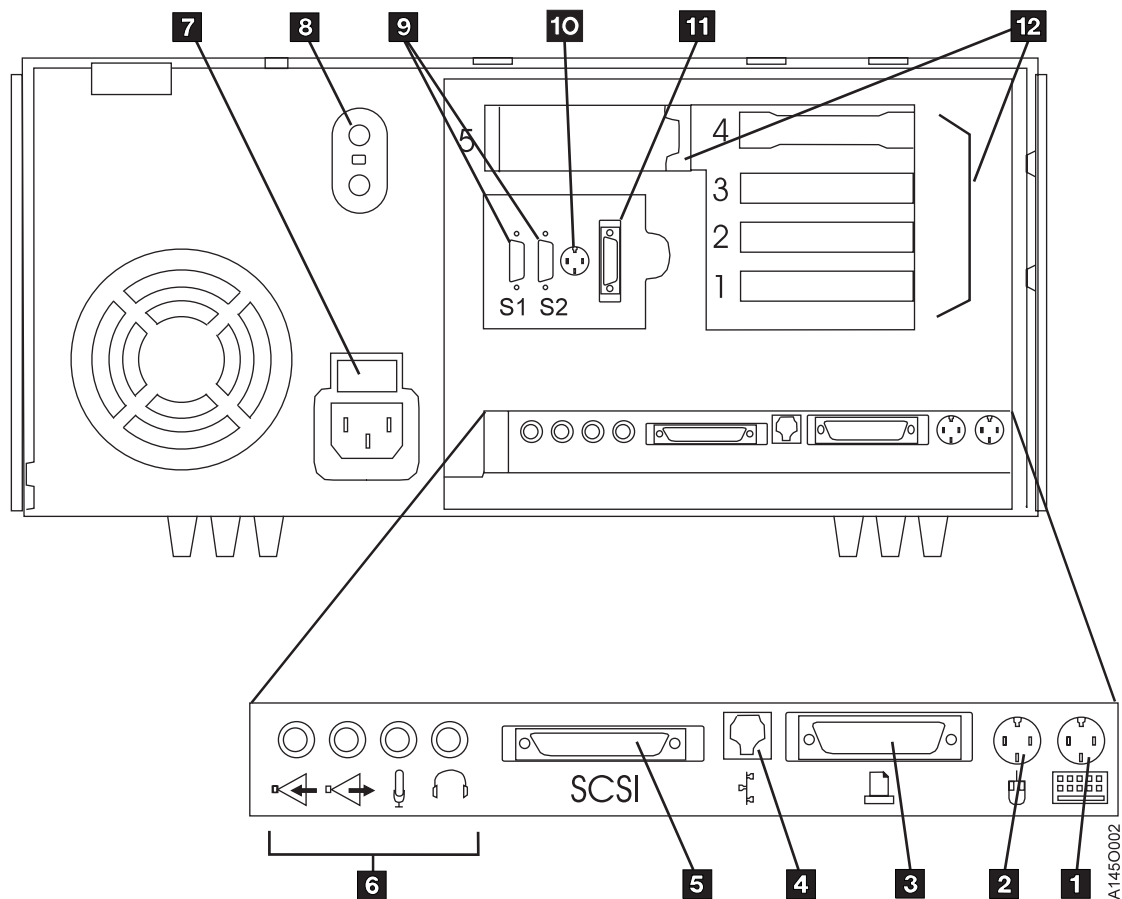


Figure 75. A50 Cable Connections

The A50 Controller, refer to Figure 75, is described as follows:

- **1** Keyboard Port
- **2** Mouse Port
- **3** Parallel Port
- **4** 10BaseT Ethernet Port
- **5** External SCSI Port
- **6** Audio Ports
- **7** Cover Lock: Security feature
- **8** Security tether attachment
- **9** 9-Pin Serial Ports
- **10** Tablet Port
- **11** 10Base5 Ethernet Port
- **12** Expansion Slots (SCSI and ESCON)

## Adapter Plugging (ESCON and SCSI) for the A00 Controller

In the field there are two type of SCSI adapter cards used for the A00 controller. One of these types contain a heat sink and require that the Adapter plugging be changed from the original configuration.

P/N 40H2842 is the original type without the heat sink, adapter plugging is shown in Figure 76 on page INST-84 and Figure 77 on page INST-84

P/N 05H3090 is the new type with the heat sink, adapter plugging is shown in Figure 79 and Figure 78

<i>Figure 76. A00 With FC 3311 (Single SCSI, Single ESCON)</i>		<i>Frame</i>
Adapter Slot	Adapter Plug	
1	SCSI - SCSI Card P/N 40H2842	
2	(unused)	
3	ESCON	
4	(unused)	

<i>Figure 77. A00 With FC 3312 (Dual SCSI, Dual ESCON)</i>	
Adapter Slot	Adapter Plug
1	SCSI 0 - SCSI Card P/N 40H2842
2	SCSI 1 - SCSI Card P/N 40H2842
3	ESCON 1
4	ESCON 2

<i>Figure 78. A00 With FC 3311 (Single SCSI, Single ESCON)</i>	
Adapter Slot	Adapter Plug
1	ESCON
2	(unused)
3	SCSI - SCSI Card P/N 05H3090
4	(unused)

<i>Figure 79. A00 With FC 3312</i>	
Adapter Slot	Adapter Plug
1	ESCON 1
2	ESCON 2
3	SCSI 0 - SCSI Card P/N 05H3090
4	SCSI 1 - SCSI Card P/N 05H3090

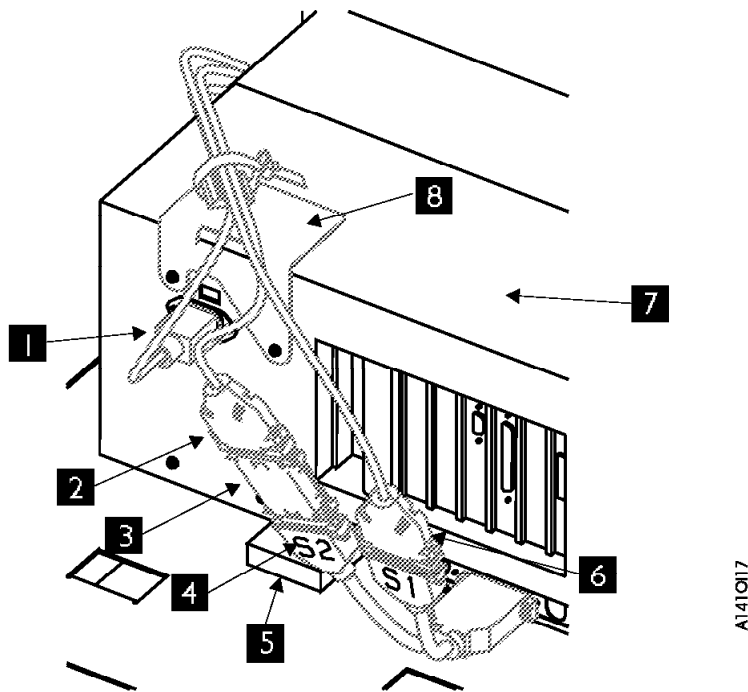


Figure 80. A00 Controller Cable Clamp and Cable Routing

**Attaching the Axx Host ESCON Cable(s):** To attach the A00 CU, refer to Figure 74 on page INST-82 and attach the host ESCON cable(s) using the following procedure:

To attach the A50 CU, refer to Figure 75 on page INST-83 and attach the host ESCON cable(s) using the following procedure:

1. Continue with installation at "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11, then return here.

**Note:**

2. If this installation is part of a 3494 subsystem, you must make sure that the VPD has been set up to make the connection between the A50 and the Library. This can be done as follows:
  - a. From the main maintenance menu, select **Subsystem Configuration** Refer to Figure 15 on page PANEL-4
  - b. From the Subsystem Configuration menu, select **Show/Change Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
  - c. From the Show/Change Vital product menu, select **Show / Change Control Unit Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
  - d. From the Show / Change Vital product menu, select **Add/Change Control Unit Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
  - e. From the Add/Change Vital Product menu, select **Library Interface** Select Library Interface and press F4. Refer to "Axx Menu Tree" on page PANEL-4
  - f. In the pop-up window, change the setting from **/dev/null** to **/dev/tty1** Refer to "Axx Menu Tree" on page PANEL-4

**Note:** There is now a connection between the A50 and the Library. You can exit the maintenance menus by pressing the F10 key.

\_\_\_ 3. Use the following procedure to route and attach the customer host ESCON cable to the Model A00 ESCON adapter in slot 3. If a second host ESCON cable is to be installed, attach it to the ESCON adapter in slot 4. See Figure 74 on page INST-82, Figure 82 on page INST-88, and Figure 83 on page INST-88.

- a. Lay the ESCON host cable over the top of the A50 slightly hanging down the back. (see **8** on Figure 80 on page INST-85)
- b. Move the A50 out far enough to install the ESCON cable(s) to the back of the Model A00 Adapter Slots 3 & 4 (see Figure 74 on page INST-82 and Figure 80 on page INST-85).

**Notes:**

The following legend describes Figure 80 on page INST-85:

- 1** Power Connector
- 2** Connector to the LM ARTIC Port

**Notes:**

Some Cable connectors on the "Y" cable will be labeled S0 and S1, other connectors may be labeled S1 and S2. Shown here Are S1 and S2, however if your connectors are labeled differently, put them in the same sequence. for example S0 goes to the same position as S1 and S1 would connect the same as S2.

- 3** RS232 to RS422 Converter
- 4** S2 connection on Y cable (LM ARTIC Connection)
- 5** RISC internal SCSI bus Terminator
- 6** S1 connection on Y cable (Service Terminal Connection)
- 7** RISC/6000 (A50 Control Unit)
- 8** Cable Clamp for all cables attached at the back of the A50, including the ESCON cables.

- c. When complete, move the A50 back onto the shelf bracket, and secure the holding bracket with the two screws provided.

- \_\_\_ 4. Perform the procedure at "Host Interface Checkout" on page INST-89, then return here.
- \_\_\_ 5. Save the ESCON Wrap Plug for future service if needed.
- \_\_\_ 6. Order Diagnostic CD ROM, P/N 40H3394 for future diagnostic and repair use if it was not sent with the shipping group. **You may need this on hand in the future.**

Now return to the 3494 INST section and complete installation from that manual. Use that manual's Post Installation Reporting.



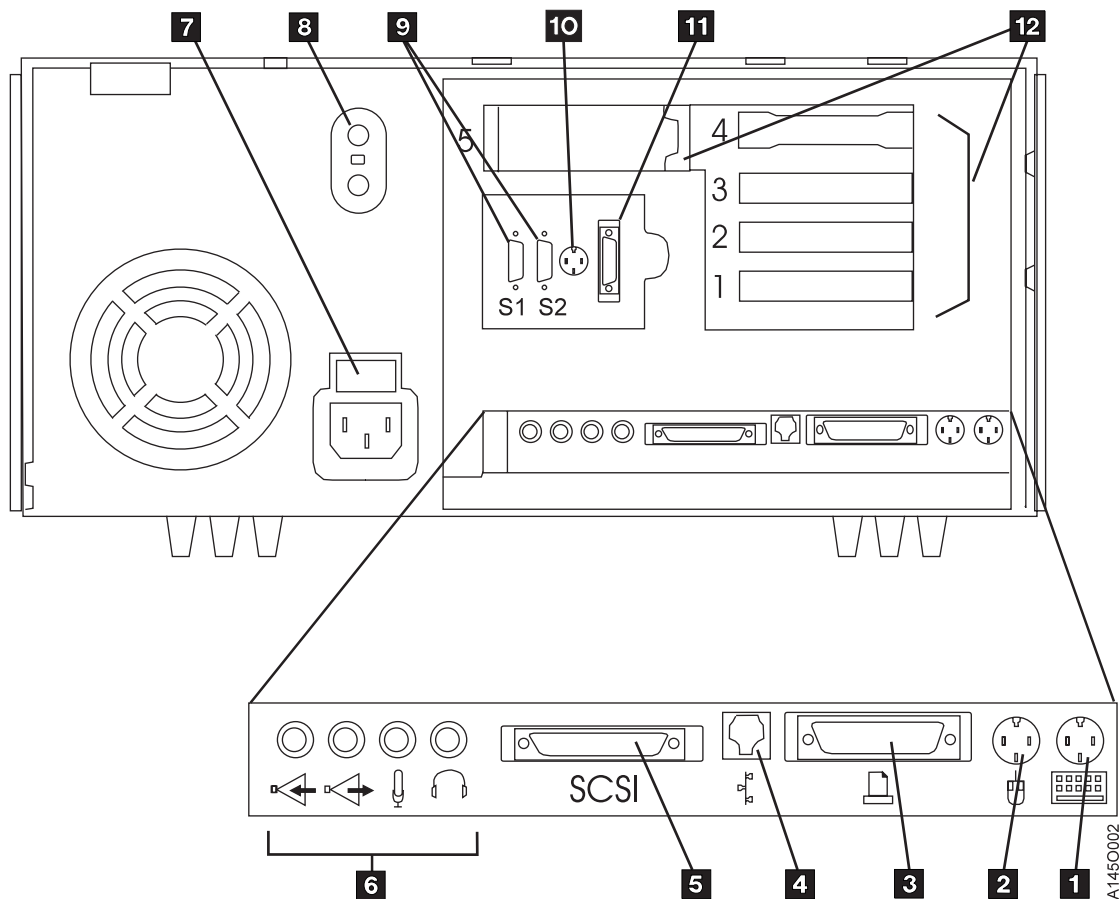


Figure 81. A50 Cable Connections

## A50 Connections

1. **1 Keyboard Port:** For keyboard port
2. **2 Mouse Port:** For mouse connection.
3. **3 Parallel Port:** For connecting a parallel printer or other parallel devices.
4. **4 10BaseT Ethernet Port:** For attaching your computer to an Ethernet/Twisted pair connection through a 10baseT connector.
5. **5 External SCSI Port:** For connecting external SCSI devices.
6. **6 Audio Ports:**
  - Headphone
  - Microphone
  - Audio line out
  - Audio line in
7. **7 Voltage-Selection Switch:** Select either 115-V or 230-V setting.
8. **8 Security Tether Attachment:** Attachment point for a security tether.
9. **9 9-Pin Serial Ports:** For a TTY terminal, Modem, or other serial device.
10. **10 Tablet Port:** For attaching a digitizing tablet to your computer.

11. **11 10Base5 Ethernet Port:** For attaching your computer to an Ethernet thick connection (or Ethernet thin connection, using an optional transceiver through a 10base5 connector).
12. **12 Expansion Slots:** For adding ISA and PCI adapters.

<i>Figure 82. A50 With FC 3311 (Single SCSI, Single ESCON)</i> <span style="float: right;"><i>Frame</i></span>	
Adapter Slot	Adapter Plug
1	SCSI
2	ESCON
3	(unused)
4	(unused)

<i>Figure 83. A50 With FC 3312 (Dual SCSI, Dual ESCON)</i> <span style="float: right;"><i>Frame</i></span>	
Adapter Slot	Adapter Plug
1	SCSI 0
2	ESCON 1
3	ESCON 2
4	SCSI 1

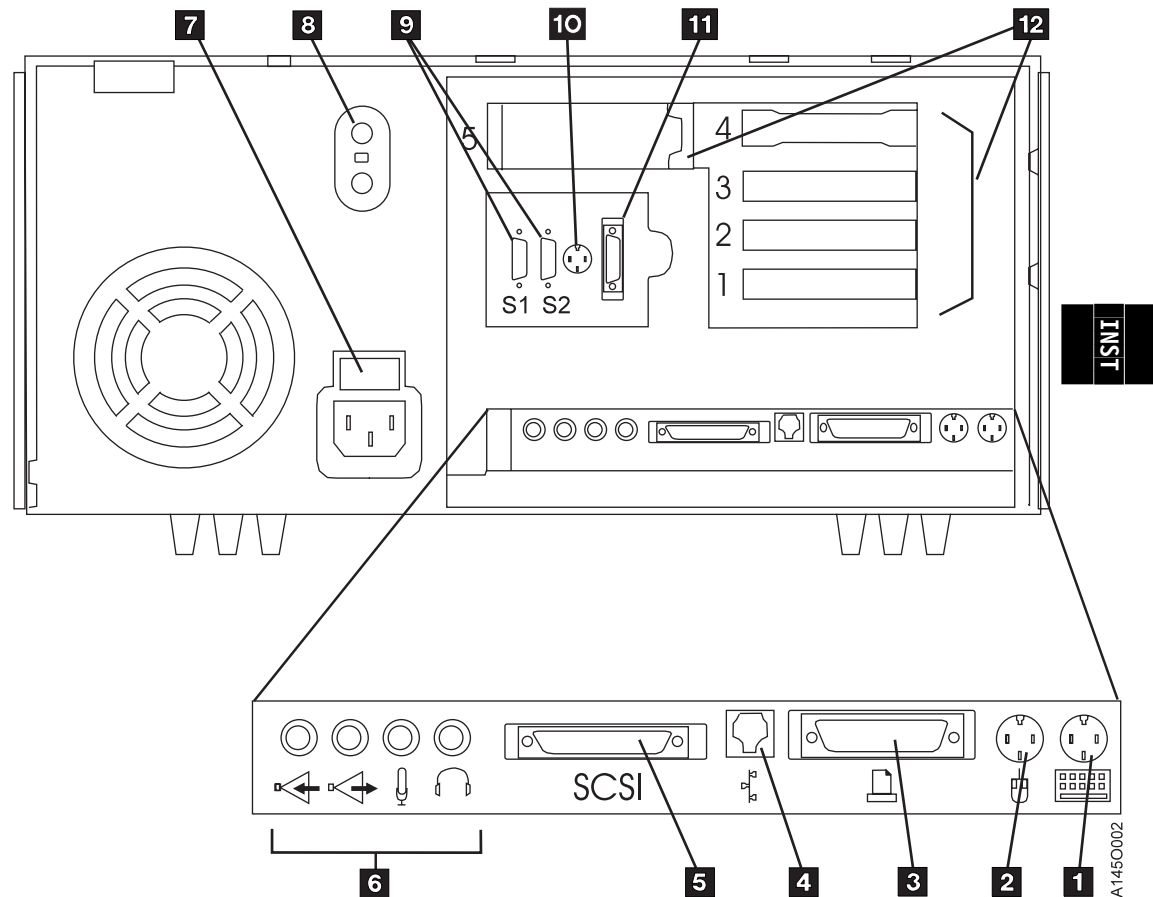


Figure 84. A50 Cable Clamp and Cable Routing

### 3590 Axx Subsystem Microcode

Should there be a reason that new Axx microcode or the Axx AIX operating system need to be installed in your Axx see “3590 Axx Subsystem Microcode Addition or Activation” on page PROC-7 or “Installing AIX in the A00 Controller Environment” on page PROC-2 and then return here and continue with install.

### Host Interface Checkout

Have the customer bring the 3590 Axx Bxx subsystem on line to checkout the ESCON interface. If two hosts will be attached to Model A00, ensure that both ESCON interfaces are verified by the customer.

### Making the Axx to Library Connection

It is necessary to set up the Axx to talk to the library manager. This is done by using the 3590 Service option either from the Service Terminal or EBTERM in the library manager. If you are using EBTERM make sure that this program has been installed in the library manager, (see “Installing EBTERM or Terminal Emulator in a 3494 Library Manager” on page PROC-13) before starting the following procedure.

1. From the main maintenance menu, select **Subsystem Configuration** Refer to Figure 15 on page PANEL-4
2. From the Subsystem Configuration menu, select **Show/Change Vital Product Data**. Refer to “Axx Menu Tree” on page PANEL-4

3. From the Show/Change Vital product menu, select **Show / Change Control Unit Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
4. From the Show / Change Vital product menu, select **Add/Change Control Unit Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
5. From the Add/Change Vital Product menu, select **Library Interface** Select Library Interface and press F4. Refer to "Axx Menu Tree" on page PANEL-4
6. In the pop-up window, change the setting from **/dev/null** to **/dev/tty1** Refer to "Axx Menu Tree" on page PANEL-4

**Notes:**

There is now a connection between the A00 controller and the Library.  
You can exit the maintenance menus by pressing the F10 key.

## 3590 Axx Controller SCSI Cabling

The Axx controller SCSI adapters (slot 1 and 2) cable connections to the SCSI drives are shown in Figure 85

*Figure 85. Controller to Drive SCSI Cable Connections*

SCSI Adapter Slot 1 / Drive Port 0	SCSI Adapter Slot 2 / Drive Port 1
Drive 0 -> Address = 0	Drive 0 -> Address = 6
Drive 1 -> Address = 1	Drive 1 -> Address = 5
Drive 2 -> Address = 2	Drive 2 -> Address = 4
Drive 3 -> Address = 3	Drive 3 -> Address = 3

**Note:** The table shows the maximum number of four (4) 3590 drives, however your subsystem may not have the maximum number. Cable according to the table up to the number of 3590 drives that your subsystem contains.

The diagram shown in Figure 86 on page INST-91 shows how the two SCSI adapters in the Axx Controller are connected to the 3590 drives.

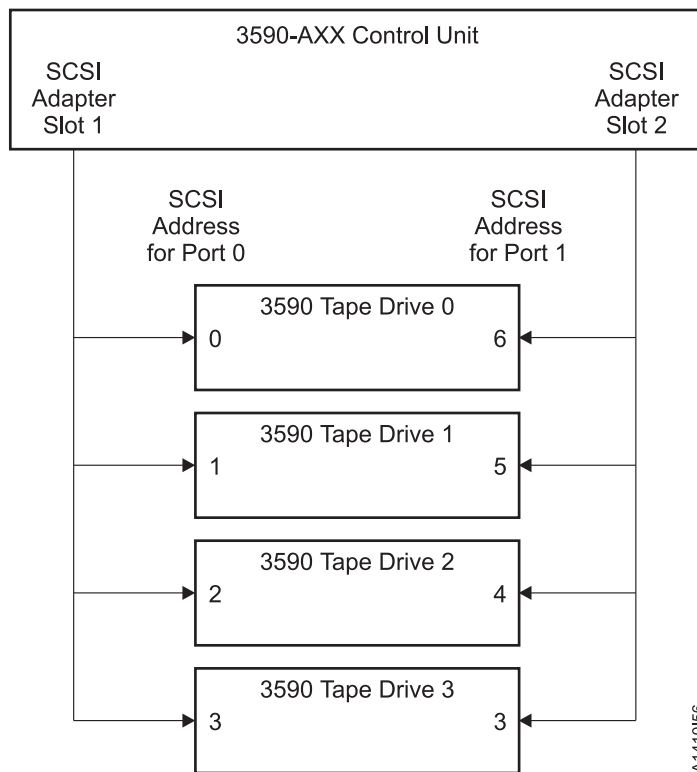


Figure 86. Controller to Drive SCSI Cables



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# Messages

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## Service and Media Information Messages (SIMs and MIMs)

The SIM and MIM functions are a primary factor in the 3590 maintenance plan for improved product availability.

- A SIM alerts the customer when an abnormal operational condition in the 3590 requires service attention. Information in the SIM identifies the affected drive, or the Axx CU, the failing component and the severity of the fault condition, and the expected operational impact of the pending service action. This information helps the user to initiate and expedite appropriate recovery and service procedures so that normal operation is restored with maximum efficiency and minimal disruption.

A SIM contains the machine type, machine serial number, and FID that allows the dispatch of the appropriate service personnel and the replacement parts required to correct the machine fault. This procedure helps improve service response time and helps reduce the time required for machine repair.

Physical location identifiers in the SIM directs the CE to the failing unit in the customers account. The SIM FID code specifies the parts to be replaced and directs the CE to appropriate service procedures. This allows the machine fault to be repaired without first looking in log records and without having to try to recreate the failure with diagnostic procedures. Both of these advantages further contribute to reduced outage durations.

- A MIM identifies problems with the media (tape) and the volume number of the *bad* cartridge. This allows the customer to do maintenance within the tape library and to prevent unnecessary service calls when the fault is media. The MIM contains a Volume Recovery Action, which tells the customer how to fix the broken volume.

The detailed information within SIMs and MIMs is for use by the dispatcher or the CE in the branch office. This individual is responsible for decoding the information and scheduling for service based on data content within the SIM or MIM.

The customer can select, depending on their software, the severities that they wish to see. For example, one customer may only want to see the *Acute* SIM/MIM and another customer may want to see all the SIMs and MIMs that are sent to the host. The 4 severity codes follow:

- Severity 0 (FID4) code means that the device needs service.
- Severity 1 (FID3) code means that the problem is moderate.
- Severity 2 (FID2) code means that the problem is serious.
- Severity 3 (FID1) code means that the problem is acute.

A service message within the SIM also informs the customer what the service impact will be; for example, *impact unknown* disables access to the drive or requires the interface to be disconnected. A MIM specifies what is wrong with the cartridge that is indicated. The 3 MIM severity codes follow:

- Severity 1 indicates moderate *high temporary read/write* errors were detected.
- Severity 2 indicates serious *permanent read/write* errors were detected.
- Severity 3 indicates acute *block 0, cartridge type, or vol label* errors were detected.



---

## Axx SIM/MIM Presentation.

SIM and MIM mapping will show the problem to be either the media, Axx or the 3590 Bxx. The following information will help to point you to which one of the three is at fault.

Byte 6 of format 70 and 71 sense data (Message Code or MC on the host console) will be a F0 for a MIM (media problem), a F1 for a 3590 Axx problem, or a F2 for a 3590 Bxx problem.

In all MIMs the first byte of the Ref Code tells the customer what to do with the bad tape. In format 70, byte 10 is the Ref Code. In format 71, byte 16 is the Ref Code.

MIMs come from the 3590 Bxx drive and the Ref Codes can be mapped to the 3590 Bxx MI. The Ref Code for the MIM at the S390 host is from bytes 0x14-0x15 in the drive MIM. The *IBM 3590 Tape Subsystem Models B11 and B1A Maintenance Information Manual*, Message Section describes the format of the MIM, as well as the meaning of the bytes.

To reach the detailed information concerning any of the open SIMs, use a service terminal or library manager to display the maintenance menus. Select the corresponding line on the service terminal screens that are printed **bold** in the following figures.

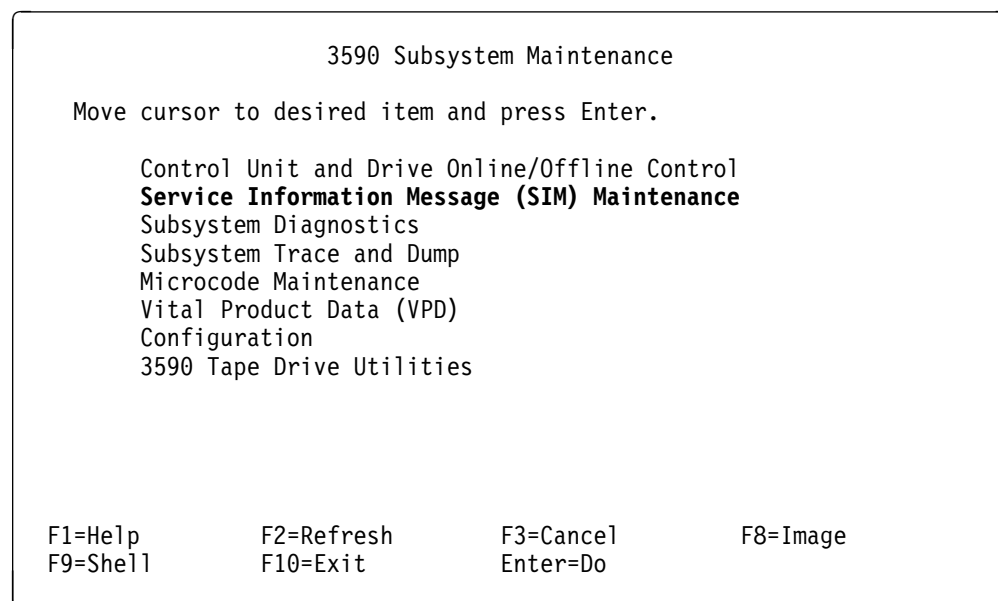


Figure 87. Main 3590 Subsystem Maintenance Screen

### 3590 Service Information Message (SIM) Maintenance

Move cursor to desired item and press Enter.

#### Show List/Detail of an OPEN Control Unit SIM

Change an OPEN Control Unit SIM to CLOSED  
 Show List/Detail of an OPEN Tape Drive SIM  
 Change an OPEN Tape Drive SIM to CLOSED  
 Show List/Detail of any OPEN or CLOSED SIM  
 Show/Change SIM & MIM Severity Reporting Level

F1=Help            F2=Refresh            F3=Cancel            F8=Image  
 F9=Shell           F10=Exit            Enter=Do

Figure 88. SIM Maintenance Screen

#### Show List/Detail of an OPEN Control Unit SIM

Type or select values in entry fields  
 Press Enter After making all desired changes.

[Entry Fields]

Enter two character hex SIM ID

[ ]

```

* * * * *
*      Enter two character hex SIM ID
*
* # SIM
* # ID  TYPE  RefCodes 1 - 3  Status      Last Occurrence
* # ---  ---  -
* 03  CUMDE  E000 701F AA55   OPEN        Jun 25 13:50:28 1996
* 06  CUHU   0000 0093 5121   OPEN        Jun 25 13:56:17 1996
* 07  CHUH   0000 0085 0902   OPEN        Sep  6 19:10:15 1996
* 08  CUHU   0000 0093 5121   OPEN        Jun  6 19:10:07 1996
*
* F1=Help      F2=Refresh      F8=Cancel
F1* F8=Image   F10=Exit       Enter=Do
F5* /=Find     n=Find Next
F9* * * * *
    
```

Figure 89. SIM Summary Log

The information obtained from looking at the SIM/MIM information from the Service Terminal or Library Manager is used in the section "Decoding SIM Refcodes" on page MSG-11. Decoding and using the SIM/MIM information is described there.

The Actual SIM/MIM records sent to the host have a different format and are shown below (See "I/O Subsystem Service Information Message" on page MSG-5, "Media Information Message" on page MSG-8, and "Device Service Information Message" on page MSG-5. MIM records are also sent to the host and will be described in "Media Information Message" on page MSG-8.

## I/O Subsystem Service Information Message

The following text shows the message format for an I/O Subsystem Service Information Message:

msgnum dddd, TCU, type-mod, severity ALERT, SER=mmpp-sssss, MC=mc, ES=es, REF=ref1-ref2-ref3

Where the lower case fields have the following meanings:

<i>Figure 90. ESCON I/O Subsystem Service Information Message</i>	
Message Code Abbreviation	Description
msgnum	Operating System dependent message number
dddd	Device number from subchannel.
severity	Severity from sense byte 9 (0-1)
type-mod	CU Type/Model from sense byte 30
mmpp-sssss	pp=plant of mfg. sssss=sequence no. Decoded from sense bytes 25-29
mc	Message Code from sense byte 6
es	Exception Message Code from sense byte 8 (0-3) and Service Message Code from sense byte 8 (4-7)
ref1-ref2-ref3	Ref Codes 1-3 from sense byte 17-21
<b>Note:</b> Refer to "Decoding SIM Refcodes" on page MSG-11 for more details.	

Example of I/O Subsystem SIM Console Message

07.22.50        \*IEA480E 1B93,TCU,3590-A00,ACUTE ALERT, SER=0113-00018,  
MC=F1,ES=11,REF=E000-3001-0000

## Device Service Information Message

The following text shows the message format for a device Service Information Message Console Message:

msgnum dddd, TAPE, type-mod, severity ALERT, SER=mmpp-sssss, MC=mc, ES=es, REF=ref1-ref2-ref3

Where the lower case fields have the following meanings:

<i>Figure 91. ESCON Device Service Information Message</i>	
Message Code Abbreviation	Description
msgnum	Operating System dependent message number
dddd	Device number from subchannel.
severity	Severity from sense byte 9 (0-1)
type-mod	Dev Type/Model from sense byte 31
mmpp-ssss	pp=plant of mfg. sssss=sequence no. Decoded from sense bytes 25-29
mc	Message Code from sense byte 6
es	Exception Message Code from sense byte 8 (0-3) and Service Message Code from sense byte 8 (4-7)
ref1-ref2-ref3	REF Codes 1-3 from sense byte 17-21
<b>Note:</b> Refer to "Decoding SIM Refcodes" on page MSG-11 for more details.	

# EXAMPLE of Device SIM Console Message

07.19.24            \*IEA480E 1B91,TAPE,3590-B11,ACUTE ALERT, SER=0113-00018,  
MC=F2,ES=77,REF=60E4-3630-3335

Figure 92 and Figure 99 on page MSG-20 provide the meaning of the SIM Sense Bytes:

Figure 92 (Page 1 of 3). Axx SIM Sense Bytes		
0-7 Common Sense Bytes		
Byte	Meaning	
0	Flags 0	
1	Flags 1	
2	<b>Bit</b>	<b>Description</b>
	<b>0-1</b>	Basic Recovery Action (BRAC)
	1	Continue
	2	Reissue
	<b>2-4</b>	Logging Code (LC)
	3	A3
	5	VLF Active
	6	Synchronous Transfer Mode
	7	Medium Positioning
3	Recovery Action code (RAC)	
	<b>C0</b>	Basic Recovery Action (BRA)
4-5	Reason Code (RC) - Reason Qualifier Code (RQC)	
	<b>11-01</b>	I/O-Subsystem SIM
	<b>11-02</b>	Device SIM
6	Message Code (MC)	
	<b>F1</b>	I/O-Subsystem SIM
	<b>F2</b>	Device SIM
7	Sense Format	
	<b>71</b>	SIM Sense

Figure 92 (Page 2 of 3). Axx SIM Sense Bytes

8-22 Format Dependent Sense Bytes			
Byte	I/O-Subsystem SIM Sense (Message Code=F1) Meaning	Device SIM Sense (Message Code=F2) Meaning	
8-9	Message Modifier	Message Modifier	
	<b>Bit</b> <b>Description</b>	<b>Bit</b>	<b>Description</b>
	<b>0-3</b> Exception Message Code	<b>0-3</b>	Exception Message Code
	<b>0</b> Reserved	<b>0</b>	Reserved
	<b>1</b> Effect of failure is unknown	<b>1</b>	Effect of failure is unknown
	<b>2</b> CU Exception - No performance Impact	<b>2</b>	Dev. Exception - No performance Impact
	<b>3-F</b> Reserved	<b>3</b>	Dev. Exception on Interface <i>xx</i>
	<b>4-7</b> Service Message Code	<b>4</b>	Dev. Exception on ACF
	<b>0</b> Reserved	<b>5</b>	Dev. Exception on Operator Panel
	<b>1</b> Repair Impact is unknown	<b>6</b>	Dev. Exception on Tape path
	<b>2</b> Repair will not impact CU performance	<b>7</b>	Dev. Exception in Drive
	<b>3-F</b> Reserved	<b>8</b>	Dev. Preventive Maintenance Required
	<b>8-9</b> Report Severity	<b>9-F</b>	Reserved
	<b>0</b> Service	Where italicized fields are determined as follows:	
	<b>1</b> Moderate	<i>xx</i>	Format 71, byte 10
	<b>2</b> Serious	<b>4-7</b>	Service Message Code
	<b>3</b> Acute	<b>0</b>	Reserved
	<b>10</b> Repeated Report Presentation: set to '1'b if this SIM was previously reported.	<b>1</b>	Repair Impact is unknown
	<b>11</b> Message To Operator (MTO): set to '1'b if this SIM should be reported to the Operator Console.	<b>2-6</b>	Reserved
	<b>12-14</b> Reserved	<b>7</b>	Repair will disable access to Dev.
	<b>15</b> Message Data Flag	<b>8</b>	Repair will disable message display <i>ids</i> on Dev.
		<b>9</b>	Dev. Cleaning Required
		<b>A</b>	Dev. Cleaning Complete
		<b>B-F</b>	Reserved
		<b>8-9</b>	Report Severity
		<b>0</b>	Service
		<b>1</b>	Moderate
		<b>2</b>	Serious
		<b>3</b>	Acute
		<b>10</b>	Repeated Report Presentation: set to '1'b if this SIM was previously reported.
		<b>11</b>	Message To Operator (MTO): set to '1'b if this SIM should be reported to the Operator Console.
		<b>12-14</b>	Reserved
		<b>15</b>	Message Data Flag
10-12	Message Data Reserved, set to X'000000'	<b>Byte</b>	<b>Meaning</b>
		<b>10</b>	Exception Data <i>xx</i>
		<b>11</b>	SIM Message Code
			<b>Value (ASCII) Description</b>
			'00'      No Message
			'41'      Device Degraded - Call for Service
			'42'      Device Hardware Failure - Call for Service
			'43'      Service Circuits Failed, Operations Not Affected - Call for Service
			'55'      Drive Needs Cleaning: Load Cleaning Cartridge
			'57'      Drive Cleaning Complete: Cleaning Cartridge Ejected
		<b>12</b>	Reserved - set to X'00'
13	SIM Identifier  This field contains the same value when a SIM is presented more than once and can be used in interactions with the product during maintenance activities.	SIM Identifier  This field contains the same value when a SIM is presented more than once and can be used in interactions with the product during maintenance activities.	
14-15	Unit Modifier  Microcode EC level.	Unit Modifier  Expert Systems Data from Log Page 31, bytes 16-19. (Drive EC level microcode).	



<i>Figure 92 (Page 3 of 3). Axx SIM Sense Bytes</i>			
16-17	REF Code 1		REF Code 1
<b>Bit</b>	<b>Description</b>	<b>Bit</b>	<b>Description</b>
<b>0-2</b>	SIM Type	<b>0-2</b>	SIM Type
	<b>B'000'</b> Hardware, non-encoded SRN (HDWE)		<b>B'011'</b> Device SIM
	<b>B'001'</b> Hardware, encoded POST error (EPOST) (future)	<b>3-7</b>	Reserved
	<b>B'111'</b> Microcode Detected Error (MDE)	<b>8-15</b>	FRU Identifier (FID)
<b>3-15</b>	Reserved (used for encoded POST errors in future)		
18-19	REF Code 2		REF Code 2
<b>HDWE SIM Type</b>	bits 0-7 are set to X'00' bits 8-15 are set to the first 2 digits of SRN		For Device SIMs, this value will be set to the 1st FSC code reported from the device.
<b>MDE SIM Type</b>	bits 0-15 are set to the CU MDE code		
20-21	REF Code 3		REF Code 3
<b>HDWE SIM Type</b>	bits 0-15 are set to the last 4 digits of SRN		For Device SIMs, this value will be set to the last FSC code reported from the device.
<b>MDE SIM Type</b>	bits 0-15 contain CU MDE supporting data		
22	Reserved		Reserved
<b>23-31 Common Sense Bytes</b>			
<b>Byte</b>	<b>Meaning</b>		
23	Flags 3		
24	Flags 4		
25-26	Product Identifier (MM-PP)		
27-29	Product Sequence Number (SSSSS)		
30	CU/Library Type-Model		
31	Device Type-Model		

## Media Information Message

The following text shows the format for a Media Information Message Console Message:

msgnum, dddd, TVOL, severity ALERT, VOLUME=valid, MC=mc, ES=es, RC=vra-medi-fi

Where the lower case fields have the following meanings:

<i>Figure 93. ESCON Media Information Message Console Message</i>	
Message Code Abbreviation	Description
msgnum	Operation-system dependent message number
dddd	Device number from subchannel.
severity	Severity from sense byte 9 (0-1)
valid	Valid from sense bytes 16-21
mc	Message Code from sense byte 6
es	Exception Message Code from sense byte 8 (0-3)
vra-medi-fi	vra=Volume Recovery Action as defined in 3590 Bxx MI Message Section as MIM Message Code. REF code from sense bytes 10-11, MEDIA ID from sense bytes 12-13, and FORMAT ID from sense byte 22.

## EXAMPLE of MIM Console Message

09.36.07 IEA486E 1B90,TVOL,SERIOUS ALERT,VOLUME= ,MC=F0,  
E=7,RC=6033-0130-23

Figure 94 gives details on the contents of the MIM Sense Bytes:

Figure 94 (Page 1 of 2). Axx MIM Sense Bytes		
0-7 Common Sense Bytes		
Byte	Meaning	
0	Flags 0	
1	Flags 1	
2	<b>Bit</b>	<b>Description</b>
	<b>0-1</b>	Basic Recovery Action (BRAC)
	1	Continue
	2	Reissue
	<b>2-4</b>	Logging Code (LC)
	3	A3
	5	VLF Active
	6	Synchronous Transfer Mode
	7	Medium Positioning
3	Recovery Action code (RAC)	
	<b>C0</b>	Basic Recovery Action (BRA)
4-5	Reason Code (RC) - Reason Qualifier Code (RQC)	
	<b>11-00</b>	MIM
6	Message Code (MC)	
	<b>F0</b>	MIM
7	Sense Format	
	<b>70</b>	MIM Sense
8-22 Format Dependent Sense Bytes		
8-9	Message Modifier	
	<b>Bit</b>	<b>Description</b>
	<b>0-3</b>	Exception Message Code
	<b>0-1</b>	Reserved
	2	Data Degraded
	3	Data Degraded in Partition yyyy
	4	Medium Degraded
	5	Medium Degraded in Partition yyyy
	6	Block 0 Error
	7	Medium Exception
	<b>8-F</b>	Reserved
	Where italicized fields are determined as follows:	
	<i>yyyy</i>	Determined from sense format 70, bytes 14-15
	<b>4-7</b>	Reserved
	<b>8-9</b>	Report Severity
	0	Reserved
	1	Moderate
	2	Serious
	3	Acute
	<b>10</b>	Repeated Report Presentation: set to '1'b if this MIM was previously reported.
	<b>11</b>	Message To Operator (MTO): set to '1'b if this MIM should be reported to the Operator Console.
	<b>12-14</b>	Reserved
	<b>15</b>	Message Data Flag



Figure 94 (Page 2 of 2). Axx MIM Sense Bytes

10	MIM Message Code <b>X'0x60'</b> Bad Media, Cartridge write protected (read only) <b>X'0x61'</b> Rewrite media, data or tape directory degraded <b>X'0x64'</b> Bad media, can not read or write <b>X'0x72'</b> Replace Cleaner Cartridge
11	Engineering Data
12-13	Medium Identifier (MID) <b>X'0120 - 013F'</b> Half Inch Cartridge Tapes
14-15	Medium Partition
16-21	VOLID This field contains the volume id, in EBCDIC, associated with the reported condition. If the VOLID is not known or is not reliable, then this field will contain EBCDIC blanks (X'40').
22	Format Identifier <b>X'23'</b> 16X8 (128) Track
<b>23-31 Common Sense Bytes</b>	
23	Flags 3
24	Flags 4
25-26	Product Identifier (MM-PP)
27-29	Product Serial (SSSSS)
30	CU/Library Type-Model
31	Device Type-Model



---

## Decoding SIM Refcodes

Use this chart to decode the Refcodes bytes extracted from:

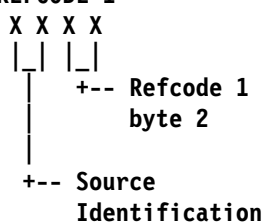
- a host console SIM message
- a SIM sense record from a host EREP report
- the 3590 A00 or A50 SIM log

### Refcode 1, 2, and 3:

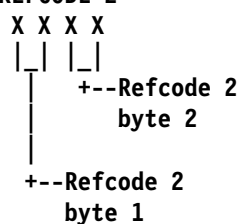
The first digit of Refcode 1 is used to determine the source of the problem that caused the SIM. The remaining digits in Refcode 1, Refcode 2 and Refcode 3 will have different meaning depending on the source of the problem.



#### REFCODE 1



#### REFCODE 2



#### REFCODE 3

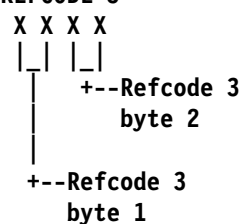


Figure 95. Axx SIM Source Decode

Source Identification Value (HEX)	Explanation
'00'	<p>Control Unit hardware error</p> <p>Refcode 2, byte 2 and Refcode 3, bytes 1 and 2 combine to form the SRN (Service Request Number) that will be used to identify and resolve the 3590 Axx hardware problem. Record this number and return to procedure that sent you here.</p> <p>The diagram below is an example of how to decode the SRN from the Refcode bytes:</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p><b>REFCODE 1</b></p> <p>0 0 0 0</p> <p>   </p> <p>+--+</p> <p>Unused</p> </div> <div style="text-align: center;"> <p><b>REFCODE 2</b></p> <p>X X 8 6</p> <p> </p> <p>+-----+</p> <p>865</p> </div> <div style="text-align: center;"> <p><b>REFCODE 3</b></p> <p>5 5 0 3</p> <p>     </p> <p>+--+</p> <p>503</p> </div> </div> <p style="text-align: center;"><b>SRN = 865-503</b></p>
'40'	<p>Unknown Control Unit hardware error</p> <p>Refcode 2 and Refcode 3 combine to form the AIX error log sequence number of the failure that resulted in this SIM. Record the AIX error log sequence number and return to the procedure that sent you here.</p> <p>The diagram below is an example of how to decode the AIX error log sequence number from the Refcode bytes:</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p><b>REFCODE 1</b></p> <p>4 0 0 0</p> <p>   </p> <p>+--+</p> <p>Unused</p> </div> <div style="text-align: center;"> <p><b>REFCODE 2</b></p> <p>0 0 0 4</p> <p> </p> <p>+-----+</p> <p>045</p> </div> <div style="text-align: center;"> <p><b>REFCODE 3</b></p> <p>5 5 0 3</p> <p>     </p> <p>+--+</p> <p>503</p> </div> </div> <p style="text-align: center;"><b>AIX error log sequence # = 45503</b></p>
'60'	<p>3590 Drive Error</p> <p>Refcode 1, Byte 2 contains the Drive FRU ID (FID) that will be used to direct service on the 3590 drive. Refcodes 2 and 3 contain the first and second Fault Symptom Codes (FSCs) associated with the drive error. Record the FID code and both FSCs and return to the procedure that sent you here.</p> <p>The diagram below is an example of how to decode the FID code and the FSCs from the Refcode Bytes:</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p><b>REFCODE 1</b></p> <p>6 0 D 4</p> <p> </p> <p>FID = D4</p> </div> <div style="text-align: center;"> <p><b>REFCODE 2</b></p> <p>3 6 3 0</p> <p> </p> <p>+--+</p> <p>FSC1 = 3630</p> </div> <div style="text-align: center;"> <p><b>REFCODE 3</b></p> <p>3 3 3 5</p> <p> </p> <p>+--+</p> <p>FSC2 = 3335</p> </div> </div>
'E0'	<p>3590 Axx Microcode detected error:</p> <p>Refcode 2 contains the Microcode Detected Error (MDE) code that will be used to identify the source of the microcode error and Refcode 3 contains supporting data (may be all 0's). Record the MDE code and the data byte and return to the procedure that sent you here.</p> <p>The diagram below is an example of how to decode the MDE code and the data byte from the Refcode Bytes:</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p><b>REFCODE 1</b></p> <p>E 0 0 0</p> <p> </p> <p>+--+</p> <p>Unused</p> </div> <div style="text-align: center;"> <p><b>REFCODE 2</b></p> <p>7 0 3 5</p> <p> </p> <p>+--+</p> <p>MDE = 7035</p> </div> <div style="text-align: center;"> <p><b>REFCODE 3</b></p> <p>0 0 0 0</p> <p> </p> <p>+--+</p> <p>data = 0000</p> </div> </div>

## ES/9000 EREP Reports

An example of SIM and EREP reports are shown below, as well as a table describing the entries.

At the end of the Format 70 Report, is an example of JCL input that will cause the Format 70 and 71 reports shown.

### SIM EREP Report (Format 71)

**1** TAPE SERVICE INFORMATION MESSAGES **2** REPORT DATE 008 99  
**3** PERIOD FROM 363 98  
**4** DEVICE-0860 **5** S/N 0113-07780 **6** DATE-007/99 **7** TIME-12:23:58:70 **8** ID=1F  
**9** \* ACUTE ALERT **10** D/T-UNKNOWN **11** REF1-60B0 **12** REF2-305D **13** REF3-305D **14** UM-2268  
**15** \* DV EXCEPTION IN DRIVE  
**16** \* REPAIR WILL DISABLE ACCESS TO DV

DEVICE-0815 S/N 0113-00094 DATE-007/99 TIME-01:44:53:87 ID=97  
\* ACUTE ALERT D/T-3590-A00 REF1-E000 REF2-30B7 REF3-0000 UM-0913  
\* EFFECT OF FAILURE IS UNKNOWN  
\* REPAIR IMPACT IS UNKNOWN

DEVICE-0860 S/N 0113-07780 DATE-006/99 TIME-08:39:59:40 ID=6C  
\* SERVICE ALERT D/T-3590-A00 REF1-E000 REF2-8083 REF3-0000 UM-0000  
\* CU EXCEPTION - NO PERFORMANCE IMPACT  
\* REPAIR WILL NOT IMPACT CU PERFORMANCE

DEVICE-0864 S/N 0113-03800 DATE-007/99 TIME-08:09:15:67 ID=1B  
\* SERVICE ALERT D/T-3590-B11 REF1-60FF REF2-C559 REF3-C559 UM-160F  
\* DV PREVENTIVE MAINTENANCE COMPLETED  
\* DV CLEANING COMPLETE

DEVICE-0864 S/N 0113-03800 DATE-007/99 TIME-08:11:40:63 ID=19  
\* SERIOUS ALERT D/T-3590-B11 REF1-60F6 REF2-7038 REF3-7038 UM-160F  
\* DV PREVENTIVE MAINTENANCE REQUIRED  
\* SERVICE B

DEVICE-0864 S/N 0113-03800 DATE-006/99 TIME-09:12:29:10 ID=1A  
\* MODERATE ALERT D/T-3590-B11 REF1-60FF REF2-7036 REF3-7036 UM-160F  
\* DV PREVENTIVE MAINTENANCE REQUIRED  
\* CLEAN DV

DEVICE-0864 S/N 0113-03800 DATE-008/99 TIME-01:31:18:13 ID=23  
\* SERIOUS ALERT D/T-3590-A00 REF1-0000 REF2-0089 REF3-0109 UM-0913  
\* EFFECT OF FAILURE IS UNKNOWN  
\* REPAIR IMPACT IS UNKNOWN

DEVICE-0865 S/N 0113-03800 DATE-007/99 TIME-16:51:25:88 ID=21  
 \* ACUTE ALERT D/T-3590-B11 REF1-60E5 REF2-9999 REF3-DECC UM-160F  
 \* DV EXCEPTION IN DRIVE  
 \* REPAIR WILL DISABLE ACCESS TO DV

DEVICE-0866 S/N 0113-03800 DATE-007/99 TIME-13:41:18:85 ID=1F  
 \* SERIOUS ALERT D/T-3590-B11 REF1-6004 REF2-305C REF3-305C UM-17BF  
 \* DV EXCEPTION IN DRIVE  
 \* REPAIR WILL DISABLE ACCESS TO DV

DEVICE-0867 S/N 0113-03800 DATE-007/99 TIME-05:31:00:66 ID=1D  
 \* ACUTE ALERT D/T-3590-B11 REF1-60A8 REF2-0053 REF3-0053 UM-17BF  
 \* DV EXCEPTION IN DRIVE  
 \* REPAIR WILL DISABLE ACCESS TO DV

DEVICE-0892 S/N 0113-DD\*02 DATE-007/99 TIME-03:52:39:74 ID=69  
 \* SERVICE ALERT D/T-3590-B1A REF1-60B9 REF2-311A REF3-311A UM-27BF  
 \* DV EXCEPTION IN DRIVE  
 \* REPAIR WILL DISABLE ACCESS TO DV

DEVICE-1746 S/N 0113-00052 DATE-007/99 TIME-09:45:46:50 ID=0D  
 \* SERIOUS ALERT D/T-3590-B1A REF1-6004 REF2-305C REF3-305C UM-27BF  
 \* DV EXCEPTION IN DRIVE  
 \* REPAIR WILL DISABLE ACCESS TO DV

An explanation of each of the reverse key fields is shown in Figure 96.

Figure 96 (Page 1 of 2). ESCON Service Information Message (SIM) format description

Reverse Keys	Field explanation
<b>1</b>	Type of EREP report - Service Information Messages (SIM)
<b>2</b>	Julian date the report ran
<b>3</b>	Julian date of the earliest record
<b>4</b>	The 4 hex digits of the control unit address
<b>5</b>	Plant of manufacture and the machine sequence number
<b>6</b>	Date of failure ddd yy
<b>7</b>	Time of failure hh:mm:ss:.01
<b>8</b>	SIM identifier. Contains the same value when presented more than once
<b>9</b>	Severity: Moderate, Serious, Acute or Service
<b>10</b>	Machine type and model number
<b>11</b>	Reference code 1 from bytes 16 and 17 in format 71 sense. See note.
<b>12</b>	Reference code 2 from bytes 18 and 19 in format 71 sense. See note.
<b>13</b>	Reference code three from bytes 20 and 21 in format 71 sense. See note.
<b>14</b>	Unit modifier for Expert System Data from bytes 14 and 15
<b>15</b>	Exception Message from byte 8, bits 0-3

Figure 96 (Page 2 of 2). ESCON Service Information Message (SIM) format description

Reverse Keys	Field explanation
16	Service Message from byte 8, bits 4-7
<b>Note:</b> Refer to the MSG section starting with “Service and Media Information Messages (SIMs and MIMs)” on page MSG-2 for detailed definitions.	

## MIM EREP Report (Format 70)

**1**  
TAPE MEDIA INFORMATION MESSAGES

**2**  
REPORT DATE 008 99  
**3**  
PERIOD FROM 363 98  
TO 008 99

\*\*\*\*\*

**4** VOLUME-CON007 **5** DEVICE-1746 **6** DATE-006/99 **7** TIME-07:35:16:89  
**8** \* D/T-3590-B1A **9** S/N 0113-00052  
**10** \* MODERATE ALERT **11** REFCODE-6157 **12** MEDIA IDENTIFIER-0130 **13** FORMAT IDENTIFIER-23  
**14** \* DATA DEGRADED  
**14** \* REFERENCE MEDIA MAINTENANCE PROCEDURE 57

VOLUME-CS5643 DEVICE-0816 DATE-006/99 TIME-09:52:09:64  
\* D/T-3590-B1A S/N 0113-00094  
\* MODERATE ALERT REFCODE-6103 MEDIA IDENTIFIER-0002 FORMAT IDENTIFIER-01  
\* MEDIUM EXCEPTION  
\* REFERENCE MEDIA MAINTENANCE PROCEDURE 03

VOLUME-CON007 DEVICE-1741 DATE-007/99 TIME-08:39:17:01  
\* D/T-3590-B1A S/N 0113-00053  
\* MODERATE ALERT REFCODE-6157 MEDIA IDENTIFIER-0130 FORMAT IDENTIFIER-23  
\* DATA DEGRADED  
\* REFERENCE MEDIA MAINTENANCE PROCEDURE 57

VOLUME-CON069 DEVICE-174B DATE-007/99 TIME-13:48:28:76  
\* D/T-3590-B1A S/N 0113-00067  
\* MODERATE ALERT REFCODE-6155 MEDIA IDENTIFIER-0130 FORMAT IDENTIFIER-23  
\* BLOCK 0 ERROR  
\* REFERENCE MEDIA MAINTENANCE PROCEDURE 55

VOLUME-CON069 DEVICE-174B DATE-007/99 TIME-13:48:30:52  
\* D/T-3590-B1A S/N 0113-00067  
\* MODERATE ALERT REFCODE-6157 MEDIA IDENTIFIER-0130 FORMAT IDENTIFIER-23  
\* DATA DEGRADED  
\* REFERENCE MEDIA MAINTENANCE PROCEDURE 57

\*\*\*\*\*

An explanation of each of the reverse key fields is shown in Figure 97.

Figure 97 (Page 1 of 2). ESCON Media Information Message (MIM) Format Description

Reverse Keys	Field explanation
<b>1</b>	Type of report - Media Information Messages (MIM)

Figure 97 (Page 2 of 2). ESCON Media Information Message (MIM) Format Description

Reverse Keys	Field explanation
<b>2</b>	Julian date the report ran
<b>3</b>	Julian date of the earliest record and latest record
<b>4</b>	The VOLID from bytes 16 - 21 in format 70 sense
<b>5</b>	The 3590 drive the tape was on when the failure occurred
<b>6</b>	Julian date that the MIM was sent to the host
<b>7</b>	Time that the failure occurred
<b>8</b>	Device type
<b>9</b>	Machine sequence number
<b>10</b>	Severity: High number of <b>temporary R/W errors</b> , Serious <b>permanent R/W errors</b> , or <b>Acute block 0, cartridge type, or volume level errors</b> were detected R/W errors,
<b>11</b>	Reference code taken from bytes 10 and 11 of format 70 sense. Byte 10 is the MIM Message Code.
<b>12</b>	Media identifier taken from bytes 12 and 13 of format 70 sense indicates the type of media, i.e. 0130 is 3590 standard length.
<b>13</b>	Format identifier taken from byte 22 of format 70 sense, 23 is 3590 128 track format.
<b>14</b>	Informational message for problem correction

MSG

## JCL for Formating and Printing Formats 70 and 71

```
//EREP3590 JOB MSGLEVEL=(1,1),MSGCLASS=H,PERFORM=7,CLASS=B
/*JOBPARM SYSAFF=*
//STEP1 EXEC PGM=IFCEREP1,REGION=4096K,PARM='CARD'
//SYSABEND DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//EREPTT DD SYSOUT=*,DCB=BLKSIZE=133
//TOURIST DD SYSOUT=*,DCB=BLKSIZE=133
//DIRECTWK DD UNIT=SYSDA,SPACE=(CYL,50,,CONTIG)
//SERLOG DD DUMMY
//ACCIN DD DSN=SYSDOC.LOGREC(0),DISP=SHR
//SYSIN DD *
  SYSEXN
  HIST
  ACC=N
  TABSIZE=512K
  DEV=(3590)
ENDPARM
//
```

## JES2 Job Log

```

1
JES2 JOB LOG -- SYSTEM 91AA -- NODE 2

22.32.31 JOB01383 IRR010I USERID 3 PFE IS ASSIGNED TO THIS JOB.
22.32.32 JOB01383 ICH70001I PFE 4 LAST ACCESS AT 16:28:39 ON FRIDAY DECEMBER 13, 1996
22.32.32 JOB01383 $HASP373 LB1EA2 5 STARTED - INIT D - CLASS A - SYS 91AA
22.32.32 JOB01383 *IEF233A M OEA2,DA4898,,LB1EA2,WRITEIT 6
22.32.32 JOB01383 IOS000I OEA2,28,I02,1F,0600,,**,DA4898,LB1EA2 7
024410C050305650000 001FFF0000000000 0331003529333690 43042300 8
9
0 POSITIONING LOST
22.33.56 JOB01383 *IEC513D I/O ERR OEA2,DA4898,SL,LB1EA2,WRITEIT 10
22.33.56 JOB01383 *83 IEC513D REPLY 'U' -ABEND OR 'M' -MOUNT SCRATCH 11
```

An explanation of each of the reverse key fields is shown in Figure 98.

Figure 98 (Page 1 of 2). ESCON JES2 Job Log Format Description	
Reverse Keys	Field explanation
<b>1</b>	Type of report - JES2 Job Log
<b>2</b>	System path job was run on.
<b>3</b>	User ID assigned to this job.
<b>4</b>	Last time this User ID had access to this system.



Figure 98 (Page 2 of 2). ESCON JES2 Job Log Format Description	
Reverse Keys	Field explanation
<b>5</b>	Job start information.
<b>6</b>	Mount message for VOLID DA4898 on Drive EA2
<b>7</b>	IOS000I is the error message with sense
<b>8</b>	The sense data associated with <b>7</b>
<b>9</b>	Describes the error
<b>10</b>	The drive address and VOLID that failed. e.g., Drive EA2, Valid DA4898
<b>11</b>	Operator recovery message

## Event History Log

EVENT HISTORY (S/370XA)



```

      TIME      JOBNAME RECTYP CP CUA DEVT  CMD CSW  SENSE  04  06  08  10
                                *  DNO  CRW  CHP   SCSW                      ESW

DATE  338 96

14 17 51 40 LB1EA0  OBRPRM  00 0EA0 3590 2F 02 0600 004810C0 50305650 0002FF00
0
14 17 51 88   N/A   MDR      01 0EA0 3590 28
14 19 11 69 LAB1EA0 OBRPRM  01 0EA0 3590 2F 02 0600 004810C0 50305650 0002FF00
14 19 12 76   N/A   MDR      01 0EA0 3590 2F
14 25 05 30 LAB1EA0 OBRPRM  00 0EA0 3590 2F 02 0600 004810C0 50305650 0002FF00
0
004810C0 50215751 002FF00 00000000 03310036 01333D90 43042300 00901011
08 46 00 62   N/A   MDR      01 0E71 3590 2F
08 47 06 49   N/A   MDR      01 0E71 3590 2F
08 48 05 30 LB4E71  OBRPRM  01 0E71 3590 2F 02 0600 084910D0 50215751
0
084910D0 50215751 0002FF00 00000000 00000000 00000090 41042300 00091011

```

\*\*\*\*\*

See *Environmental Record Editing and Printing Program (EREP) User's Guide and Reference* (GC-28-1378) for more detailed information on Event History Log.

## ES/9000 EREP Reports for ERA 48

Figure 99 on page MSG-20 provides the meaning of the SIM Sense Bytes:

Figure 99 (Page 1 of 3). RS/6000 SIM Sense Bytes		
0-7 Common Sense Bytes		
Byte	Meaning	
0	Flags 0	
1	Flags 1	
2	<b>Bit</b>	<b>Description</b>
	<b>0-1</b>	Basic Recovery Action (BRAC)
	<b>1</b>	Continue
	<b>2</b>	Reissue
	<b>2-4</b>	Logging Code (LC)
	<b>3</b>	A3
	<b>5</b>	VLF Active
	<b>6</b>	Synchronous Transfer Mode
	<b>7</b>	Medium Positioning
3	Error Recovery Action (ERA)	
	<b>48</b>	Unsolicited Informational Data
4-5	Reason Code (RC) - Reason Qualifier Code (RQC)	
	<b>11-01</b>	I/O-Subsystem SIM
	<b>11-02</b>	Device SIM
6	Message Code (MC)	
	<b>F1</b>	I/O-Subsystem SIM
	<b>F2</b>	Device SIM
7	Sense Format	
	<b>71</b>	SIM Sense

Figure 99 (Page 2 of 3). RS/6000 SIM Sense Bytes

8-22 Format Dependent Sense Bytes			
Byte	I/O-Subsystem SIM Sense (Message Code=F1) Meaning	Device SIM Sense (Message Code=F2) Meaning	
8-9	Message Modifier	Message Modifier	
	<b>Bit</b> <b>Description</b>	<b>Bit</b>	<b>Description</b>
	<b>0-3</b> Exception Message Code	<b>0-3</b>	Exception Message Code
	<b>0</b> Reserved	<b>0</b>	Reserved
	<b>1</b> Effect of failure is unknown	<b>1</b>	Effect of failure is unknown
	<b>2</b> CU Exception - No Performance Impact	<b>2</b>	DV Exception - No performance Impact
	<b>3-F</b> Reserved	<b>3</b>	DV Exception on Interface <i>xx</i>
	<b>4-7</b> Service Message Code	<b>4</b>	DV Exception on ACF
	<b>0</b> Reserved	<b>5</b>	DV Exception on Operator Panel
	<b>1</b> Repair Impact is unknown	<b>6</b>	DV Exception on Tape path
	<b>2</b> Repair will not impact CU performance	<b>7</b>	DV Exception in Drive
	<b>3-F</b> Reserved	<b>8</b>	DV Preventive Maintenance Required
	<b>8-9</b> Report Severity	<b>9-F</b>	Reserved
	<b>0</b> Service	Where italicized fields are determined as follows:	
	<b>1</b> Moderate	<b>xx</b>	Format 71, byte 10
	<b>2</b> Serious	<b>4-7</b>	Service Message Code
	<b>3</b> Acute	<b>0</b>	Reserved
	<b>10</b> Repeated Report Presentation: set to '1'b if this SIM was previously reported.	<b>1</b>	Repair Impact is unknown
	<b>11</b> Message To Operator (MTO): set to '1'b if this SIM should be reported to the Operator Console.	<b>2-6</b>	Reserved
	<b>12-14</b> Reserved	<b>7</b>	Repair will disable access to DV
	<b>15</b> Message Data Flag	<b>8</b>	Repair will disable message display <i>ids</i> on DV
		<b>9</b>	DV Cleaning Required
		<b>A</b>	DV Cleaning Complete
		<b>B-F</b>	Reserved
		<b>8-9</b>	Report Severity
		<b>0</b>	Service
		<b>1</b>	Moderate
		<b>2</b>	Serious
		<b>3</b>	Acute
		<b>10</b>	Repeated Report Presentation: set to '1'b if this SIM was previously reported.
		<b>11</b>	Message To Operator (MTO): set to '1'b if this SIM should be reported to the Operator Console.
		<b>12-14</b>	Reserved
		<b>15</b>	Message Data Flag
10-12	Message Data Reserved, set to X'000000'	<b>Byte</b>	<b>Meaning</b>
		<b>10</b>	Exception Data <i>xx</i>
		<b>11</b>	SIM Message Code
			<b>Value (ASCII) Description</b>
			'00'      No Message
			'41'      Device Degraded - Call for Service
			'42'      Device Hardware Failure - Call for Service
			'43'      Service Circuits Failed, Operations Not Affected - Call for Service
			'55'      Drive Needs Cleaning: Load Cleaning Cartridge
			'57'      Drive Cleaning Complete: Cleaning Cartridge Ejected
		<b>12</b>	Reserved - set to X'00'
13	SIM Identifier  This field contains the same value when a SIM is presented more than once and can be used in interactions with the product during maintenance activities.	SIM Identifier  This field contains the same value when a SIM is presented more than once and can be used in interactions with the product during maintenance activities.	
14-15	Unit Modifier  Microcode EC level	Unit Modifier  Expert Systems Data from Log Page 31, bytes 16-19 (ASCII->HEX) (Drive microcode EC level).	

MSG

<i>Figure 99 (Page 3 of 3). RS/6000 SIM Sense Bytes</i>			
16-17	REF Code 1		REF Code 1
	<b>Bit</b>	<b>Description</b>	<b>Bit</b> <b>Description</b>
	<b>0-2</b>	SIM Type	<b>0-2</b> SIM Type
		<b>B'000'</b> Hardware, non-encoded SRN (HDWE)	<b>B'011'</b> Device SIM
		<b>B'001'</b> Hardware, encoded POST error (EPOST) (future)	<b>3-7</b> Reserved
		<b>B'111'</b> Microcode Detected Error (MDE)	<b>8-15</b> FRU Identifier (FID)
	<b>3-15</b>	Reserved (used for encoded POST errors in future)	
18-19	REF Code 2		REF Code 2
	<b>HDWE SIM Type</b>	bits 0-7 are set to X'00' bits 8-15 are set to the first 2 digits of SRN	For Device SIMs, this value will be set to the 1st FSC code reported from the device.
	<b>MDE SIM Type</b>	bits 0-15 are set to the CU MDE code	
20-21	REF Code 3		REF Code 3
	<b>HDWE SIM Type</b>	bits 0-15 are set to the last 4 digits of SRN	For Device SIMs, this value will be set to the last FSC code reported from the device.
	<b>MDE SIM Type</b>	bits 0-15 contain CU MDE supporting data	
22	Reserved		Reserved
<b>23-31 Common Sense Bytes</b>			
<b>Byte</b>	<b>Meaning</b>		
23	Flags 3		
24	Flags 4		
25-26	Product Identifier (MM-PP) MM + Plant of Mfr.		
27-29	Product Sequence Number (SSSSS)		
30	CU/Library Type-Model		
31	Device Type-Model		

Figure 100 gives details on the contents of the MIM Sense Bytes:

Figure 100 (Page 1 of 2). RS/6000 MIM Sense Bytes		
0-7 Common Sense Bytes		
Byte	Meaning	
0	Flags 0	
1	Flags 1	
2	<b>Bit</b>	<b>Description</b>
	<b>0-1</b>	Basic Recovery Action (BRAC)
	<b>1</b>	Continue
	<b>2</b>	Reissue
	<b>2-4</b>	Logging Code (LC)
	<b>3</b>	A3
	<b>5</b>	VLF Active
	<b>6</b>	Synchronous Transfer Mode
	<b>7</b>	Medium Positioning
3	Error Recovery Action (ERA)	
	<b>48</b>	Unsolicited Informational Data
4-5	Reason Code (RC) - Reason Qualifier Code (RQC)	
	<b>11-00</b>	MIM
6	Message Code (MC)	
	<b>F0</b>	MIM
7	Sense Format	
	<b>70</b>	MIM Sense
8-22 Format Dependent Sense Bytes		

Figure 100 (Page 2 of 2). RS/6000 MIM Sense Bytes

8-9	Message Modifier
<b>Bit</b>	<b>Description</b>
<b>0-3</b>	Exception Message Code
<b>0-1</b>	Reserved
<b>2</b>	Data Degraded
<b>3</b>	Data Degraded in Partition yyyy
<b>4</b>	Medium Degraded
<b>5</b>	Medium Degraded in Partition yyyy
<b>6</b>	Block 0 Error
<b>7</b>	Medium Exception
<b>8-F</b>	Reserved
	Where italicized fields are determined as follows:
<i>yyyy</i>	Determined from sense format 70, bytes 14-15
<b>4-7</b>	Reserved
<b>8-9</b>	Report Severity
<b>0</b>	Reserved
<b>1</b>	Moderate
<b>2</b>	Serious
<b>3</b>	Acute
<b>10</b>	Repeated Report Presentation: set to '1'b if this MIM was previously reported.
<b>11</b>	Message To Operator (MTO): set to '1'b if this MIM should be reported to the Operator Console.
<b>12-14</b>	Reserved
<b>15</b>	Message Data Flag
10-11	REF Code
12-13	Medium Identifier (MID)
	<b>X'0120 - 013F'</b> Half Inch Cartridge Tapes
14-15	Medium Partition
16-21	VOLID
	This field contains the volume id, in EBCDIC, associated with the reported condition. If the VOLID is not known or is not reliable, then this field will contain EBCDIC blanks (X'40').
22	Format Identifier
<b>X'23'</b>	16X8 (128) Track
<b>23-31 Common Sense Bytes</b>	
23	Flags 3
24	Flags 4
25-26	Product Identifier (MM-PP)
27-29	Product Serial (SSSSS)
30	CU/Library Type-Model
31	Device Type-Model

## ERRPT Error Log for ES/9000 Machine Check

See Figure 101 for an example of a Data Cache Parity Error. The **Machine Status Save/Restore Register 1 (SRR1)** indicates the following types of machine checks:

- 0000 0000 0020 0000 - Instruction Cache Parity Error
- 0000 0000 0010 0000 - Data Cache Parity Error
- 0000 0000 0008 0000 - External Machine Check
- 0000 0000 0004 0000 - Transfer Error Acknowledge (TEA)
- 0000 0000 0002 0000 - Data Bus Parity Error
- 0000 0000 0001 0000 - Address Bus Parity Error

```
-----  
LABEL:          MACHINE_CHECK_LOG  
IDENTIFIER:      DF64C49A  
  
Date/Time:       Thu Dec 10 11:48:58  
Sequence Number: 18053  
Machine Id:      001354764C00  
Node Id:         localhost  
Class:          H  
Type:           PERM  
Resource Name:   MACHCHECK  
Resource Class:  NONE  
Resource Type:   NONE  
Location:        NONE  
  
Description  
MACHINE CHECK  
  
Failure Causes  
MACHINE CHECK  
  
Recommended Actions  
RUN SYSTEM DIAGNOSTICS.  
  
Detail Data  
MACHINE STATUS SAVE/RESTORE REGISTER 0  
0000 0000 D004 2930  
MACHINE STATUS SAVE/RESTORE REGISTER 1  
0000 0000 0010 D030  
MACHINE CHECK LOG  
0194 1000 0000 0028 C600 8100 366F FB7A 0000 0000 4000 0000 0000 0000 0000 0000  
0000 0000 0000 0000 0000 0000 0000 0000 1000 0601 8020 2701 A500 52B8 0000 0000  
0076 2000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000  
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000  
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000  
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000  
0000 0000 0000 0000
```

Figure 101. Sample ES/9000 Machine Check

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# Common Procedures

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The  symbol identifies an ESD-sensitive part.

## End of Call

Figure 102. End of Call Table for all 3590 Models

3590 Models	Procedure
3590 Axx Control Unit Problem	Close SIMs at the Control Unit, See “3590 A00 or A50: View SIMs in the 3590 CU SIM Log:” on page PROC-30  <b>Note:</b> Ensure that the RS/6000 is in the NORMAL position
3590 Models B11 and B1A attached to a A00 or A50 Control Unit	Close SIMs at the Control Unit, See “3590 A00 or A50: View SIMs in the 3590 CU SIM Log:” on page PROC-30

## Installing AIX in the A00 Controller Environment

The following steps should be performed in the order indicated:

1. Attach Service Terminal to Service Panel connector (see “Getting Started” on page PANEL-2).
2. Power on or reset the Control Unit so that installation media may be inserted.

- **If the Control Unit is already on:**

- a. Turn mode switch to the Service position (wrench icon).

**Note:** The **MODE SWITCH** is located on the front panel of the A00 Controller. The A00 Controller may have a plastic door which needs to be swung open to expose the panel. In all but the earliest units, the switch appears to be a keylock, but actually requires no key to turn the switch. Use a coin as a key.

- b. Depress and release the yellow front-panel reset button **TWICE** in succession.
- c. Turn mode switch immediately to Secure position (padlock icon).

- **If Control Unit is off:**

- a. Turn mode switch to the Secure position (padlock icon).
- b. Power on the A00 Controller.

3. Wait until 3 digit LED reads '200'.
4. Insert AIX 4.X CD-ROM media into CD-ROM drive.
  - a. Press CD Eject button (wide blue button).
  - b. Pull out clips on CD tray to prevent media from falling.
  - c. Insert media into tray under clips.
  - d. Close tray door by pressing the Eject button again.
5. Insert 3595-A00 Microcode Diskette 1 into floppy drive.

**Note:** If your A00 has Ultra drive/s, the minimum code level for the A00 is **1.9.20.0**. If this level or higher is not installed the operation of Magstar Ultra drives may be affected.

There will be **Two** Microcode Diskettes provided when drive microcode is ordered or sent with product. One diskette labeled D0IB for Magstar Ultra drives and one labeled D0I9 or A for



| Base 3590 drives. Each diskette code image is to be copied to the controller Hard drive to  
| ensure both levels of 3590 drives have code available for loading.

6. Turn mode switch to Service (wrench icon).
7. AIX will now automatically install over the next 15 minutes. Progress can be monitored with the front panel LED's and/or the Service Terminal.
8. The conclusion of AIX Install is shown by an LED code of 'c58'. The Service Terminal will prompt you to turn the mode switch to Normal (OK icon), and will wait for terminal input (Enter key) before continuing.  
  
**Note:** Prior to the 'c58' LED indication, the Service Terminal may indicate that the mode switch can be turned to Normal. Doing so will bypass the wait for Service Terminal input at this step, and automatically continue to the next step.
9. The RS/6000 will not re-IPL. Wait for '3590 SERVICE TERMINAL' screen to appear on the terminal.
10. The initial application code may be installed by entering the service menus and following the directions presented.

**Notes:**

1. If the frame does not have a **BULKHEAD CONSOLE CONNECTOR**, or if the RS/6000 has been removed from the frame, the Service Terminal can be cabled directly to the connector marked 'S' at the rear of the RS/6000. A null-modem serial cable or equivalent assembly is required.
2. The 3 digit LED display is also located on the front panel of the RS/6000. To decode values that appear during IML or AIX installation, refer to either the 7009 Operator's Guide or the START section of the 7009 Maintenance Information Manual.

**ATTENTION:** If you are updating the microcode in a A00 that is part of a 3494 subsystem, you must make sure that the VPD has been set up to make the connection between the A00 and the Library. This can be done as follows:

1. From the main maintenance menu, select **Subsystem Configuration** Refer to Figure 15 on page PANEL-4
2. From the Subsystem Configuration menu, select **Show/Change Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
3. From the Show/Change Vital product menu, select **Show / Change Control Unit Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
4. From the Show / Change Vital product menu, select **Add/Change Control Unit Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
5. From the Add/Change Vital Product menu, select **Library Interface** Select Library Interface and press F4. Refer to "Axx Menu Tree" on page PANEL-4
6. In the pop-up window, change the setting from **/dev/null** to **/dev/tty1** Refer to "Axx Menu Tree" on page PANEL-4

**Notes:**

There is now a connection between the A00 and the Library. You can exit the maintenance menus by pressing the F10 key.

**Notes:**

In 3494 Library configurations you need to repeat the code/copy activation for each A00 in the library. Refer to Figure 36 on page INST-31. You will need to move the MoST.LM cable **with** NULL modem to each CU and repeat Copy/Activation for each CU in the Library.

---

## Installing AIX in the A50 Control Unit Environment

The following steps should be performed in the order indicated:

1. If Control Unit is off: If power is already on skip to step 2

- a. Power on the A50 to open the CD-ROM drive to install the media.

**Note:** Let the A50 complete the power on process before continuing to step 2

2. Insert AIX 4.2.1 (or later) CD-ROM media (1 of 2) into CD-ROM drive.

- a. Press CD Eject button (wide blue button).
- b. Insert media into tray.
- c. Close tray door by pressing the Eject button again.

**Note:** If your A50 has Magstar Ultra drive/s, the minimum code level for the A50 is **1.9.20.0**. If this level or higher is not installed the operation of Magstar Ultra drives may be affected.

There will be **Two** Microcode Diskettes provided when drive microcode is ordered or sent with product. One diskette labeled D0IB for Magstar Ultra drives and one labeled D0I9 or A for Base 3590 drives. Each diskette code image is to be copied to the controller Hard drive to ensure both levels of 3590 drives have code available for loading.

3. Insert 3595-A50 Microcode Diskette 1 into floppy drive.

4. Attach Service Terminal to Service Panel see "Getting Started" on page PANEL-2

5. If the Control Unit is already on:

- a. Use the Service Menus to select the Control Unit shutdown and Restart Menu. "Shutting Down the A00 or the A50 Controller" on page PROC-32
- b. At the Control Unit Shutdown and Restart Menu select the Restart AIX and Control Unit Microcode function.

**Note:** If for some reason you are unable to get to the Service Menus, press the **yellow reset** button **twice** in succession.

- c. Look at the Service terminal Display. If the display shows a \*, press the **yellow reset** button **twice** in succession.

- d. If the \* has not appeared, continue to the next step.

**Note:** During the Restart, Connection to the Service Terminal will be lost. Re-connect **IMMEDIATELY** to be ready for the next step.

6. Wait for the display shown in Figure 103 on page PROC-5 to appear.

7. After the message appears, press **5** on the Service Terminal keyboard to instruct that AIX is to be loaded from the CD in the CD-ROM drive.

**Note:** If the screen shown in Figure 104 on page PROC-5, comes up on the Service Terminal before entering the **5** on the Service Terminal keyboard, you will have to start from the beginning of the procedure.

[illegible]

## Memory

## Keyboard

SCSI

Figure 103. First Screen Shown After Reset or Power On

[illegible]

Figure 104. Second Screen Shown from Reset or Power On

**Note:** If this screen is shown, see Figure 104 before entering the **5** on the Service Terminal keyboard, you will have to start from the beginning of the procedure.

8. AIX will now automatically be loaded into the RISC from the CD. Progress can be monitored with the front panel LED's.
9. At completion of loading the AIX code, the RS/6000 will now re-IPL.

**Note:** During the re-IPL, connection to the Service Terminal will be lost. Re-connect **IMMEDIATELY** to be ready for the next step.

10. Wait for '3590 SERVICE TERMINAL' screen to appear on the terminal.
11. Enter Service at the command line.
12. AIX will now be installed from the code loaded prior to the re-boot. This will take about 15 minutes. The progress can be monitored at the Service Terminal or the LED's on the RISC.
13. The screens shown in Figure 103 on page PROC-5 and Figure 104 on page PROC-5 will be displayed again during the re-boot. **DO NOT** enter anything in the Service Terminal until you are requested to load the next Microcode diskette. This process can take up to 15 minutes.
14. After loading the requested additional microcode disketts, the microcode application code has been loaded in the RISC successfully. Follow the directions carefully that is presented on the Service Terminal to completion.
15. At completion you will be shown a screen on the Service Terminal that shows the code level of AIX and the microcode and the date and time installed. Read this carefully and ensure that you did in fact update the AIX code and microcode as planned.

**Notes:**

1. If the frame does not have a **BULKHEAD CONSOLE CONNECTOR**, or if the RS/6000 has been removed from the frame, the Service Terminal can be cabled directly to the connector marked 'S' at the rear of the RS/6000. A null-modem serial cable or equivalent assembly is required.
2. The 3 digit LED display is also located on the front panel of the RS/6000. To decode values that appear during IML or AIX installation, refer to the Models 140 and 240 User's Guide, SA38-0511 or the START section of the Models 140 and 240 Service Guide, SA38-0512.

**ATTENTION:** If you are updating the microcode in a A50 that is part of a 3494 subsystem, you must make sure that the VPD has been set up to make the connection between the A50 and the Library. This can be done as follows:

1. From the main maintenance menu, select **Subsystem Configuration** Refer to Figure 15 on page PANEL-4
2. From the Subsystem Configuration menu, select **Show/Change Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
3. From the Show/Change Vital product menu, select **Show / Change Control Unit Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
4. From the Show / Change Vital product menu, select **Add/Change Control Unit Vital Product Data**. Refer to "Axx Menu Tree" on page PANEL-4
5. From the Add/Change Vital Product menu, select **Library Interface** Select Library Interface and press F4. Refer to "Axx Menu Tree" on page PANEL-4
6. In the pop-up window, change the setting from **/dev/null** to **/dev/tty1** Refer to "Axx Menu Tree" on page PANEL-4

**Notes:**

There is now a connection between the A50 and the Library. You can exit the maintenance menus by pressing the F10 key.

**Notes:**

In 3494 Library configurations you need to repeat the code/copy activation for each A50 in the library. Refer to Figure 36 on page INST-31. You will need to move the MoST.LM cable **with** NULL modem to each CU and repeat Copy/Activation for each CU in the Library.

## 3590 Axx Subsystem Microcode Addition or Activation

### Adding new Code Images to the A00/A50 Subsystem

**Note:** If your Axx has Magstar Ultra drive/s, the minimum code level for the Axx is **1.9.20.0**. If this level or higher is not installed the operation of Magstar Ultra drives may be affected. A minimum controller code level is required, for Axx, when an Magstar Ultra drive is attached to, or added to, an existing Base 3590 drive configuration. Failure to install the prerequisite controller code, **1.9.20.0 or higher**, can result in improper operation of any Ultra drives attached to the Axx subsystem.

There will be **Two** Microcode Diskettes provided when drive microcode is ordered or sent with product. One diskette labeled D0IB for Magstar Ultra drives and one labeled D0I9 or A for Base 3590 drives. Each diskette code image is to be copied to the controller Hard drive to ensure both levels of 3590 drives have code available for loading.

To identify which drives are installed see Figure 105

Figure 105. Magstar UltraDrive Code versus Base 3590

Parameter	Magstar Ultra 3590	Base 3590
Rear Cover Label	1"x2" Magstar Ultra label on rear cover, near drive power switch.	S/N label only.
Op Panel Display	The word <b>ULTRA</b> is displayed, upper right corner of display.	
From Drive panel Select <b>Microcode Level.</b>	Magstar Ultra drive code will be displayed as D0IB_XXX.	Base 3590 drive code will be D0I9_xxx or D0IA_XXX.

## Activate 3590-Bxx Tape Drive Microcode

The following procedure requires that the 3590-Bxx code image be stored on the RS/6000 hard disk. If the image you need is not stored in the RS/6000, you must add the code image to the hard drive.

1. There are two 3590 hardware EC's available, **Base 3590 drives**, and **Magstar Ultra drives**.

- Each drive hardware type has its' own drive code:

D0I9\_XXX = Base Drives

D0IA\_XXX = Base Drives

D0IB\_XXX = Magstar Ultra Drives **CAUTION:**

**The Base code levels are not compatible to Magstar Ultra drives and vise versa. If your Axx subsystem has both drive types you must load code from diskettes supplied for each type. If you have not identified the type of drive/s installed on your subsystem see Figure 105 Return here when drives have been identified.**

The following procedures need to be followed to add new microcode to become one of the two microcode levels that is stored within the Axx.

**Note:** If two prior levels have already been installed on the control unit via this process, one of them will have to be deleted before a new level can be copied. To delete an existing copy from the 3590 Subsystem, return to the **Microcode Maintenance** screen and select Delete Code

Image. Follow the process for activating a code image (see “Adding new Code Images to the A00/A50”) for the code load deletion.

- a. Assure all drives are powered/cabled and on line to port 0. Using either the Service Terminal or the LM. Enter **Service** and select **Microcode Maintenance**.
- b. Select **Copy Code Image From Diskette**. Select **Copy 3590 Subsystem Code from Diskette**,
- c. Insert code diskettes as requested.
- d. Remove last diskette and depress **Enter**

Return to “Adding new Code Images to the A00/A50” on page PROC-7 to activate the new code added to the subsystem (stored in the RS/6000).

**Microcode Activation in the Axx:** The following procedures need to be followed to activate one of the two microcode levels that is stored within the Axx.

1. Assure all drives are powered/cabled and on line to port 0. Using either the Service Terminal or the LM. Enter **Service** and select **Microcode Maintenance**. Select **List Code Images Available for Activation**, and then select **List 3590 Subsystem Code Images**, check to make sure that the level of microcode you are there to activate is displayed. Depress F3 twice to return to the **Microcode Maintenance** screen.

**Note:** If the level you want to activate is not displayed, do not continue with this process.

2. Select **Activate Code Image** then select **Activate 3590 Subsystem Code**. A pop up window will appear in the lower half of the screen, select the code load to activate with the cursor and press enter. A series of screens will scroll by that give the status of getting the microcode switched over. This process should take about 3 minutes for the Axx and an additional 3 minutes for each 3590 drive.

The ending status will be displayed before returning to the **Activate Code Image** screen.

**ATTENTION:** If you are updating the microcode in a Axx that is part of a 3494 subsystem, you must make sure that the VPD has been set up to make the connection between the Axx and the Library. This can be done as follows:

1. From the main maintenance menu, select **Subsystem Configuration** Refer to Figure 15 on page PANEL-4
2. From the Subsystem Configuration menu, select **Show/Change Vital Product Data**. Refer to “Axx Menu Tree” on page PANEL-4
3. From the Show/Change Vital product menu, select **Show / Change Control Unit Vital Product Data**. Refer to “Axx Menu Tree” on page PANEL-4
4. From the Show / Change Vital product menu, select **Add/Change Control Unit Vital Product Data**. Refer to “Axx Menu Tree” on page PANEL-4
5. From the Add/Change Vital Product menu, select **Library Interface** Select Library Interface and press F4. Refer to “Axx Menu Tree” on page PANEL-4
6. In the pop-up window, change the setting from **/dev/null** to **/dev/tty1** Refer to “Axx Menu Tree” on page PANEL-4

**Notes:**

There is now a connection between the Axx and the Library. This can be done as follows: and the Library. You can exit the maintenance menus by pressing the F10 key.

## Setting up NetTerm Terminal Emulator (Windows 95/98 Platforms)

1. Start the NetTerm program
2. From the NetTerm Startup window toolbar select **File**
3. From the File pop-up list select **Phone Directory**
4. From the Phone Directory window select the **Modem Test** entry.
5. From the Phone Directory window modify the following fields to the values listed:

Field	Entry
Name	3590-Axx & 3494-Bxx Subsystem Service
Emulation	IBM-3151
Keys	IBM_3151
6. From the Phone Directory window verify that the *Connection field* has **Modem** selected.
7. From the Phone Directory window click on **Modem Settings**. This will bring up a communication Setup Window.
8. From the Communication Setup window click on the **Modems** box. This will bring up a Select Modem window.
9. From the Select Modem window, click on the **No Modem** box. You will be returned to the Phone Directory window.
10. From the Phone Directory window click on **Modem Settings** to bring up the Communications Setup Window.
11. From the Communication Setup window modify the following fields to the values listed:

Field	Entry
Port:	COM1
Baud Rate:	9600
Data Bits:	8
Parity:	None
Stop bits:	1
Modem Initialize Command - clear this field (leave blank).	

### **Control Settings** (click on box to change)

DTR/DSR	box unchecked
RTS/CTS	box unchecked
XON/OFF	box checked (√)
Tone Dialing	box unchecked
Direct Line	box unchecked
Ignore Carrier	box unchecked

Use TAPI                      box unchecked

12. After making the changes to the Communication Setup window click **OK** You will be returned back to the Phone Directory Window.
13. From the Phone Directory window click on **Desktop**.
14. From the Desktop window change the following settings:
  - a. Place a checkmark (√) in the **Autowrap** box.
  - b. Remove the check mark in the **Exit NetTerm on disconnect** box.
15. From the Desktop window click on **OK** You will be returned back to the phone Directory window.

- | 16. From the Phone Directory window click on **Color**.
- | 17. From the Screen Colors window place a checkmark (✓) in the **Allow Graphics rendition code of 0 to reset colors to default** box.
- | 18. From the Screen Colors window click on **OK** You will be returned back to the Phone Directory window.
- | 19. From the Phone Directory window click **Add**.  
**Note:** The Phone Directory entry **3590-Axx & 3494-Bxx Subsystem Service** may not be displayed in the phone directory list until the NetTerm program is exited and restarted.
- | 20. From the Phone Directory window click **OK**
- | 21. Start the NetTerm program
- | 22. From the NetTerm Startup window toolbar select **File**
- | 23. From the File pop-up list select **Phone Directory**.
- | 24. From the Phone Directory window select the **Modem Test** entry.
- | 25. From the Phone directory window modify the following fields to the values listed:  

Field	Entry
Name	Subsystem Service at 38400 BAUD
Emulation	IBM-3151
Keys	IBM_3151
- | 26. From the Phone Directory window, verify that the *Connection* field has **Modem** selected.
- | 27. From the Phone Directory window click on **Modem Settings**. This will bring up a communications Setup window.
- | 28. From the Communications Setup window click on the **Modem** box. This will bring up a Select Modem window.
- | 29. From the Select Modem window Click on the **No Modem** box. You will be returned to the Phone Directory window.
- | 30. From the Phone Directory window click on **Modem Settings** to bring up the communications Setup window.
- | 31. From the communications Setup window modify the following fields to the values listed:  

Field	Entry
Port:	COM1
Baud Rate:	38400
Data Bits:	8
Parity:	None
Stop bits:	1
Modem Initialize Command	- clear this field (leave blank).

Control Settings (click on box to change)	
DTR/DSR	box unchecked
RTS/CTS	box unchecked
XON/OFF	box checked (✓)
Tone Dialing	box unchecked
Direct Line	box unchecked
Ignore Carrier	box unchecked
Use TAPI	box unchecked
- | 32. After making the changes to the Communication Setup window click **OK** You will be returned back to the Phone Directory Window.



- | 33. From the Phone Directory window click on **Desktop**.
- | 34. From the desktop window change the following settings:
  - | a. Place a checkmark (✓) in the **Autowrap box**.
  - | **b. Remove the check mark in the Exit NetTerm on disconnect box.**
- | 35. From the Desktop window click on **OK** You will be returned back to the phone Directory window.
- | 36. From the Phone Directory window click on **Color**.
- | 37. From the Screen Colors window place a checkmark (✓) in the **Allow Graphics rendition code of 0 to reset colors to default** box.
- | 38. From the Screen Colors window click on **OK** You will be returned back to the Phone Directory window.
- | 39. From the Phone Directory window click **Add**.
  - | **Note:** The Phone Directory entry **Subsystem Service at 38400 BAUD** may not be displayed in the phone directory list until the NetTerm program is exited and restarted.
- | 40. From the Phone Directory window click **OK**

---

## | **Setting up the EBTERM or Terminal Emulator (OS/2 Platform)**

- | EBTERM or Terminal Emulator must be "setup" prior to using for the first time on the 3590 Axx controller tape subsystem. The following steps will show how to accomplish this only if using EBTERM. If using a different emulator, refer to the manufacturer's instructions to set up as an IBM 3151 Emulator.
- | 1. **ATTENTION:** Ensure that the EBTERM program is installed on your Service Terminal before continuing.
- | 2. Start EBTERM by double clicking on the EBTERM icon.
- | 3. Select "Setup" from the toolbar across the top of the window.
- | 4. Select "Dialing Profiles" from the pop-up list.
- | 5. Select "Add Profile" from the pop-up list.
- | 6. Select the first unused profile number from the pop-up list. This will open a window with the title "EBTERM[a] Dialing Directory: Profile X" where X is the profile number just selected.
- | 7. Set the fields of the following window as shown.

Field Name	Set to Value
Host location Description	3590-Axx & 3494-B16 Subsystem Service
Modem Initialization	<Clear this field-should be blank>
Number to Dial	<Clear this field-should be blank>
Long Distance Prefix	<Clear this field-should be blank>
Response to Connect	<Clear this field-should be blank>
Serial Port Speed	9600 <point and click on arrows to scroll through choices>
Bits Setting	8/N/1
Serial Port Buffer	Auto
Display Buffer	Checkmark OFF in box <point and click on box to change>
Flow Control XON/XOFF	Checkmark ON in box
Flow Control CTS/RTS	Checkmark OFF in box
Host Protocol	IBM 3151
Host Codepage	ASCII 437 U.S. English
Host Type	ASCII
Logon Script	None

Point and click on Enter at bottom of the window after setting fields.

8. Select "Setup" from the tool bar across the top of the window.
9. Select "Save as..." from the pop-up list.
10. Press "Enter" to save changes just made.
11. From the Phone Directory window click on **Color**.
12. From the Screen Colors window place a checkmark (✓) in the **Allow Graphics rendition code of 0 to reset colors to default** box.
13. From the Screen Colors window click on **OK** You will be returned back to the Phone Directory window.
14. From the Phone Directory window click **Add**.
- Note:** The Phone Directory entry **3590-Axx & 3494-Bxx Subsystem Service** may not be displayed in the Phone directory list until the NetTerm program is exited and restarted.
15. From the Phone Directory window click **OK**
16. Start the NetTerm program
17. From the NetTerm Startup window toolbar select **File**
18. From the File pop-up list select **Phone Directory**.
19. From the Phone Directory window select the **Modem Test** entry.
20. From the Phone directory window modify the following fields to the values listed:

Field	Entry
Name	Subsystem Service at 38400 BAUD
Emulation	IBM-3151
Keys	IBM_3151

21. From the Phone Directory window, verify that the :hp11Connection field has **Modem** selected.
22. From the Phone Directory window click on **Modem Settings**. This will bring up a communications Setup window.
23. From the Communications Setup window click on the **Modem** box. This will bring up a Select Modem window.

24. From the Select Modem window Click on the **No Modem** box. You will be returned to the Phone Directory window.

---

## Installing EBTERM or Terminal Emulator in a 3494 Library Manager

In a 3494 library, the library manager can be used as a terminal for the Model A00 instead of the Service Terminal if the CE chooses to do so. The advantage of using the library manager is that it is already there with a power source, and is easily set up.

EBTERM or Terminal Emulator must be loaded on the library manager just as it is on the Service Terminal. Listed below are the steps that are necessary to install EBTERM on the library manager if not already loaded.

1. Open a service window from the LM(Library Manager)
2. Insert the EBTERM installation diskette into the LM diskette drive
3. type a:install
4. remove the diskette from the diskette drive

PROC

---

## Modem Initialization when using the WTI Data Switch

The Modem must be initialized prior to using the system. Use the following steps to accomplish this.

**ATTENTION:** The Service Terminal must be set up with EBTERM or Terminal Emulator before continuing with the modem initialization. (See "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11 and "Installing EBTERM or Terminal Emulator in a 3494 Library Manager.")

- \_\_\_ 1. Turn Modem power off.
- \_\_\_ 2. Either the MoST or the Library Manager may be used to initialize the modem.
  - a. If using the MoST terminal:
    - Use the 9 pin to 25 pin cable included with the 3590 Control Unit to use with this procedure. Connect the 9 pin connector to the MoST terminal serial port and the 25 pin connector to the DTE connector on the back of the modem (Do **NOT** use the null modem adapter that is also provided with the cable.)
  - b. If using the Library Manager:
    - Locate the Service Cable between the Library Manager Com Port A and the null modem connected to the Service Panel (refer to Figure 38 on page INST-34) Leave the 9 pin connector of the Service Cable connected to the Library Manager Com Port A. Disconnect the 25 pin connector from the null modem adapter and connect it to the DTE connector on the back of the modem (Do **NOT** use the null modem adapter for this procedure).
- \_\_\_ 3. Remove the small panel (approximately 1.5 inches X 0.3 inches ("DeskPorte FAST" on it) from the front of the modem. There will be a series of switches behind this panel.
- \_\_\_ 4. Set the switches as shown, from left to right.

D D D D D D D U D D D D

**Note:** Only **one** switch is up. The remainder are down. D=down, U=up.
- \_\_\_ 5. Turn modem power on.
- \_\_\_ 6. If Using **EBTERM**

- a. Start EBTERM.
    - 1) Select **"Modify"** from the toolbar across the top of the window.
    - 2) In the pop-up list, verify that **"Direct Connect Mode"** does **NOT** have a check mark (√) next to it.
    - 3) Point and click on **"Direct Connect Mode"** if it needs to be changed, i.e. remove the Check mark (√).
  - b. In the pop-up list displayed (step 6a), select **"Dial Prefix Selections"**
  - c. Select **"External Prefix 2"** from the pop-up list.
 

**Note:** there should be a check mark (√) next to "External Prefix2".
  - d. Select **"Connect"** from the toolbar across the top of the window.
  - e. Select **"3594-Axx Controll Unit Modem Setup"** from the pop-up list.
  - f. The characters **"AT&F\*E1%U1\$B38400&D0\*W0&Y0"** should be displayed in the EBTERM window. On the next line, **OK** should be displayed. If characters **AT&FQ1E0-Q1\*E1%U1\$B38400&D0\*W0&Y0** is displayed in the EBTERM window. You will not display OK on the next line. Continue with step 12.
- If the displays specified are not correct;
- 1) Check the switch settings in step 4 on page PROC-13.
  - 2) Return to "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11 and make sure that EBTERM was set up correctly.
  - 3) If the problem persists, contact your next level of support.
- g. Select **"Disconnect"** from the tool bar across the top

## 7. If using **NetTerm**

- a. Start **NetTerm**
- b. Select **File** from the tool bar located at the top of the NetTerm window.
- c. In the pop-up selection window select **Phone Directory...** This will bring up a **Phone Directory** window.
- d. From the Phone Directory window select **Modem Test**

**Note:** The connection status (connected/Disconnected) is indicated by a colored ball in the lower left of the NetTerm window. The ball is green when NetTerm is in the connected state and is red when in the disconnected state.
- e. Type in **AT** and then press the **Enter** key. The next line in the NetTerm display should display **Disconnect** This verifies that modem recognized the AT command.
- f. Type in **AT&F\*E1%U1\$B38400&D0\*W0&Y0** and the press the **Enter** key. The next line in the NetTerm display should display **OK** This verifies that the modem recognized the initialization command.
- g. Select **File** from the tool bar located at the top of the NetTerm window.
- h. In the pop-up selection window select **Disconnect** of the EBTERM window.

## 8. Turn modem power **"Off"**

## 9. Reset the switches on the modem (see step 4 on page PROC-13).

D D D D D D D D D D

**Note:** all switches are in the down (D) position.

- \_\_\_ 10. Turn the modem **"On"** and check the LCD display. The display should continue to show 28.8.

If the displays specified are not correct:

Start at step 1 on page PROC-13.

- a. If the problem persists, contact your next level of support.

- \_\_\_ 11. Reinstall the panel removed in step 3 on page PROC-13.

---

## Modem Initialization Without the WTI Data Switch

The Modem must be initialized prior to using the system. Use the following steps to accomplish this.

**ATTENTION:** The Service Terminal must be set up with EBTERM or Terminal Emulator before continuing with the modem initialization. (See "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11 and "Installing EBTERM or Terminal Emulator in a 3494 Library Manager" on page PROC-13.)

- \_\_\_ 1. Turn Modem power off.
- \_\_\_ 2. Either the MoST or the Library Manager may be used to initialize the modem.
- a. If using the MoST Terminal: Use the 9 pin to 25 pin cable included with the 3590 Control Unit to use with this procedure. Connect the 9 pin connector to the MoST terminal serial port and the 25 pin connector to the DTE connector on the back of the modem. (Do **NOT** use the null modem adapter that is also provided with the cable.)
- b. If using the Library Manager: Locate the Service Cable between the Library Manager Com Port A and the null modem connected to the Service panel (refer to Figure 37 on page INST-33). Leave the 9 pin connector of the Service Cable connected to the Library Manager Com Port A. Disconnect the 25 pin connector from the null modem adapter and connect it to the DTE connector on the back of the modem. (do **NOT** use the null modem adapter for this procedure).
- \_\_\_ 3. Remove the small panel (approximately 1.5 inches X 0.3 inches ("DeskPorte FAST" on it) from the front of the modem. There will be a series of switches behind this panel.

- \_\_\_ 4. Set the switches as shown, from left to right.

D D D D D D D U D D D D

**Note:** Only **one** switch is up. The remainder are down. D=down, U=up.

- \_\_\_ 5. Turn modem power on.

- \_\_\_ 6. If using **EBTERM**

- a. Start EBTERM.

- 1) Select **"Modify"** from the toolbar across the top of the window.
- 2) In the pop-up list, verify that **"Direct Connect Mode"** does **NOT** have a check mark (✓) next to it.
- 3) Point and click on **"Direct Connect Mode"** if it needs to be changed, i.e. remove the Check mark (✓).

- b. In the pop-up list displayed, select **"Dial Prefix Selections"**

- c. Select "**External Prefix 2**" from the pop-up list.

**Note:** there should be a check mark (√) next to "External Prefix2".

- d. Select "**Connect**" from the toolbar across the top of the window.

- e. Select "**3590-Axx Controller Modem Setup**" from the pop-up list.

- f. The characters "**AT&FQ1E0\Q1\*E1%U1\$B9600&D0\*W0&Y0**" should be displayed in the EBTERM window. Because of the initialization command entered the next line in **EBTERM** display will *not* display **OK**

**Note:** If the displays specified are not correct; Check the switch settings in step 4 on page PROC-13. Return to "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page PROC-11 and make sure that EBTERM was set up correctly. If the problem persists, contact your next level of support.

- g. Select "**Disconnect**" from the tool bar across the top of the EBTERM window.

- h. If using **NetTerm**

- 1) Start **NetTerm**

- 2) Select **File** from the tool bar located at the top of the NetTerm window.

- 3) In the pop-up selection window select **Phone Directory...** This will bring up a **Phone Directory** window.

- 4) From the Phone Directory window select **Modem Test**

**Note:** The connection status (connected/Disconnected) is indicated by a colored ball in the lower left of the NetTerm window. The ball is green when NetTerm is in the connected state and is red when in the disconnected state.

- 5) Type in **AT** and then press the **Enter** key. The next line in the NetTerm display should display **OK**. This verifies that modem recognized the AT command.

- 6) Type in **AT&FQE10\Q1\*E1%U1\$B9600&D0\*W0&Y0** and then press the **Enter** key. The next line in the NetTerm display will *not* display **OK** This verifies that the modem recognized the initialization command.

- 7) Select **File** from the tool bar located at the top of the NetTerm window.

- 8) In the pop-up selection window select **Disconnect**

- i. Turn modem power "**Off**"

- j. Reset the switches on the modem (see step 4 on page PROC-13).

D D D D D D D D D D

**Note:** all switches are in the down (D) position.

Turn the modem "**On**" and check the LCD display. The display should continue to show 9.6.

**Note:** If the displays specified are not correct, Start at step 1 on page PROC-15. If the problem persists, contact your next level of support.

- k. Reinstall the panel removed in step 3 on page PROC-13.

## Local Setup and Testing of WTI Switch

1. The WTI data switch may be tested/used locally by disconnecting the modem and connecting the Service Terminal (MoST or LM).
2. If using MDS-16 switch:
  - a. Remove the RJ12 cable from the SA25 Connector at the back of the modem.
  - b. Connect this RJ12 cable to a spare SA12 connector with a gender changer to the end of the Service Terminal 9 to 25 pin cable (see Figure 106).

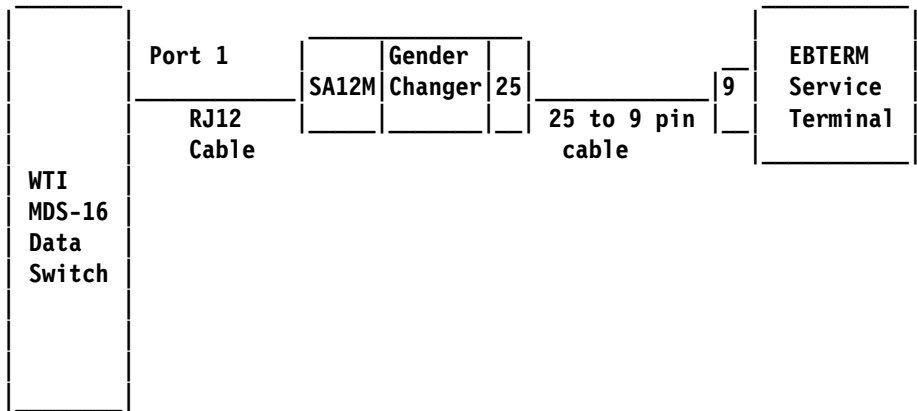


Figure 106. Local Setup and Test of MDS Switch

3. If using APS-16 switch:
  - a. Unplug the modem, 9 to 25 pin cable from the back of the modem.
  - b. Connect the 25 pin end just unplugged to the end of the Service Terminal cable. Use the Null Modem Adapter with the gender changer between the two 25 pin connectors (see Figure 107).

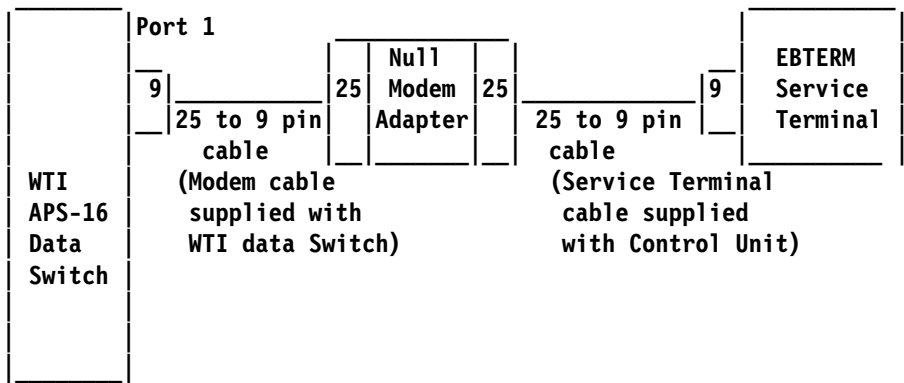


Figure 107. Local Setup and Test of APS Switch

4. If using **EBTERM**
  - a. .Change the EBTERM baud rate to match the speed to the WTI switch port 1.
    - 1) Start EBTERM
    - 2) Select "**Setup**" from the tool bar across the top of the window

- 3) Select **"Dialing Profiles"** from the pop-up list
- 4) Select **"Update Profile"** from the pop-up list
- 5) Select **"3590-Axx & 3494-B16 Subsystem Service"** from the pop-up list
- 6) Change the **Serial Port Speed** from 9600 to 38400
- 7) Point and click on Enter at bottom of window after changing Serial Port Speed.

**Note: IMPORTANT:** The speed will need to be changed back to 9600 after testing the WTI switch.

- b. From EBTERM select **"Modify"** from the tool bar across the top of the window. In the pop-up window verify the **"Direct Connect Mode"** has a check mark(✓) next to it. Point and click on **"Direct Connect Mode"** if you need to change it.
- c. From EBTERM select **"Connect"** from the tool bar across the top of the window. In the pop-up window select **"3590-Axx & 3494-B16 Subsystem Service"**.
- d. Wait for EBTERM to complete the connection before continuing. EBTERM is connect when the top status line changes from **EBTERM[A] [min]:** to **EBTERM[A] [0]:**.

5. If using **NetTerm**

- a. Start **NetTerm**
- b. Select **File** from the tool bar located at the top of the NetTerm window.
- c. In the pop-up selection window select **Phone Directory...** This will bring up a Phone Directory window.
- d. From the Phone Directory window select **Subsystem Service at 38400 BAUD**
- e. Click on the **Connect** box at the bottom of the Phone Directory window.

6. Issue the WTI **"Wake Port"** command to access the WTI switch Command Mode. Type **"/"**, then press and hold **"Ctrl"** key and momentarily press the **E** key, then release the **"Ctrl"** key, then press **"Enter"**.

**Notes:**

- a. Some EBTERM configurations use the Right Ctrl key as the "Enter" key.
- b. Holding down the **"E"** key long may cause the WTI switch to enter an error state. Use WTI Error Correction Table below to correct.
- a. If the **"MDS>"** or **"APS>"** prompt is displayed, you have successfully accessed the WTI switch Command Mode.
- b. If the **"MDS>"** or **"APS>"** prompt is not displayed try the following to correct.

Figure 108 (Page 1 of 2). WTI Error Correction Table.

Condition	Procedure to Correct
WTI switch in error state because the <b>"E"</b> key was held down to long in <b>Wake Port</b> command sequence (6)	Issue the Disconnect Sequence to the WTI switch. On your Service Terminal press "Enter", then press "+" three times, the press "Enter". This will put the switch in the state where the <b>"APS&gt;"</b> or <b>"MDS&gt;"</b> prompt is displayed but will not accept the <b>"/H"</b> or <b>"/S"</b> commands. Use the procedure in the next entry of this table to correct.



Figure 108 (Page 2 of 2). WTI Error Correction Table.

Condition	Procedure to Correct
"APS>" or "MDS>" prompt is displayed but does not echo "/H" or "/S" to display when entered.	<ol style="list-style-type: none"> <li>1. Re-enter "WakePort" command (6) and retry "/H" or "/S" command.</li> <li>2. If step 1 did not correct: <ol style="list-style-type: none"> <li>a. Select "Disconnect" from the EBTERM toolbar.</li> <li>b. On the WTI switch press and hold both the SET button and the CLEAR button. Release only the CLEAR button, and then release the SET button.</li> <li>c. Repeat steps 4c through 6 above.</li> </ol> </li> </ol>
WTI switch port that you are using has been left in a connected state to another port on the WTI data switch.	<p>Issue the Disconnect Sequence to the WTI switch. On you Service Terminal press "Enter", then press "+" three times, the press "Enter"</p> <p><b>Note:</b> The sequence above is (Enter + + + Enter)</p>
BAUD rate mismatch between WTI switch and EBTERM	Verify that EBTERM setup has been changed to match the WTI port 1 baud rate, refer to 4a on page PROC-17.
WTI setup switches not set correctly.	Refer to table on Figure 40 on page INST-39 for correct switch setting for your configuration.
WTI switch has not been initialized with setting.	Press and hold both the <b>SET</b> button and the <b>CLEAR</b> button on the front of the WTI data switch. Release only the <b>CLEAR</b> button, and then release the <b>SET</b> button.

7. Display the WTI switch help screen:

- a. From the WTI "MDS>" or "APS>" prompt on the Service Terminal type: **/h** then press **ENTER**.
- b. The display should now show:

# COMMAND MENU:

```

/-E          Wake-up port
/X          Sleep - only accepts Wake-up command
/H          Help - displays command list
/S          Status - displays status screen
/W ffn"     Who - displays port parameters
/C <n> ffn"  Connect - local ffiremote"
/D <n> | ... | *> Disconnect
/E <n> | ... | *> Erase Buffer
/I          Initialize / test unit
/F          Enter Site ID
/J          Read Site ID
/P ffn"     Set Port Parameters
/U          Read Port Parameters
/L-<N>      Load Port Parameters
/G-00      Reinitialize All Ports

```

n	Port # or name
N	Port #
	"or"
*	"all"
<>	Required entry
ffn"	Optional entry

/D, /E, /I commands: add /Y to bypass "Are you sure (y/n)?"

APS> -

Figure 109. WTI Command Menu Screen.

## 8. Display the WTI switch status screen:

- From the WTI "MDS>" or "APS>" prompt on the Service Terminal type: **/s** then press **"ENTER"**.
- The display should now show: (MDS-16 screen will be slightly different).

# SYSTEM STATUS

VERSION 1.1

PORT	NAME	STATUS	BAUD	COM	HS	MODE	TIMEOUT	BUF	CTS
01+		*Free	38.4K	8N1	RTS	Any	Off	0	H
02+		Free	38.4K	8N1	RTS	Any	Off	0	L
03		Free	38.4K	8N1	RTS	Any	Off	0	L
04		Free	38.4K	8N1	RTS	Any	Off	0	L
05		Free	38.4K	8N1	RTS	Any	Off	0	L
06		Free	38.4K	8N1	RTS	Any	Off	0	L
07		Free	38.4K	8N1	RTS	Any	Off	0	L
08		Free	38.4K	8N1	RTS	Any	Off	0	L
09		Free	38.4K	8N1	RTS	Any	Off	0	L
10		Free	38.4K	8N1	RTS	Any	Off	0	L
11		Free	38.4K	8N1	RTS	Any	Off	0	L
12		Free	38.4K	8N1	RTS	Any	Off	0	L
13		Free	38.4K	8N1	RTS	Any	Off	0	L
14		Free	38.4K	8N1	RTS	Any	Off	0	L
15		Free	38.4K	8N1	RTS	Any	Off	0	L
16		Free	38.4K	8N1	RTS	Any	Off	0	L

APS>

Figure 110. WTI Switch System Status Screen.

## 9. Set WTI APS-16 Data Modem Mode (for WTI APS-16 only)

- a. From the WTI "APS>" prompt on the Service Terminal type **/p 1** then press **"ENTER"** to select PORT PARAMETERS for the modem port.
- b. Enter **"1"** then press **"ENTER"** to select PORT NAME option.
- c. Enter the word **"Modem"** and press **"ENTER"**.
- d. You should still be at the PORT PARAMETERS #01 menu. Type **"7"** then press **"ENTER"** to select MODE menu.
- e. From the INPUT MODE menu type **"4"** then press **"ENTER"** to select "Modem".
- f. you should still be at the PORT PARAMETERS #01 menu. Type **"71"** and then press **"ENTER"** to select RESET STRING menu.
- g. From the RESET STRING menu press the **"SPACE"** bar and then press **"ENTER"** to clear the RESET STRING.
- h. You should still be at the PORT PARAMETERS #01 menu. Type **"71"** then press **"ENTER"** to select INIT STRING menu.
- i. From the INIT STRING menu press the **"SPACE"** bar and then press **"ENTER"** to clear the INIT STRING.
- j. You should still be at the PORT PARAMETERS #01 menu. Type **"73"** then press **"ENTER"** to select HANG-UP STRING menu.
- k. From the HANGUP STRING menu type **"ATH0"** (**0** is the number zero) then press **"ENTER"** to set the HANG-UP STRING.
- l. You should still be at the PORT PARAMETERS #01 menu. Type **"2"** then press **"ENTER"** to select PASSWORD.
- m. Type **"pfe4u"** as the password then press **"ENTER"**  
**Note:** If the customer requests a specific password, enter the customers password instead of pfe4u.
- n. You should still be at the PORT PARAMETERS #01 menu. Verify that menu number **71** and **72** are both set to **undefined**) and that menu number **73** is set to **ATH0**. Also verify that the PASSWORD is set to **pfe4u**. The Service Terminal screen should now show:

# PORT PARAMETERS #01

```

1. PORT NAME:      Modem
2. PASSWORD:       pfe4u
3. BAUD RATE:      38.4K
4. BITS/PARITY:    8-None
5. STOP BITS:      1
6. HANDSHAKE:      RTS/CTS
7. MODE:           Modem
  71. RESET STRING: (undefined)
  72. INIT STRING:  (undefined)
  73. HANG-UP STRING: ATH0
8. COMMANDS:       All
9. LOGOFF CHAR:    +
10. SEQUENCE DISC: 0n
11. TIMEOUT DISC:  15 Min
12. MESSAGE TYPE:  Verbose
13. ECHO:          0n
  
```

Enter: "<" previous port,  
 ">" next port,  
 "##" change parameter,  
 <CTRL-X> exit ...

- o. Press the left **Ctrl** and the **X** keys simultaneously to exit the PORT PARAMETERS screen. This will take you back to the "APS>" prompt. An example of a typical screen is shown:

## SYSTEM STATUS

VERSION 1.1

PORT	NAME	STATUS	BAUD	COM	HS	MODE	TIMEOUT	BUF	CTS
01+	Modem	*Free	38.4K	8N1	RTS	Modem	15 Min	0	H
02+	LM	Free	38.4K	8N1	RTS	Any	Off	0	H
03	A00_F00	Free	9600	8N1	XON	Any	Off	0	H
04	A50_FC0	Free	9600	8N1	XON	Any	Off	0	H
05	B16_C00	Free	38.4K	8N1	RTS	Any	Off	0	H
06		Free	38.4K	8N1	RTS	Any	Off	0	L
07		Free	38.4K	8N1	RTS	Any	Off	0	L
08		Free	38.4K	8N1	RTS	Any	Off	0	L
09		Free	38.4K	8N1	RTS	Any	Off	0	L
10		Free	38.4K	8N1	RTS	Any	Off	0	L
11		Free	38.4K	8N1	RTS	Any	Off	0	L
12		Free	38.4K	8N1	RTS	Any	Off	0	L
13		Free	38.4K	8N1	RTS	Any	Off	0	L
14		Free	38.4K	8N1	RTS	Any	Off	0	L
15		Free	38.4K	8N1	RTS	Any	Off	0	L
16		Free	38.4K	8N1	RTS	Any	Off	0	L

APS>

10. Enter port 1 "Name". (for WTI MDS-16 only)
  - a. From the WTI "MDS>" prompt on the Service Terminal type: **/p 1** then press **"ENTER"**.
  - b. The display should now show:

## PORT PARAMETERS #01

```

1. PORT NAME:      (undefined)
2. PASSWORD:      (undefined)
3. BAUD RATE:      38.4K
4. BITS/PARITY:    8-None
5. STOP BITS:      1
6. HANDSHAKE:      RTS/CTS
7. MODE:           Any-to-Any
8. COMMANDS:       All
9. LOGOFF CHAR:    +
10. SEQUENCE DISC: On
11. TIMEOUT DISC:  Off
12. MESSAGE TYPE:  Verbose
13. ECHO:           On

```

```

Enter: "<" previous port,
      ">" next port,
      "##" change parameter,
      <CTRL-X> exit ...

```

Figure 111. WTI Switch Port Parameters #01 Screen.

- c. Enter "1" then press "ENTER" to select the PORT NAME option.
  - d. Enter the word "Modem" then press "ENTER".
  - e. Press the left **Ctrl** and the **X** keys simultaneously (on some MDS-16 you may need to press **ESC**) to exit this screen. This will take you back to the "MDS>" prompt.
  - f. Enter "/s" to display the status screen. The word **Modem** should now be displayed in the Name column for Port 1.
11. Enter port 2 "name".
- a. From the WTI "WTI>" or "APS>" prompt on the Service Terminal type "/p 1" then press "ENTER"
  - b. Enter "1" then press "ENTER" to select the PORT NAME option.
  - c. Enter the word "LM" then press "ENTER".
  - d. Press the left **Ctrl** and the **X** keys simultaneously (on some MPS-16 you may need to press **ESC**) to exit this screen. This will take you back to the "APS>" or "MPS>" prompt.
  - e. Enter "/s" to display the status screen. The word **LM** should now be displayed in the name column for port 2.
12. Configure WTI ports that have a 3590-Axx connected:
- a. From the WTI "MDS>" or "APS>" prompt on the Service Terminal type: "/p n" ("n" is the port number that has the Axx connected) then press "ENTER" You should be at the PORT PARAMETERS screen for the selected port.
  - b. Enter 1 then press "ENTER" to select the **PORT NAME** option.
  - c. Enter a descriptive name to identify the Axx then press "ENTER"
  - d. You should still be at the **PORT PARAMETERS** screen for the selected port. From this screen menu enter the number to select the **BAUD RATE** and then press "ENTER".
  - e. From the BAUD RATE menu select the number for 9600 and then press "ENTER".

- f. You should still be at the **PORT PARAMETERS** screen for the selected port. From this screen menu enter the number to select **HAND SHAKE** and then press "**ENTER**".
  - g. From the **HAND SHAKE** menu select the number for **XON/XOFF** and then press "**ENTER**".
  - h. Press the left **Ctrl** and the **X** keys simultaneously (on some MDS-16 you may need to press **ESC**). This will take you back to the "APS>" or "MDS>" prompt.
  - i. Enter **"/s"** to display the status screen. Verify the **NAME**, **BAUD RATE**, and **HAND SHAKE** columns are correct for the port you just configured.
  - j. Repeat from 12 on page PROC-23 for each Axx connected to the WTI data switch.
13. Configure WTI ports that have a 3494-B16 connected. (Only the NAME field need to be entered for the 3494-B16. The other parameters should not be changed):
- a. From the WTI "MDS>" or "APS>" prompt on the Service Terminal type: **/p n** (n is the port number that has the Axx connected) then press "**ENTER**". You should be at the **PORT PARAMETERS** screen for the selected port.
  - b. Enter **"1"** then press "**ENTER**" to select the **PORT NAME** option.
  - c. Enter a descriptive name to identify the B16 then press "**ENTER**".
  - d. Press the left **Ctrl** and the **X** keys simultaneously (on some MDS-16 you may need to press **ESC**). This will take you back to the "APS>" or "MDS>" prompt.
  - e. Enter **"/s"** to display the status screen. Verify the **NAME** column is correct for the port you just configured.
  - f. Repeat steps from 13 for each B16 connected to the WTI data switch.
14. Verify connections to Axx controls units.
- Note:** These steps will not work with B16 control units as they use a protocol not compatible with EBTERM.
- a. To connect the switch port 1 to an Axx enter **"/c n"** ("n" is the port number of the Axx you want to connect to) then press "**ENTER**".
  - b. The following screen will be displayed when the Axx is connected through the WTI switch (May need to press "**ENTER**" a second time to display screen).

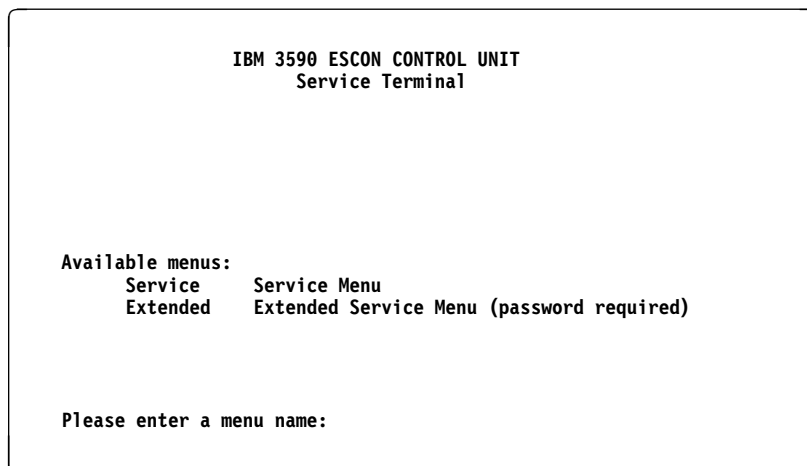


Figure 112. Initial 3494 Service Terminal Screen

- c. Enter **"Service"** then press "**ENTER**" to go to the service menus.

- | d. This completes the checkout for this port. Press **F10** to exit the service menu.
- | e. Issue the WTI Disconnect Sequence. Press "Enter", then press "+" three times, then press "Enter"
- | **Note:** The sequence above is (Enter + + + Enter)
- | The screen should now display the "APS>" or the "MDS>" prompt.
- | f. Repeat from 14 on page PROC-24 for each Axx attached to the WTI switch.
- | 15. From the "APS>" or "MDS>" prompt enter **/x** then press **ENTER** The word **Asleep** should now be displayed indicating that the switch is in the sleep mode.
- | 16. Disconnect your Service Terminal from port 1 of the WTI switch and reconnect the modem to port 1.
- | 17. Change the EBTERM baud rate back to 9600.
  - | a. Start EBTERM
  - | b. Select **"Setup"** from the tool bar across the top of the window
  - | c. Select **"Dialing Profiles"** from the pop-up list
  - | d. Select **"Update Profile"** from the pop-up list
  - | e. Select **"3590-Axx & 3494-B16 Subsystem Service"** from the pop-up list.
  - | f. Change the **Serial Port Speed from 38400 to 9600**
  - | **g. Point and click on Enter at bottom of window after changing the Serial Port Speed.**
- | 18. Contact your support center and have them call the modem to verify the modem to WTI switch connection.

---

## ESCON System Interface Checkout.

- \_\_\_ 1. Refer to your host operating system and host hardware checkout procedures for a system level test of the A00 Controller or A50 Controller ESCON interface.
- \_\_\_ 2. When you are satisfied that everything is working, turn the product over to the customer.

## Adapter Plugging (ESCON and SCSI) for the A00 Controller

In the field there are two type of SCSI adapter cards used for the A00 controller. One of these types contain a heat sink and require that the Adapter plugging be changed from the original configuration.

P/N 40H2842 is the original type without the heat sink, adapter plugging is shown in Figure 113 and Figure 114

P/N 05H3090 is the new type with the heat sink, adapter plugging is shown in Figure 116 and Figure 115

Figure 113. A00 With FC 3311 (Single SCSI, Single ESCON)

Frame

Adapter Slot	Adapter Plug
1	SCSI - SCSI Card P/N 40H2842
2	(unused)
3	ESCON
4	(unused)

Figure 114. A00 With FC 3312 (Dual SCSI, Dual ESCON)

Adapter Slot	Adapter Plug
1	SCSI 0 - SCSI Card P/N 40H2842
2	SCSI 1 - SCSI Card P/N 40H2842
3	ESCON 1
4	ESCON 2

Figure 115. A00 With FC 3311 (Single SCSI, Single ESCON)

Adapter Slot	Adapter Plug
1	ESCON
2	(unused)
3	SCSI - SCSI Card P/N 05H3090
4	(unused)

Figure 116. A00 With FC 3312

Adapter Slot	Adapter Plug
1	ESCON 1
2	ESCON 2
3	SCSI 0 - SCSI Card P/N 05H3090
4	SCSI 1 - SCSI Card P/N 05H3090



---

## Prepare the A00 or the A50 Controller for Service

The control unit must be offline to the customer before starting and type of service. The following list will correctly take the CU offline.

1. Notify the Customer that you need to take the Subsystem offline and all customer operations to the subsystem must be halted.
2. Go to the Main 3590 Subsystem Maintenance screen and select **Control Unit and Drive Online/Offline Control**
3. Following the repair action, be sure to go to “End of Call” on page PROC-2 and close any open SIMs before returning Subsystem to the customer.

**Note:** Remember to re-connect the remote service cable to the switch when call is complete.

---

## Setting Service Mode in the A50 Controller

There are two ways to set service mode in the A50.

1. is called Service Mode Boot used if you are going to run the RISC diagnostics from the diagnostic CD-ROM, see “Service Mode Boot.”
2. The other called Service Mode from the Custom Boot List, this does not require a disk, see “Bootting in Service Mode from the Custom Boot List”

### Service Mode Boot

- \_\_\_ 1. Verify with the system administrator and users that all programs need to be stopped.
- \_\_\_ 2. Turn off the system.
- \_\_\_ 3. Wait 30 seconds, then turn on the system
- \_\_\_ 4. Start EBTERM **immediately**
- \_\_\_ 5. Press the **6** key on the keyboard.
- \_\_\_ 6. Enter any passwords.

### Bootting in Service Mode from the Custom Boot List

1. Verify with the system administrator and users that all programs need to be stopped.
2. Insert the diagnostic CD-ROM into the CD-ROM drive, if you intend to run standalone diagnostics.
3. Turn off the system.
4. Wait 30 second, then turn on the system.
5. Start EBTERM **immediately**
6. Press the **5** key on the keyboard.
7. Enter any passwords

---

## 3590 A00 or A50: Retrieving Engineering and Dump Data

The 3590 A00 or A50 automatically saves trace, dump and error information whenever errors occur or unexpected conditions arise. The data aids in problem resolution without having to recreate the exception conditions. The 3590 A00 or A50 will also automatically gather device dumps and store them internally so that they can be retrieved through the 3590 A00 or A50 Service interface.

To retrieve Engineering and Dump Data (including device dumps):

1. Connect the Service Terminal to the 3590 A00 or A50 (Refer to "Getting Started" on page PANEL-2)
2. At the "3590 Subsystem Maintenance" panel, select "Subsystem Trace and Dump.
3. Select "Select Trace/Dump Files and Copy to Diskette".
4. Press PF4 to display a list of available files.
5. Unless otherwise directed, select "ALL\_ENGR\_FILES" to offload all the engineering and dump data files and press ENTER (twice).
6. Follow the instructions that appear on the interactive status screen.

### Notes:

- 1.44 MB (or greater) diskettes are required.
  - DISKETTES MUST BE INSERTED IN THE A00 Controller or A50 Controller FLOPPY DISK DRIVE, NOT THE FLOPPY DISK DRIVE ON THE SERVICE TERMINAL.
  - The procedure will format the diskettes if they are not already formatted.
  - The procedure will offer to erase all files on the diskette if there is not enough space available.
7. When the procedure has completed, press PF3 to return to the "3590 Subsystem Maintenance" panel.

---

## 3590 A00 and A50: Show/Change SIM and MIM Reporting Level

The 3590 A00 and A50 Controller offloads SIM sense records to the host with a "message to Operator" control bit that the host software can use to determine whether to display a message on the host console or not. The

CU sets this bit based on the severity of the SIM and according to a "clip level" that can be set from the Service Terminal. If "clip level" is specified, then the 3590 CU default is to turn the "message to Operator" bit on for all SIMS with a severity of 2 (Serious) or higher.

To Show/Change the SIM and MIM Severity Reporting Level:

1. Connect the Service Terminal to the 3590 control unit (refer to "Getting Started" on page PANEL-2).
2. At the "3590 Subsystem Maintenance" panel, select "Service Information Message (SIM) Maintenance".
3. Select "Show/Change Error Match Code (EMC) settings".
4. The current value is displayed (if no value has been specified, then the current value will read "NOT\_INITIALIZED").
5. To change the current value, press PF4 to display a list of options, select the desired value and press ENTER (twice).
6. The command status panel will be displayed.
7. When the status on "OK", the command has completed.

8. Press the PF3 key twice to return to the "3590 Subsystem Maintenance" panel.

---

## 3590 A00 or A50: Set Error Match Codes

The 3590 CU allows for up to 4 Error Match Codes (EMCs) to be enabled at one time. As described here, a variety of actions can be initiated by an EMC "hit". EMCs should only be set under the supervision of your next level of support.

To set an Error Match Code:

1. Connect the Service Terminal to the 3590 control unit. (Refer to "Getting Started" on page PANEL-2)
2. At the "3590 Subsystem Maintenance" panel, select "Subsystem Trace and Dump".
3. Select "Show/Change Error Match Code (EMC) Settings".
4. There are 4 EMC entries and 4 fields per Entry:

- EMC MDE Code:

This is the AIX errid to match. If this entry is left as all 0's, then the AIX errid will be ignored and only the MDE code/mask fields will be checked for a match.

- EMC MDE Code:

This is the 3590 CU Microcode Detected Error (MDE) code to match. If this entry is left as all 0's, then the MDE code will be ignored and only the AIX errid field will be checked for a match.

- EMC MDE Mask:

This is a bit mask that is AND'ed with the MDE code that gets logged, then checked against the EMC MDE Code for a match. If you want to match the EMC MDE Code exactly, then this field should be set to X'FFFF'

- EMC Action Code:

Each bit in this field specifies an action to be taken when a "hit" occurs or a characteristic of this EMC entry (i.e. SAVE across IMLs). Some possible actions are:

- Do not log the error to the error/SIM log
- Reset EMC code when 1st "hit" occurs
- Snapshot trace when a "hit" occurs
- Force a dump when a "hit" occurs
- Kill the entire CU when a "hit" occurs
- Start a trace when a "hit" occurs
- Send a SIM when a "hit" occurs
- Send a MAIL message when a "hit" occurs (requires a LAN attachment)

5. Fill in the appropriate fields for one or more EMC entries and press ENTER.
6. The command status panel will be displayed.
7. When the status is "OK", the command has completed.
8. Press the PF3 key twice to return to the "3590 Subsystem Maintenance" panel.

---

## 3590 A00 or A50: Reset Set Error Match Codes

## Reset ALL Error Match Codes

1. Connect the Service Terminal to the 3590 CU (see "Getting Started" on page PANEL-2)
2. At the "3590 Subsystem Maintenance" panel, select "Subsystem Trace and Dump"
3. Select "Clear (Disable) all Error Match Code (EMC) Settings"
4. A warning screen will appear. Select ENTER to continue or PF3 to cancel.
5. The command status panel will be displayed
6. When the status is "OK", the command has completed.
7. Press the PF3 key twice to return to the "3590 Subsystem Maintenance" panel.

## Reset Individual Error Match Codes

1. Connect the Service Terminal to the 3590 CU (see "Getting Started" on page PANEL-2)
2. At the "3590 Subsystem Maintenance" panel, select "Subsystem Trace and Dump"
3. Select "Show / Change Error Match Code (EMC) Settings"
4. Set all 4 fields of the EMC entry(ies) that you want to reset to all 0's and press ENTER.
5. The command status panel will be displayed
6. When the status is "OK", the command has completed.
7. Press the PF3 key twice to return to the "3590 Subsystem Maintenance" panel.

---

## 3590 A00 or A50: View SIMs in the 3590 CU SIM Log:

The 3590 CU records the SIM data for all SIMs sent to the host. This data is used to assist in problem analysis and resolution and as a basis for subsequent SIM representation when a problem has not been resolved. It is important to close out SIMs at the conclusion of a maintenance call to avoid having erroneous SIM messages represented to the host.

## View SIMs in the 3590 CU SIM Log:

1. Connect the Service Terminal to the 3590 CU (see "Getting Started" on page PANEL-2)
2. At the "3590 Subsystem Maintenance" panel, select "Subsystem Information Message (SIM) Maintenance"
3. Select the appropriate action and press ENTER
  - If you suspect that the source of the problem is the A00 Controller or A50 Controller Select "Show List/Detail of an OPEN Control Unit SIM"
  - If you suspect that the source of the problem is a device: Select "Show List/Detail of an OPEN Tape Drive SIM"
  - If you do not know the source of the problem: Select "Show List/Detail of any OPEN SIMs"
4. If you know the SIM ID of the SIM that you want to view, enter it in the entry field and press ENTER to view the detailed data for that SIM. Otherwise, press PF4 to display a summary list of all the SIM's that meet the criteria specified in step 3.
5. To view the detailed data or an individual SIM entry from the summary list, select the entry and press ENTER twice.
6. Press PF4 to return to the previous panel.

7. Press PF3 repeatedly to return to each prior panel.

## **Close SIMs in the 3590 A00 or A50 SIM Log:**

1. Connect the Service Terminal to the 3590 A00 or A50 (see "Getting Started" on page PANEL-2)
2. At the "3590 Subsystem Maintenance" panel, select "Subsystem Information Message (SIM) Maintenance"
3. Select the appropriate action and press ENTER
  - If you want to close a Controller SIM: Select "Change an OPEN Control Unit SIM to CLOSED"
  - If you want to close a Device SIM: Select "Change an OPEN Tape Drive SIM to CLOSED"
  - If you want to close ALL OPEN SIMs: Select "Change ALL OPEN SIMs to CLOSED"
4. If you are closing an individual SIM, then enter the SIM ID of the SIM you want to close in the entry field and press ENTER. If you do not know the SIM ID, then press PF4 to display a list of entries, select the entry that you want to close and press ENTER twice.
5. Press PF4 to return to the previous panel.
6. Press PF3 repeatedly to return to each prior panel.



---

## **Varying On/Off 3590 drives from the A00 or A50 Controller**

The following procedure lets you vary 3590 On/Off from the Service Terminal

1. Connect the Service Terminal and go to the main service menu.
2. From the main service menu select "Control Unit and Drive Online/Offline Control".
3. Select the "Display Control Unit, ESCON, and Tape Device Status". Check the displayed status for the Tape Device you are wanting to put online or offline.
4. If the tape drive is not in the correct online/offline status, select the appropriate "Vary Tape Drive Online or Offline" menu selection from the "Control Unit and Drive Online/Offline Control" menu.
5. Select the desired drive from the pop-up list of available drives and press ENTER. Check the command status for proper completion of the command.

---

## Shutting Down the A00 or the A50 Controller

**Warning:** Use the shutdown procedure for your system, This is the correct command before you stop the system unit. Failure to do so may result in the loss of data.

1. Inform the customer that you need the A00 or the A50 varied off at the host before proceeding to power off your control unit.
2. Before turning off the power on the A00 or the A50 CU, you must first perform the shutdown procedures that are **highlighted** in Service Terminal screens as shown below.

From the 3590 Subsystem Maintenance Menu shown in Figure 117, select the **Control Unit Shutdown and Restart** option.

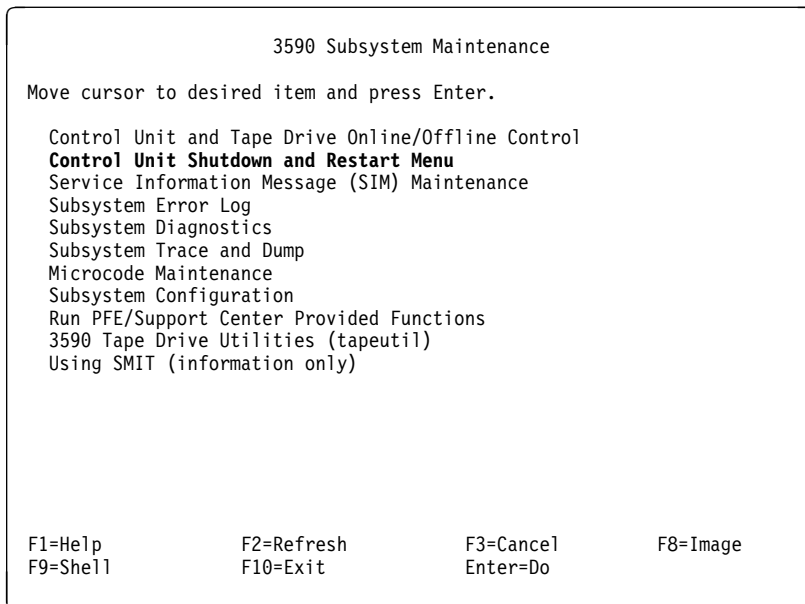


Figure 117. 3590 Subsystem Maintenance Screen

When the **Control Unit Shutdown and Restart** option is selected, the following screen Figure 118 on page PROC-33 will be shown.

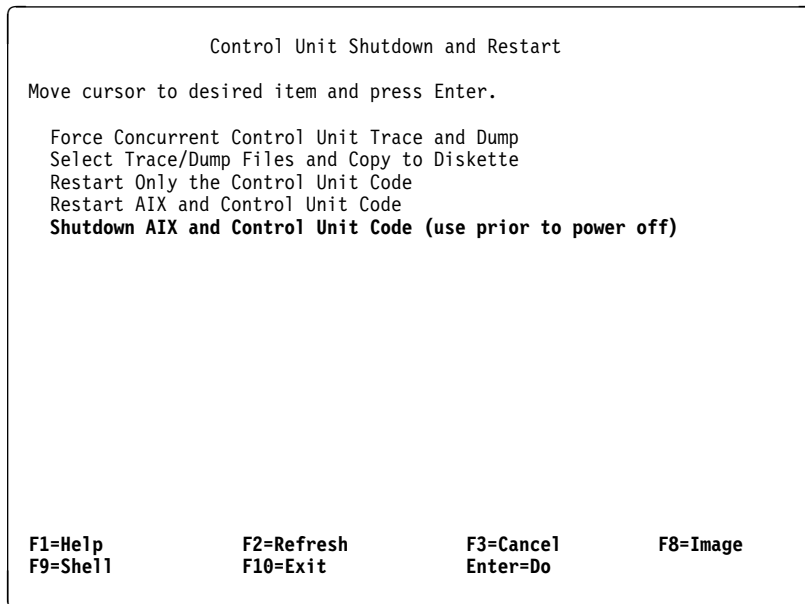


Figure 118. Control Unit Shutdown and Restart

When the **Shutdown AIX and Control Unit Code (use prior to power off)** is selected Figure 119 will be shown. This is a *Warning* to verify that the customer has quiesced all jobs on this control unit before proceeding.

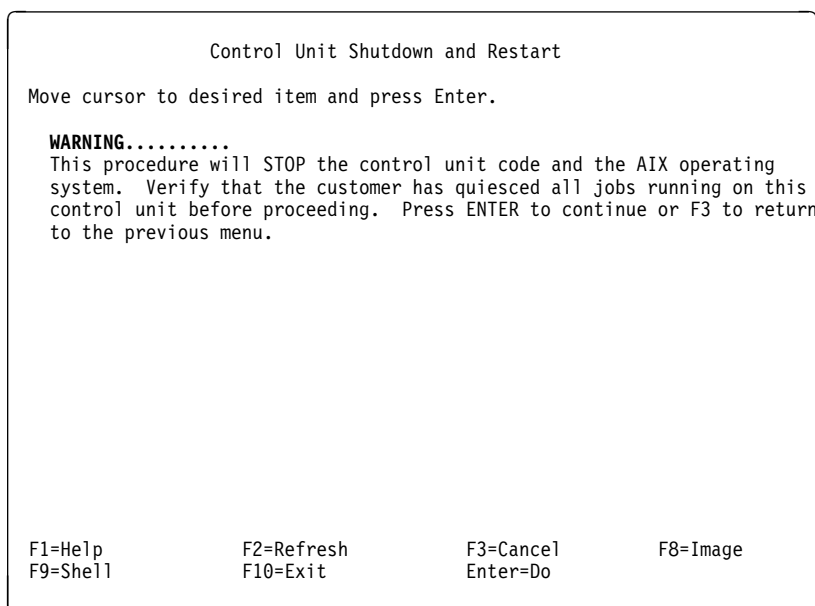


Figure 119. Control Unit Shutdown and Restart First Warning

When the **Shutdown AIX and Control Unit Code (use prior to power off)** is selected Figure 119 will be shown. This is a second *Warning* to give the CE a change to stop before stopping the microcode in the control unit and AIX operating system.

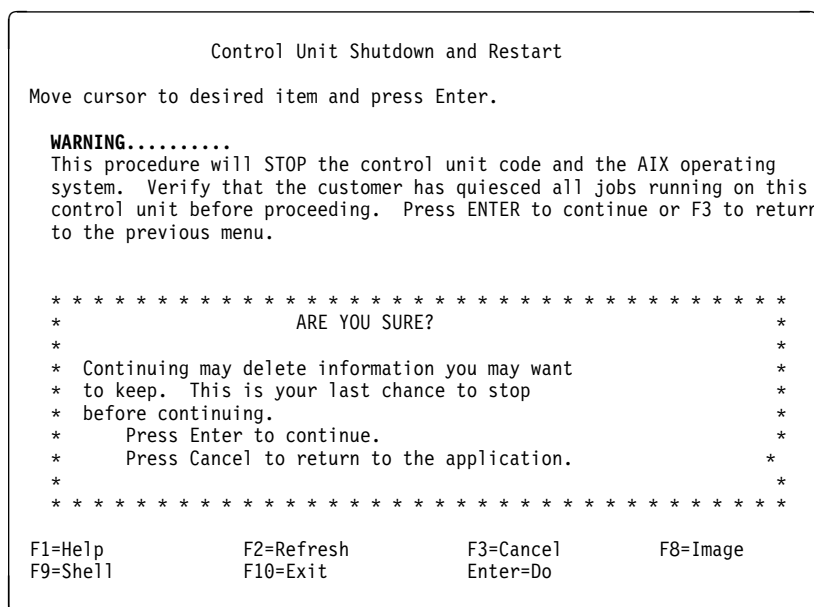


Figure 120. Control Unit Shutdown and Restart Second Warning

3. If you are doing the shutdown on an A14 frame, turn off the A14 power after completing the previous step by using the Power off switch on the A14 operator panel.

**Note:** Using the power off switch will cause a power down sequence of the attached devices before powering down the CU. Do not shut down the A00 or the A50 at the RS/6000 operator panel.



---

## Running Diagnostics from the A00 or A50 Controller

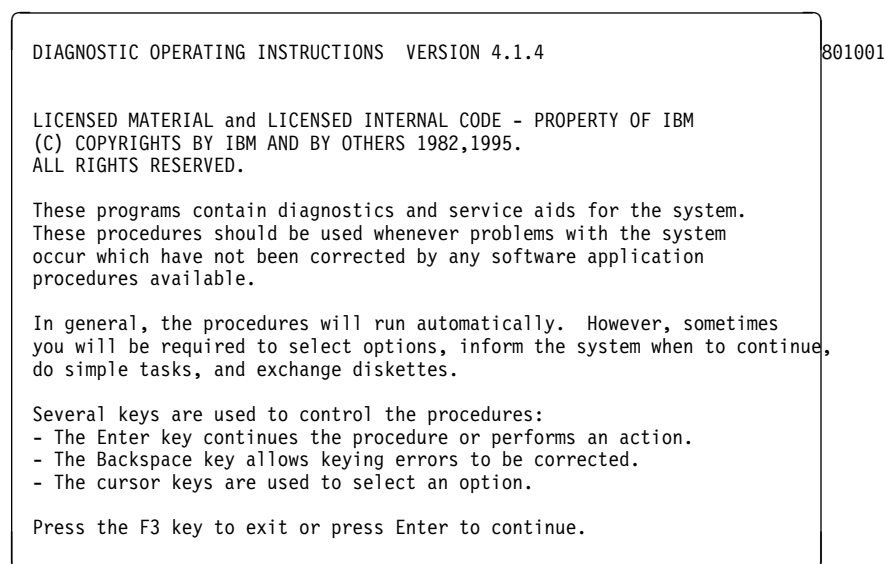
Have the customer vary the drives and control unit offline to the host before proceeding.

This procedure shows you how to execute diagnostics from the Service Terminal menus. Some of the RS/6000 maps may direct you to run diagnostics. In these instances follow the directions given in the maps. For general diagnostic information refer to the **"Diagnostic Information for Micro Channel Bus Systems"**, **"Using the Standalone and Online Diagnostics"** chapter.

1. Connect the Service Terminal and go to the main service menu.
2. From the main service menu select "Control Unit and Drive Online/Offline Control".
3. Select the "Display Control Unit, ESCON, and Tape Device Status". Verify from the displayed status that the ESCON adapter and all available Tape Drives are offline.
4. If the ESCON adapter or Tape Drives need to be taken offline select the appropriate "Vary Control Unit Offline" and/or "Vary Tape Drive Offline" menu selection from the "Control Unit and Drive Online/Offline Control" menu.

**Note:** Before running diagnostics on Model A14 frames, ensure the Controller Status LED is Off solid (wrench icon). Diagnostic errors may be encountered if the Status LED is flashing.

5. Return to the main "3590 Subsystem Maintenance" menu and select "Subsystem Diagnostics".
6. The following screen (see Figure 121) is displayed. Press the Enter key to continue.



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These programs contain diagnostics and service aids for the system.  
These procedures should be used whenever problems with the system  
occur which have not been corrected by any software application  
procedures available.

In general, the procedures will run automatically. However, sometimes  
you will be required to select options, inform the system when to continue,  
do simple tasks, and exchange diskettes.

Several keys are used to control the procedures:

- The Enter key continues the procedure or performs an action.
- The Backspace key allows keying errors to be corrected.
- The cursor keys are used to select an option.

Press the F3 key to exit or press Enter to continue.

Figure 121. Diagnostic Operating Instruction

7. The following screen (see Figure 122 on page PROC-36) will be displayed. "Diagnostic Routines" will run the basic diagnostics. "Advanced Diagnostic Routines" will run the advanced diagnostics which included the ESCON and TTY wrap tests.

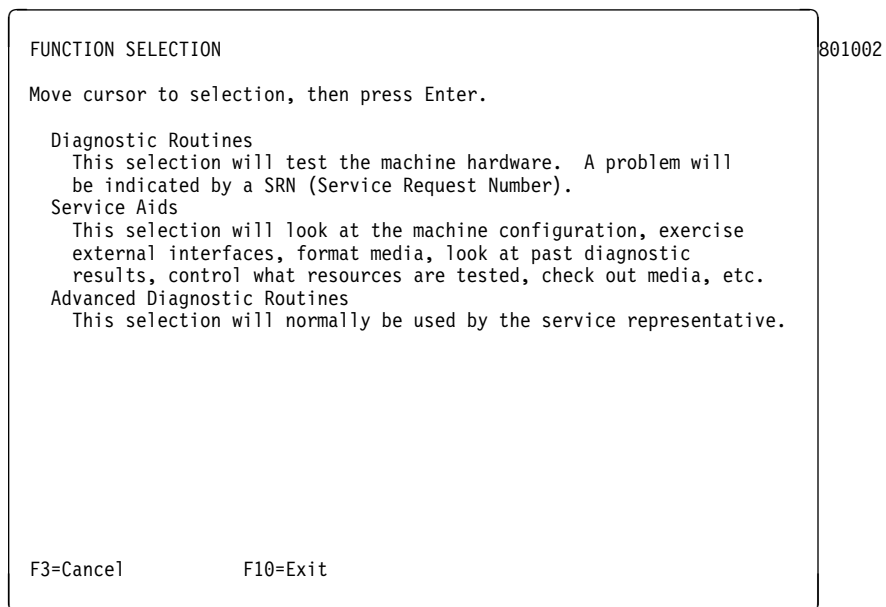


Figure 122. Function Selection

8. Following screen (see Figure 123) is displayed after selecting either the "Diagnostic Routines" or the "Advanced Diagnostic Routines".

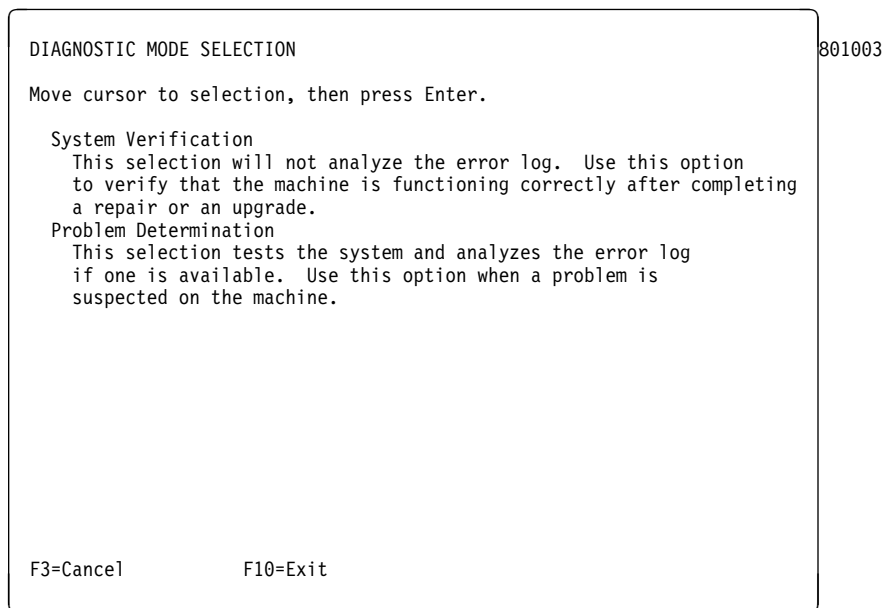


Figure 123. Diagnostic Mode Selection

- The following screen (see Figure 124 on page PROC-37) is displayed next if "Diagnostic Routines" was selected. Move cursor to resource you want to test and press the enter key.

801006

Choose the test that you want to run.

F3=Cancel                      F10=Exit

- The following screen (see Figure 125) is displayed next if "Advanced Diagnostic Routines" was selected. Move cursor to resource you want to test and press the enter key. For diagnostics that require wrap plugs you will be prompted when to install and remove the wrap plugs.

801005

Choose the test that you want to run.

F3=Cancel                      F10=Exit

Common Procedures **PROC-37**

---

## Setting the Correct time on the A00 or the A50

This procedure shows you how to set up the clock on the A00 or A50 using the Service Terminal menus.

1. Connect the Service Terminal (MoST) (see "Getting Started" on page PANEL-2) and go to the 3590 Subsystem Maintenance menu
2. From the main service menu select "Subsystem Configuration" (see Figure 126 on page PROC-38)
3. From the next menu to appear, Select the "Show / Change Date, Time, and Time Zone" (see Figure 127 on page PROC-39)
4. A pop-up menu will appear on the screen (see Figure 128 on page PROC-39)
5. Answer the question "Does this time zone go on DAYLIGHT SAVINGS TIME?"  
**Note:** Select either **yes** or **no** and press ENTER
6. A new pop-up screen will be displayed, "CUT (Coordinated Universal Time) Time Zone". On this screen you are given 18 different options, select the one that matches where the machine is installed, and Press the Enter key to continue. (see Figure 129 on page PROC-40)
7. A full screens is displayed, that allows you to enter values for the year, month, day, hour, minutes, and seconds. Type or select values in the entry fields, and press ENTER. (see Figure 130 on page PROC-40)

**Note:** It is very important to press **ENTER** after you have entered the values in the entry fields, or your values will not be saved, and the time, date etc. will not be updated.

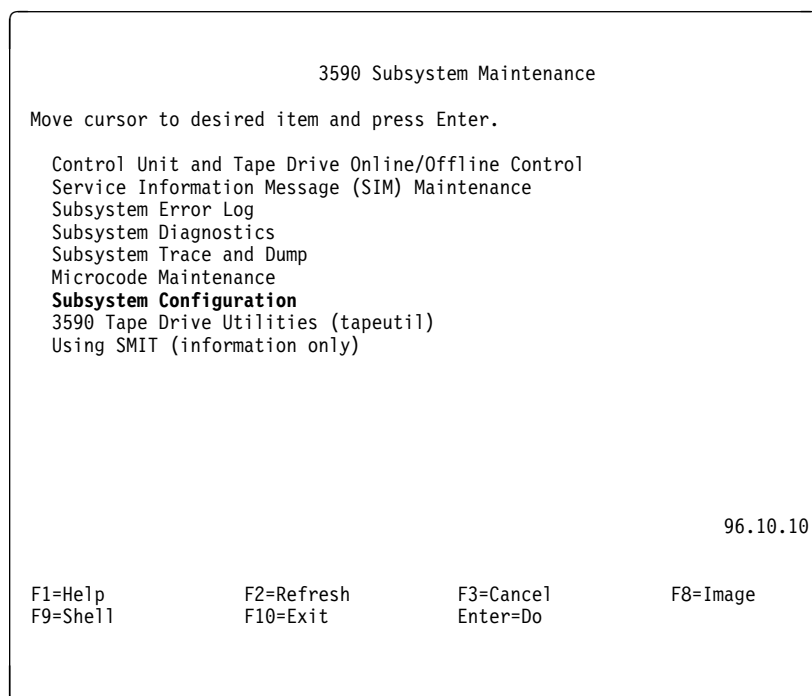


Figure 126. 3590 Subsystem Maintenance Screen

```

Subsystem Configuration

Move cursor to desired item and press Enter.

Show / Change Date, Time, and Time Zone
Show / Change Vital Product Data (VPD)
Show Control Unit Hardware Data (VPD)
Show / Change ESCON Channel Path Definitions
Show / Change 3490E Emulation Fencing Settings
Show / Change Automatic REBOOT after System Crash


F1=Help      F2=Refresh    F3=Cancel    F8=Image
F9=Shell     F10=Exit      Enter=Do

```

Figure 127. Subsystem Configuration

```

Subsystem Configuration

Move cursor to desired item and press Enter.

Show / Change Date, Time, and Time Zone
Show / Change Vital Product Data (VPD)
Show Channel Path Tables
Show / Change ESCON Channel Path Definitions
Show / Change Automatic REBOOT after System Crash


x x x x x x x x x x x x x x x x x x x x x x x x x x x x
x                               Use DAYLIGHT SAVINGS TIME?  x
x                                                                    x
x Move cursor to desired item and press Enter.                x
x                                                                    x
x # Does this time zone go on                                  x
x # DAYLIGHT SAVINGS TIME?                                    x
x #                                                            x
x 1 yes                                                         x
x 2 no                                                          x
x                                                                    x
x F1=Help              F2=Refresh          F3=Cancel    x
x F8=Image             F10=Exit             Enter=Do   x
F1x /=Find             n=Find Next          x
F9x x x x x x x x x x x x x x x x x x x x x x x x x x x x

```

Figure 128. Use DAYLIGHT SAVINGS Time?

```

Subsystem Configuration

x x x x x x x x x x x x x x x x x x x x x x x x x x x x
x          CUT (Coordinated Universal Time) Time Zone x
x
x Move cursor to desired item and press Enter.           x
x
x #TOP#
x (CUT0)      Coordinated Universal Time (CUT)           x
x (GMT0)      United Kingdom (CUT)                       x
x (AZOREST1)  Azores; Cape Verde (CUT -1)               x
x (FALKST2)   Falkland Islands (CUT -2)                 x
x (GRNLNDST3) Greenland; East Brazil (CUT -3)            x
x (AST4)      Central Brazil (CUT -4)                   x
x (EST5)      Eastern U.S.; Colombia (CUT -5)            x
x (CST6)      Central U.S.; Honduras (CUT -6)            x
x (MST7)      Mountain U.S. (CUT -7)                    x
x (PST8)      Pacific U.S.; Yukon (CUT -8)               x
x (AST9)      Alaska (CUT -9)                           x
x #MORE...18#
x
x F1=Help      F2=Refresh      F3=Cancel x
x F8=Image     F10=Exit        Enter=Do  x
F1x /=Find     n=Find Next      x
F9x x x x x x x x x x x x x x x x x x x x x x x x x x x x

```

Figure 129. CUT (Coordinated Universal Time)

```

Change / Show Date, Time, & Time Zone

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

Old time zone      [Entry Fields]
Time zone          MST7
Does this time zone go on daylight savings time? [MST7] no

* YEAR (00-99)      [96] #
* MONTH (01-12)     [10] #
* DAY (01-31)       [14] #

* HOUR (00-23)      [08] #
* MINUTES (00-59)   [46] #
* SECONDS (00-59)   [10] #

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command      F7=Edit       F8=Image
F9=Shell     F10=Exit        Enter=Do

```

Figure 130. Show / Change Date, Time and Time Zones

## Analyze the AIX Log Procedure

The control unit logs all errors to the AIX error log and then determines if a SIM or MIM should be sent to the host. In some cases, such as an intermittent or unknown CU hardware problem, the SIM or MIM record does not provide enough information to fix the problem and the diagnostics are unable to isolate the failure. In these cases, the actual AIX error log entry can be analyzed and used to isolate and repair the problem.

To View an AIX Error Log Entry:

1. Connect the Service Terminal to the RS/6000
2. At the "Subsystem Maintenance" panel, select "Subsystem Error Log"
3. Select "Generate an Error Report"
4. Highlight the line "SUMMARY or DETAILED error report" and press PF4 to list the options.
5. Select "detailed" and press ENTER.
6. If you have the sequence number of a specific AIX error log entry that you wish to analyze, then:
  - Highlight the line "SEQUENCE numbers (default is all)" and enter the sequence number in the brackets.
  - If you have the AIX Error ID of a specific AIX error log entry that you wish to analyze, then:
    - Highlight the line "Error ID's (default is all)" and enter the AIX error ID in the brackets. If you know the resource name for a specific AIX error log entry that you wish to analyze, then:
    - Highlight the line "Resource NAMES (default is all)" and enter the resource name in the brackets.
7. Press ENTER to generate the error report.
8. If multiple error log entries are displayed, then look for repetitive entries or entries with descriptions that are consistent with the symptoms of the failure you are trying to fix. Use the "U" and "D" keys to scroll up and down. If you are unable to find an entry that makes sense, then call your next level of support.
9. Follow the "Recommended Actions" and/or replace the FRUs identified by the "Failure Causes" and "Probably Causes". If you are uncertain of how to proceed, call your next level of support.
10. Press the "Q" key to return to the "Generate an Error Report" panel.
11. Press the PF3 key twice to return to the "Subsystem Maintenance" panel.



---

## Set or Reset the A00 or the A50 Control Unit in 3490E Emulation Mode

### WARNING:

**Only perform this procedure if the customer has requested that the A00 or A50 Control Unit operate in 3490E emulation mode or reset 3490E emulation mode.**

This procedure allows the Control Unit to emulate the 3490E control units. Using the Service Terminal (or the Library Manager if the A00 or A50 is part of a 3494 Dataserver) and get to the **3590 Subsystem Maintenance** screen. See Figure 131 on page PROC-42. and select **Subsystem Configuration**, the highlighted entry shown in Figure 131 on page PROC-42, the **Subsystem Configuration** screen shown in Figure 132 on page PROC-42, will be on the screen.

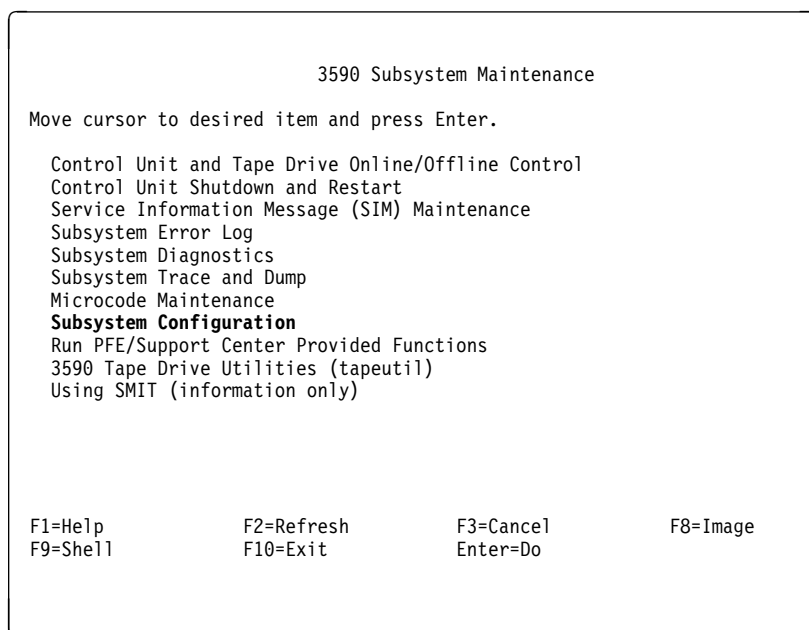


Figure 131. 3590 Subsystem Maintenance Screen

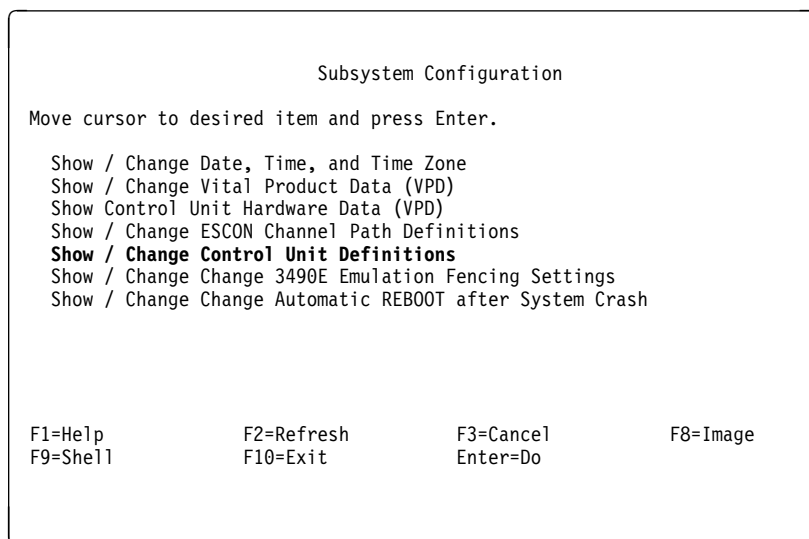


Figure 132. Subsystem Configuration Screen

Select the **Show / Change Control Unit Definitions** shown in Figure 132. Press Enter and the pop-up window shown in Figure 133 on page PROC-43 will be shown.



```

Subsystem Configuration

Move cursor to desired item and press Enter.

Show / Change Date, Time, and Time Zone
Show / Change Vital Product Data (VPD)
Show Control Unit Hardware Data (VPD)
Show / Change ESCON Channel Path Definitions
Show / Change Control Unit Definitions
Show / Change Change 3490E Emulation Fencing Settings
Show / Change Change Automatic REBOOT after System Crash
x x x x x x x x x x x x x x x x x x x x x x x x x x x x x
x           Control Unit Logical Name                           x
x                                                                 x
x Move cursor to desired item and press Enter                    x
x                                                                 x
x   cu0 Available 04-03-00 Control unit                          x
x                                                                 x
Fx F1=Heip              F2=Refresh              F3=Cancel        x
Fx F8=Image             F10=Exit                 Enter=Do         x
x /=Find                n=Find Next              x
x x x x x x x x x x x x x x x x x x x x x x x x x x x x x

```

Figure 133. Control Unit Logical Name Screen

Select the desired Available Control unit, see Figure 132 on page PROC-42 and press Enter. The **Change a Control Unit** screen will be shown, see Figure 134.

```

Change a Control Unit

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

Control Unit Logical Name      [Entry Fields]
Device Buffer Size             cu0                +
Control Unit Type              4194304             +
Base Address                   [3590]             +
Number of Attached Device      [00]              +X
                               [4]                +X

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command     F7=Edit        F8=Image
F9=Shell     F10=Exit       Enter=Do

```

Figure 134. Change a Control Unit Screen

Select **Control Unit Type** and press Enter. A pop-up window will be shown, see Figure 135 on page PROC-44 that allows you to select either a **3590** or **3490** control unit type.

To set 3490E emulation, select 3490 shown high lighted or to reset 3490E emulation mode, select 3590. When the selection has been made press Enter.

```

Change a Control Unit

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

Control Unit Logical Name      [Entry Fields]
Device Buffer Size             cu0
                               4194304
Control Unit Type           [3590]
Base Address                   [00]
Number of Attached Device      [4]

x x x x x x x x x x x x x x x x x x x x x x x x x
x                               Control Unit Type      x
x                               x                       x
x Move cursor to desired item and press Enter        x
x                               x                       x
x 3590                                                  x
x 3490                                                  x
x                               x                       x
Fx F1=Help          F2=Refresh          F3=Cancel      x
Fx F8=Image         F10=Exit             Enter=Do      x
Fx /=Find           n=Find Next          x
x x x x x x x x x x x x x x x x x x x x x x x x x

```

Figure 135. Select Control Unit Type Screen

After selecting the Control Unit Type desired and pressing Enter, the pop-up window will disappear and you should verify the Control Unit Type field has changed to your selection. See Figure 136

```

Change a Control Unit

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

Control Unit Logical Name      cu0                      +
Device Buffer Size              4194304                +
Control Unit Type            [3490]                 +
Base Address                    [00]                   +X
Number of Attached Device      [4]                    +#

```

F1=Help                      F2=Refresh                      F3=Cancel                      F4=List

F5=Reset                      F6=Command                      F7=Edit                      F8=Image

F9=Shell                      F10=Exit                      Enter=Do

Figure 136. Change a Control Unit Screen

---

## Setting Up EBTERM or Terminal Emulator for Setting Modem Password

**Note:** The modem password should **only** be used for configurations where the Axx is directly connected to the modem (**no** WTI data switch is used). For configurations with the WTI data switch the **WTI Data Switch password** should be used instead of the modem password.

EBTERM or Terminal Emulator must be "setup" prior to using for the first time on setting up the modem password. The following steps will show how to accomplish this only if using EBTERM. If using a different emulator, refer to the manufacturer's instructions to set up as an IBM 3151 Emulator.

**ATTENTION:** Ensure that the EBTERM program is installed on your Library Manager or Service Terminal before continuing.

1. Start EBTERM by double clicking on the EBTERM icon.
2. Select "**Setup**" from the tool bar across the top of the window.
3. Select "**Dialing Profiles**" from the pop-up list.
4. Select "**Add Profile**" from the pop-up list.
5. Select the first unused profile number from the pop-up list. This will open a window with the title "**EBTERM[A] Dialing Directory: Profile X**" where X is the profile number just selected.
6. Set the fields of the following window as shown.

Field Name	Set To Value
Host Location Description	A00 or A50 Modem Setup with Password
Modem Initialization	AT&FQ1E0\Q1*E1%U1\$B9600&D0&M2\N2*W0&Y0<e <all are the number zero(0)> <alpha characters are upper/lower case <sensitive> <Leave blank> <Leave blank> <Clear this field-should be blank>
Number to Dial	9600 <point and click on arrows to scroll through choices>
Long Distance Prefix	8/N/1
Response to Connect	Ignore
Serial Port Speed	Checkmark OFF in box <point and click on box to change>
Bits Setting	Checkmark OFF in box
Serial Port Buffer	Checkmark OFF in box
Display Buffer	IBM 3151
Flow Control XON/XOFF	ASCII 437 U.S. English
Flow Control CTS/RTS	None
Host Protocol	
Host Codepage	
Host Script	

Point and click on **Enter** at bottom of window after setting fields.

7. Select "**Setup**" from the tool bar across the top of the window.
8. Select "**Save as...**" from the pop-up list.
9. Press "**Enter**" to save changes just made.
10. Select "**Setup**" from the toolbar across the top of the window.
11. Select "**Dialing Profiles**" from the pop-up list.
12. Select **Add Profile** from the pop-up list.

13. Select the first unused profile number from the pop-up list. This will open a window with the title **"EBTERM[A] Dialing Directory: Profile X"** where X is the profile number just selected.
14. Set the fields of the following window as shown.

Field Name	Set To Value
Host Location Description	Direct Modem AT Command Entry
Modem Initialization	<Clear this field - should be blank>
Number to Dial	<Leave blank>
Long Distance Prefix	<Leave blank>
Response to Connect	<Clear this field-should be blank>
Serial Port Speed	9600 <point and click on arrows to scroll through choices>
Bits Setting	8/N/1
Serial Port Buffer	Ignore
Display Buffer	Checkmark OFF in box <point and click on box to change>
Flow Control XON/XOFF	Checkmark OFF in box
Flow Control CTS/RTS	Checkmark OFF in box
Host Protocol	DEC VT100
Host Codepage	ASCII 437 U.S. English
Host Type	ASCII
Logon Script	None

Point and click on **Enter** at the bottom of the window, after setting fields.

15. Select **"Setup"** from the tool bar across the top of the window.
16. Select **"Configuration/Modem"** from the pop-up list.
17. Clear the field **"Modem Dial Prefix 3"**. Leave all other fields unchanged. Point and click on **"Enter"** at bottom of window after clearing field.
18. Select **"Setup"** from the tool bar across the top of the window.
19. Select **"Save as..."** from the pop-up list.
20. Press **"Enter"** to save changes just made.

The EBTERM program is now set up to correctly initialize the modem with password protection.

**Note:**

Modem initialization string

```

&F      set factory defaults
Q1      disable result codes
E0      turn off echo of the AT commands
\Q1     set XON/XOFF on the DTE port
*E1     enable remote access
%U1     always keeps the current serial port speed
$B9600  set serial port rate to 9600
&D0     ignores DTR (DTR not needed for auto-answer)
&M2     set password verification
\N2     set modem to reliable mode (required for password verification)
*W0     store setup in memory zero
&Y0     make setup the default

```

---

## Modem Initialization with Password

**Note:** The Modem password should **only** be used for configurations where the Axx is directly connected to the modem (**no** WTI data switch is used). For configurations with the WTI data switch the **WTI Data Switch password** should be used instead of the modem password.

The Modem must be initialized, prior to using the system. Use the following steps to accomplish this.

**ATTENTION:** The Service Terminal must be set up with EBTERM or Terminal Emulator before continuing with the modem initialization. (See "Setting Up EBTERM or Terminal Emulator for Setting Modem Password" on page PROC-45.

- \_\_\_ 1. Turn Modem power off.
- \_\_\_ 2. Either the MoST or the Library Manager may be used to initialize the modem.
  - a. If using the MoST terminal:
    - A spare 9 pin to 25 pin cable is included with the 3590-Axx to use with this procedure. Connect the 9 pin connector to the MoST terminal serial port and the 25 pin connector to the DTE connector on the back of the modem (Do **NOT** use the null modem adapter that is provided with the cable.)
  - b. If using the Library Manager:
    - Locate the Service Cable between the Library Manager Com Port A and the null modem connected to the Service Panel (refer to Figure 36 on page INST-31). Leave the 9 pin connector of the Service Cable connected to the Library Manager Com Port A. Disconnect the 25 pin connector from the null modem adapter and connect it to the DTE connector on the back of the modem (Do **NOT** use the null modem adapter for this procedure).
- \_\_\_ 3. Remove the small panel (approximately 1.5 inches X 0.3 inches ("DeskPorte FAST" on it) from the front of the modem. There will be a series of switches behind this panel.
- \_\_\_ 4. Set the switches as shown, from left to right.

D D D D D D D U D D D D

**Note:** Only **one** switch is up. The remainder are down. (D=down, U=up.)

- \_\_\_ 5. Turn modem power on.
- \_\_\_ 6. Start EBTERM.
  - a. Select "**Modify**" from the toolbar across the top of the window.
  - b. In the pop-up list, verify that "**Direct Connect Mode**" does **NOT** have a check mark (√) next to it.
  - c. If it needs to be changed, point and click on "**Direct Connect Mode**", to remove the check mark (√).
- \_\_\_ 7. In the pop-up list displayed in step 6, select "**Dial Prefix Selections**".
- \_\_\_ 8. Select "**External Prefix 2**" from the pop-up list.

**Note:** There should be a check mark (√) next to "External Prefix 2".
- \_\_\_ 9. Select "**Connect**" from the toolbar across the top of the window.
- \_\_\_ 10. Select "**3590-Axx Modem Setup with Password**" from the pop-up list.

- \_\_\_ 11. The characters "**AT&FQ1E0\Q1\*E1%U1\$B9600&D0&M2\N2\*W0&Y0**" should be displayed in the EBTERM window. On the next line, **OK** should be displayed.
- If the displays specified are not correct;
- a. Check the switch settings in step 4 on page PROC-47.
  - b. Return to "Setting Up EBTERM or Terminal Emulator for Setting Modem Password" on page PROC-45 and make sure that EBTERM was set up correctly.
  - c. If the problem persists, contact your next level of support.
- \_\_\_ 12. Select "**Disconnect**" from the tool bar across the top of the EBTERM window.
- \_\_\_ 13. Password protection is now active on the modem. The following steps are used to enter or change the password.
- a. Select "**Modify**" from the toolbar across the top of the window
  - b. In the pop-up list, verify the "**Direct Connect Mode**" does have a check mark (√) next to it.
  - c. Point and click on "**Direct Connect Mode**". If it needs to be changed, add the Check mark (√).
- \_\_\_ 14. Select "**Connect**" from the tool bar across the top of the window.
- \_\_\_ 15. Select "**Direct Modem at Command Entry**" from the pop-up list.
- \_\_\_ 16. Wait a few seconds to allow the CONNECT to complete. CONNECT has completed when the EBTERM Status line (line above tool bar) changes from "**EBTERM[A] [min]**" to "**EBTERM[A] [0]**"
- \_\_\_ 17. Type **AT%I0** (letter I, number zero) and press ENTER.
- Note:** The **AT%I0** will not be displayed when entered)
- \_\_\_ 18. The EBTERM display should now show **NEW PASSWORD:**. Unless directed otherwise by your second level support or by your customer, enter **pfe4u** as the password. Type in the password and press ENTER.
- Note:** Passwords must contain exactly five alphanumeric characters. The password letters are not upper and lower case sensitive.
- \_\_\_ 19. Select "**Disconnect**" from the tool bar at the top of the EBTERM window.
- \_\_\_ 20. Turn modem power **OFF**.
- \_\_\_ 21. Reset the switches on the modem.
- D D D D D D D D D D D D
- Note:** all switches are in the down (D) position.
- \_\_\_ 22. Turn the modem "**On**". Check the LCD of the modem. The display should continue to show 28.8. If the displays specified are not correct:
- a. Start at step 1 on page PROC-47.
  - b. If the problem persists, contact your next level of support.
- \_\_\_ 23. Reinstall the panel removed in step 3 on page PROC-47







---

# Locations, Checks, Adjustments, Removals, and Replacements

**Contents**

	A00 Removal and Replacement . . . . .	LOC*CAR-2
	Adapter Plugging (ESCON and SCSI) for the A00 Controller . . . .	LOC*CAR-3
	A00 Hard Disk Removal and Replacement . . . . .	LOC*CAR-4
	Adapter Plugging (ESCON and SCSI) for the A00 Controller . . . .	LOC*CAR-5
	A50 Removal and Replacement . . . . .	LOC*CAR-6
	A50 Hard Disk Removal and Replacement . . . . .	LOC*CAR-6



## A00 Removal and Replacement

**Removal of A00:** Before removal of the A00 Controller, have the customer take the A00 Controller offline from the host, as the host cable must be removed.

Follow the procedures below to remove the A00 Controller.

**Note:** Each model that contains a A00 Controller has a slightly different set of shelf and mounting hardware, but these differences do not significantly affect removal and replacement of the A00 Controller.

1. On Model A14, D14 and Rack systems, remove the two screws on each side of the bracket holding the A00 Controller to the shelf, and remove the holding bracket.
2. On Model L14, loosen the two screws that retain the holding bracket against the A00 Controller, and lift the holding bracket clear of the A00 Controller.
3. Carefully slide the A00 Controller toward the rear of the frame.
4. Remove the following cables from the rear of the A00 Controller:
  - a. Power cable
  - b. Host cable
  - c. Special "Y" cable to the Serial connector
  - d. Operator panel cable (A14 only) to Parallel connector
  - e. SCSI cable from the 1st drive to Adapter slot 1
5. slide the A00 Controller to the rear and remove it for service.
6. If service is needed on the A00 Controller, refer to the R/S 6000 Service Manual for procedures. Return here when you are ready to install the A00 Controller back into the frame.

### **Replacement of A00 Controller**

1. Perform the replacement procedure in the reverse order, then return here.
2. Perform "End of Call" on page PROC-2.
3. Use your local procedures to report the FRU part number for the failing part you replaced, and use technical area code (TAC) **xxx** for the area of failure.

## Adapter Plugging (ESCON and SCSI) for the A00 Controller

In the field there are two type of SCSI adapter cards used for the A00 controller. One of these types contain a heat sink and require that the Adapter plugging be changed from the original configuration.

P/N 40H2842 is the original type without the heat sink, adapter plugging is shown in Figure 137 and Figure 138

P/N 05H3090 is the new type with the heat sink, adapter plugging is shown in Figure 139 and Figure 140

Figure 137. A00 With FC 3311 (Single SCSI, Single ESCON)

Frame

Adapter Slot	Adapter Plug
1	SCSI - SCSI Card P/N 40H2842
2	(unused)
3	ESCON
4	(unused)

Figure 138. A00 With FC 3312 (Dual SCSI, Dual ESCON)

Adapter Slot	Adapter Plug
1	SCSI 0 - SCSI Card P/N 40H2842
2	SCSI 1 - SCSI Card P/N 40H2842
3	ESCON 1
4	ESCON 2

Figure 139. A00 With FC 3311 (Single SCSI, Single ESCON)

Adapter Slot	Adapter Plug
1	ESCON
2	(unused)
3	SCSI - SCSI Card P/N 05H3090
4	(unused)

Figure 140. A00 With FC 3312

Adapter Slot	Adapter Plug
1	ESCON 1
2	ESCON 2
3	SCSI 0 - SCSI Card P/N 05H3090
4	SCSI 1 - SCSI Card P/N 05H3090

## A00 Hard Disk Removal and Replacement

**Removal of A00 Hard Disk:** Before removal of the A00 Controller, have the customer take the A00 Controller offline from the host, as the host cable must be removed.

This procedure will be sending you to other sections of this MI as well as to the R/S 6000 documentation for some of the procedures. You should always return here after completing those procedures.

Follow the procedures below to remove the A00 Controller hard disk drive.

1. Perform the removal procedure on "A00 Removal and Replacement" on page LOC\*CAR-2.
2. Go to the 7009 Compact Server Service Guide, Power Station Power Server SA23-2716 and perform removal of the hard disk, then return here for further instructions on how to recover the microcode and other data.
3. When the hard disk is removed, and a new one is in hand, go to "Replacement of A00 Controller Hard Disk."

### **Replacement of A00 Controller Hard Disk**

1. Refer to 7009 Compact Server Service Guide, Power Station Power Server SA23-2716 for procedures on how to replace the hard disk, and perform basic hard disk recovery. Return here for product specific recovery procedures.
2. Perform "Replacement of A00 Controller" on page LOC\*CAR-2.  
**Note:** It is assumed that the hard disk comes formatted.
3. Perform "Installing AIX in the A00 Controller Environment" on page PROC-2 and then return here.
4. Perform "Axx Stand-Alone Power On and Checkout" on page INST-79 to ensure that the A00 Controller is now fully operational.
5. Perform "End of Call" on page PROC-2.
6. Use your local procedures to report the FRU part number for the FID and use technical area code (TAC) **yyy** for the area of failure.

## Adapter Plugging (ESCON and SCSI) for the A00 Controller

In the field there are two type of SCSI adapter cards used for the A00 controller. One of these types contain a heat sink and require that the Adapter plugging be changed from the original configuration.

P/N 40H2842 is the original type without the heat sink, adapter plugging is shown in Figure 141 and Figure 142

P/N 05H3090 is the new type with the heat sink, adapter plugging is shown in Figure 144 and Figure 143

Figure 141. A00 With FC 3311 (Single SCSI, Single ESCON)

Frame

Adapter Slot	Adapter Plug
1	SCSI - SCSI Card P/N 40H2842
2	(unused)
3	ESCON
4	(unused)

Figure 142. A00 With FC 3312 (Dual SCSI, Dual ESCON)

Adapter Slot	Adapter Plug
1	SCSI 0 - SCSI Card P/N 40H2842
2	SCSI 1 - SCSI Card P/N 40H2842
3	ESCON 1
4	ESCON 2

Figure 143. A00 With FC 3311 (Single SCSI, Single ESCON)

Adapter Slot	Adapter Plug
1	ESCON
2	(unused)
3	SCSI - SCSI Card P/N 05H3090
4	(unused)

Figure 144. A00 With FC 3312

Adapter Slot	Adapter Plug
1	ESCON 1
2	ESCON 2
3	SCSI 0 - SCSI Card P/N 05H3090
4	SCSI 1 - SCSI Card P/N 05H3090

## A50 Removal and Replacement

**Removal of A50:** Before removal of the A50, have the customer take the A50 offline from the host, as the host cable must be removed.

Follow the procedures below to remove the A50.

**Note:** Each model that contains a A50 has a slightly different set of shelf and mounting hardware, but these differences do not significantly affect removal and replacement of the A50.

1. Carefully slide the A50 toward the rear of the frame.
2. Remove the following cables from the rear of the A50:
  - a. Power cable
  - b. Host cable
  - c. Operator panel cable (A14 only) to Parallel connector
  - d. SCSI cable from the 1st drive to Adapter slot 1
3. Lift the A50 up and remove for service.
4. If service is needed on the A50, refer to the R/S 6000 Service Manual for procedures. Return here when you are ready to install the A50 back into the frame.

### **Replacement of A50**

1. Perform the replacement procedure in the reverse order, then return here.
2. Perform "End of Call" on page PROC-2.
3. Use your local procedures to report the FRU part number for the failing part you replaced, and use technical area code (TAC) **xxx** for the area of failure.

## A50 Hard Disk Removal and Replacement

**Removal of A50 Hard Disk:** Before removal of the A50, have the customer take the A50 offline from the host, as the host cable must be removed.

This procedure will be sending you to other sections of this MI as well as to the R/S 6000 documentation for some of the procedures. You should always return here after completing those procedures.

Follow the procedures below to remove the A50 hard disk drive.

1. Perform the removal procedure on "A50 Removal and Replacement."
2. Go to the Models 140 and 240 Service Guide, SA38-0512 and perform removal of the hard disk, then return here for further instructions on how to recover the microcode and other data.
3. When the hard disk is removed, and a new one is in hand, go to "Replacement of A50 Hard Disk."

### **Replacement of A50 Hard Disk**

1. Refer to Models 140 and 240 Service Guide, SA38-0512 for procedures on how to replace the hard disk, and perform basic hard disk recovery. Return here for product specific recovery procedures.
2. Perform "Replacement of A50."

**Note:** It is assumed that the hard disk comes formatted.

3. Perform “Installing AIX in the A00 Controller Environment” on page PROC-2 and “Adding new Code Images to the A00/A50” on page PROC-7 then return here.
4. Perform “Axx Stand-Alone Power On and Checkout” on page INST-79 to ensure that the A50 is now fully operational.
5. Perform “End of Call” on page PROC-2.
6. Use your local procedures to report the FRU part number for the FID and use technical area code (TAC) **yyy** for the area of failure.







# Parts Catalog

## SECURITY

### How to Use This Parts Catalog

- **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 the quantity of the part is used as required.
- **NP:** (Non-Procurement) 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 the part has a restricted availability.

- **INDENTURE:** The indenture is marked by a series of dots located before the parts description. The indenture indicates the relationship of a part to the next higher assembly. For example:

Indenture	Relationship of Parts
(No dots)	MAIN ASSEMBLY
(One dot)	• Detail parts of a main assembly
(One dot)	• Subassembly of the main assembly
(Two dots)	• • Detail part of a one-dot subassembly
(Two dots)	• • Subassembly of a one-dot subassembly
(Three dots)	• • • Detail part of a two-dot subassembly

### Assembly n: Cover Assembly

Asm-Index	Part Number	Units	Description
n-	2512667	1	Cover Assembly, Rear, Red
-	2512668	1	Cover Assembly, Rear, Yellow
-	2512669	1	Cover Assembly, Rear, Blue
-	2512670	1	Cover Assembly, Rear, Gray
-	2513714	1	Cover Assembly, Rear, White
			For Next Higher Assembly, See 1-2 on page 15
-1	5373637	1	• Seal, Top
-2	5356429	2	• Clip, Retaining
-3	2513013	3	• Liner, Cover
-4	5373727	1	• Seal, Left Side
-5	5356429	3	• Clip, Retaining
-6	513668	2	• Catch, Cover
-7	81693	4	• Screw, Mach Bind Hd- 6-32, X 0.375 Long
-8	1847630	R	• Finger Stock Assembly
-9	1847602	NR	• • Channel, Finger Stock
-10	1847604	NR	• • Finger Stock, 2.00 Long
-11	5373639	AR	• Seal, Bottom
-12	5356429	2	• Clip, Retaining
-13		NP	• Cover, Rear, without Paint

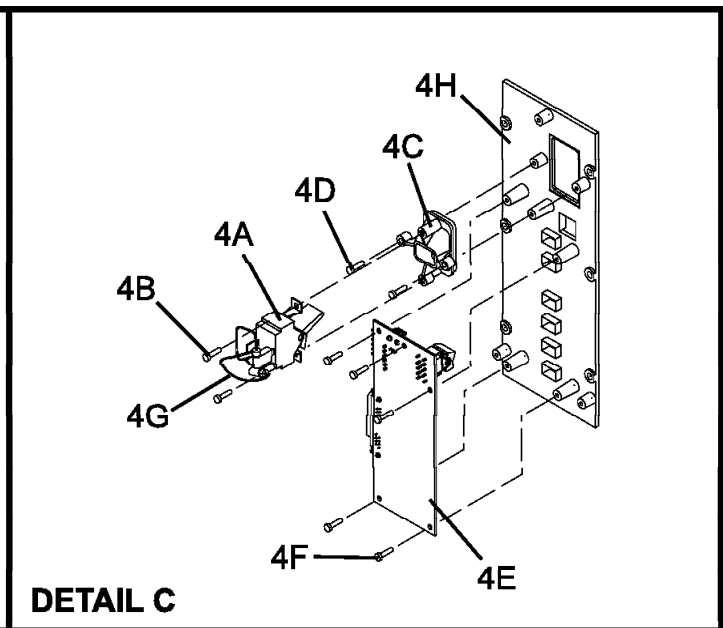
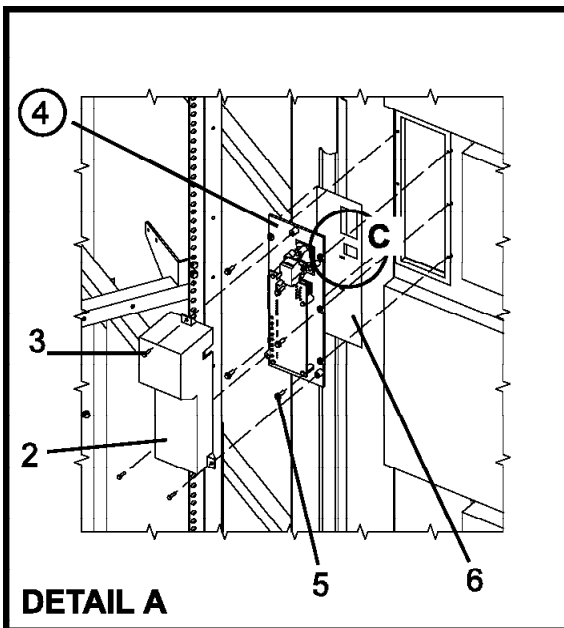
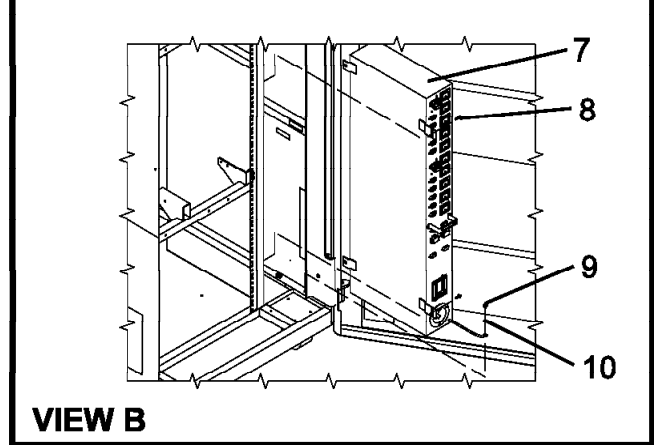
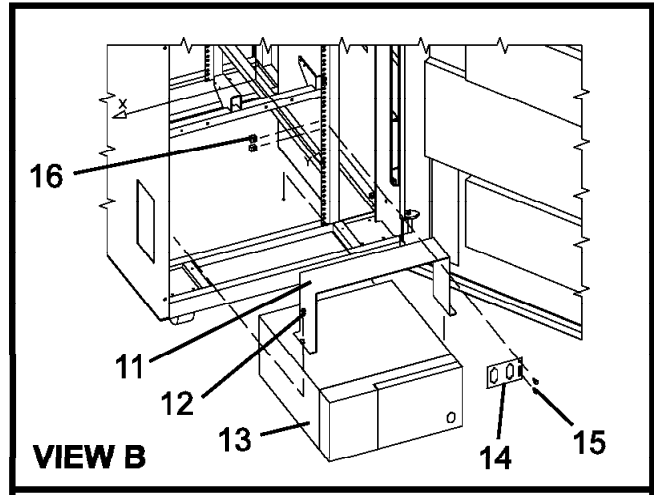
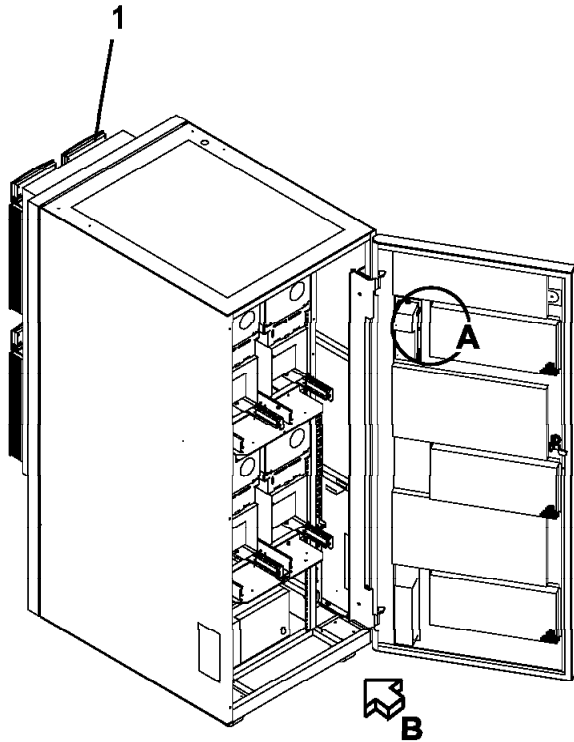
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## Assembly 1: A14 Final Assembly



A1480A06

Asm- Index	Part Number	Units	Description
1-		NP	A14 Final Assembly
-1		NP	• 3590 B11, Drive
-2	05H4509	1	• Cover, Operator Panel Card
-3	1622533	3	• Screw, Metric-Thd Rolling Pan Hd M3 X 12 mm Long
-4	05H4510	1	• Panel Assembly, Operator
-4A	67X8763	1	• • Switch, UEPO
-4B	1622533	2	• • Screw, Metric-Thd Rolling Pan Hd M3 X 12 mm Long
-4C	4451782	1	• • Housing, Switch, UEPO
-4D	1622533	2	• • Screw, Metric-Thd Rolling Pan Hd M3 X 12 mm Long
-4E	05H4466	1	• • Card, OPN1
-4F	1622533	5	• • Screw, Metric-Thd Rolling Pan Hd M3 X 12 mm Long
-4G	1622533	1	• • Cable Assembly, UEPO to OPN1
-4H	05H4506	1	• • Operator Panel
-5	1624767	5	• Screw, Metric-Hex Fling Hd M4 X 12 mm Long
-6	05H9001	1	• Label, Operator Panel, English
-6	05H9002	1	• Label, Operator Panel, German
-6	05H9003	1	• Label, Operator Panel, Spanish
-7	21F9008	1	• PCC Assembly, 25A 1PH AC PS
-8	1624776	2	• Screw, Metric-Thd Form Hex Fling Hd M5 X 8 mm Long
-9	1624779	1	• Screw, M5 X 14 Metric-Hex Fling Hd M5 X 14 mm Long
-10	1622347	1	• Lockwasher, Metric-Ext Tooth 5.3 ID X 10 OD
-11	05H8990	1	• Bracket, RISC Retaining
-12	1624779	2	• Screw, M5 X 14 Metric-Hex Fling Hd M5 X 14 mm Long
-13		1	• RISC 6000/C20 For A00 Detail Breakdown Refer to 7009 Power Server Documentation For A50 Detail Breakdown Refer to 7043 Power Server Documentation To see mounting hardware for each of the frames, choose the correct model from the table of contents of the Install section.
-14	05H7821	1	• Bracket Connector
-15	1624779	2	• Screw, M5 X 14 Metric-Hex Fling Hd M5 X 14 mm Long
-16	74F1823	1	• Nut Clip, M5

## Assembly 2: Cable List

Asm- Index	Part Number	Units	Description
2-		NP	Cable List
-	05J9572	AR	• A50 Line cord, AC power
-	05H8911	AR	• A00 Line cord, AC power A00/Bxx
-	05H3210	AR	• Cable Assembly, Controller Interface
-	05H3211	AR	• Cable Assembly, PCC to Operator Panel Card
-	05H3212	AR	• Cable Assembly, UEPO
-	05H3221	AR	• Cable Assembly, SCSI 2.9 Meter
-	05H3299	AR	• Cable Assembly, RS323 Interface
-	05H3303	AR	• Cable Assembly, RS323 A00 to Bulkhead
-	05H4647	AR	• Cable Assembly, SCSI 2.8 Meter
-	05H8015	AR	• Cable Assembly, SCSI 3.5 Meter
-	05H4648	AR	• Cable Assembly, SCSI 4.5 Meter
			<p><b>Note:</b> For SCSI cable information, see IBM 3590 Tape Subsystem Models B11 and B1A MI.</p>

### Assembly 3: Remote Switch Assembly

Asm- Index	Part Number	Units	Description
3-		NP	WTI Switch / Cable Assembly
-	05H9742	AR	• APS-16, High Speed Async Port Switch
-	05H3352	AR	• Modem Cable
-	05H3357	AR	• Modem Adapter
-	05H3350	AR	• MDS-16, Data Switch
-	05H3299	AR	• MC925-10, Modem to Switch Cable, 25 Card pin to 9 pin, 10 feet
-	04H6328	AR	• 9-25 Pin Cable
-	05H9744	AR	• RJC-150, 150 foot RJ-45 Cable
-	05H9745	AR	• LDRJ-9F, RS-232 to 422 Converter, connects to APS-16 switch
-	05H9746	AR	• LDRJ-25, RS-232 to 422 Converter, connects to IBM Control Unit serial port
-	05H9044	AR	• Modem Deskport Fast USA,

## Assembly 4: Adapter Assemblies

Asm- Index	Part Number	Units	Description
4-		NP	ESCON / SCSI Assemblies
-	51H8701	AR	• ESCON Adapter 3590 A00
-	51H8712	AR	• ESCON Adapter 3590 A50
-	5605670	AR	• FOSA Wrap Plug Tool
-	52G3380	AR	• SCSI Corvette Adapter
			Card



## Assembly 5: Adapter Assemblies

Asm- Index	Part Number	Units	Description
5-		NP	World Wide Modems
-1	05H7048	1	• ISM (South Africa), Microcom Deskporte FAST+ Modem
-1	05H7024	1	• Czechia, Microcom Deskporte FAST+ Modem
-1	05H7024	1	• Slovenia, Microcom Deskporte FAST+ Modem
-1	05H7024	1	• Hungary, Microcom Deskporte FAST+ Modem
-1	05H7024	1	• Jordan, Microcom Deskporte FAST+ Modem
-1	05H7024	1	• Ukraine, Microcom Deskporte FAST+ Modem
-1	05H7027	1	• Germany, Microcom Deskporte FAST+ Modem
-1	05H7030	1	• Israel, Microcom Deskporte FAST+ Modem
-1	05H7033	1	• France, Microcom Deskporte FAST+ Modem
-1	05H7033	1	• Italy, Microcom Deskporte FAST+ Modem
-1	05H7033	1	• Portugal, Microcom Deskporte FAST+ Modem
-1	05H7036	1	• Japan, Microcom Deskporte FAST+ Modem
-1	05H7039	1	• Belgium, Microcom Deskporte FAST+ Modem
-1	05H7039	1	• Netherlands, Microcom Deskporte FAST+ Modem
-1	05H7042	1	• New Zealand, Microcom Deskporte FAST+ Modem
-1	05H7044	1	• USA and Canada, Microcom Deskporte FAST+ Modem
-1	05H7045	1	• ILC, Microcom Deskporte FAST+ Modem
-1	05H7045	1	• Denmark, Microcom Deskporte FAST+ Modem
-1	05H7045	1	• Norway, Microcom Deskporte FAST+ Modem
-1	05H7045	1	• Sweden, Microcom Deskporte FAST+ Modem
-1	05H7051	1	• Cyprus, Microcom Deskporte FAST+ Modem
-1	05H7051	1	• United kingdom, Microcom Deskporte FAST+ Modem
-1	05H7054	1	• Colombia, Microcom Deskporte FAST+ Modem
-1	05H7054	1	• Costa Rica, Microcom Deskporte FAST+ Modem
-1	05H7054	1	• Ecuador, Microcom Deskporte FAST+ Modem
-1	05H7054	1	• Taiwan, Microcom Deskporte FAST+ Modem
-1	05H7054	1	• Uruguay, Microcom Deskporte FAST+ Modem
-1	05H7054	1	• Venezuela, Microcom Deskporte FAST+ Modem
-1	05H7057	1	• Argentina, Microcom Deskporte FAST+ Modem
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-1	05H7060	1	• Austria, Microcom Deskporte FAST+ Modem
-1	05H7063	1	• Switzerland, Microcom Deskporte FAST+ Modem
-1	05H7066	1	• Finland, Microcom Deskporte FAST+ Modem
-1	05H7069	1	• Australia, Microcom Deskporte FAST+ Modem
-1	05H7072	1	• Mexico, Microcom Deskporte FAST+ Modem
-1	05H7075	1	• Peoples Republic of China, Microcom Deskporte FAST+ Modem
-1	05H7075	1	• Hong Kong, Microcom Deskporte FAST+ Modem
-1	05H7075	1	• Malaysia, Microcom Deskporte FAST+ Modem
-1	05H7075	1	• Singapore, Microcom Deskporte FAST+ Modem



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# Glossary

This glossary defines the special terms, abbreviations, and acronyms that are used in this publication. If you do not find the term you are looking for, refer to the index or to the *Dictionary of Computing*, New York: McGraw-Hill, 1994.

## A

**ac.** Alternating current.

**access method.** A technique for moving data between main storage and input or output devices.

**ACF.** Automatic cartridge facility.

**adj.** Adjustment.

**AEN.** Asynchronous event notification.

**AIX.** Advanced Interactive Executive. IBM's implementation of the UNIX operating system. The RS/6000 system, among others, runs the AIX operating system.

**alter.** To change.

**ANSI.** American National Standards Institute.

**ARTIC.** A real time interface processor. In a tape library, the RS-422 communication path between the 3590 and the library manager.

**ASCII.** American National Standard Code for Information Interchange. A 7-bit coded character set (8 bits including parity check) that consists of control characters and graphic characters.

**assigning a device.** The establishing of the relationship of a device to a running task, process, job, or program.

**assignment.** The naming of a specific device to perform a function.

**assistance.** Aid.

**asynchronous.** Pertaining to two or more processes that do not depend upon the occurrence of specific events such as common timing signals.

**attention (notice).** A word for calling attention to the possibility of danger to a program, device, or system, or to data. Contrast with *caution* and *danger*.

**ATTN.** Attention.

## B

**backhitch.** Magnetic tape that makes a slight backward motion just prior to moving forward.

**backup.** To make additional copies of documents or software for safekeeping.

**BCR.** Buffer channel remainder register.

**BCSE.** Buffer channel status/error register.

**BDSE.** Buffer device status/error register.

**beginning-of-tape (BOT).** The location on a magnetic tape that indicates the start of the permissible recording area.

**bezel.** Decorative and safety cover.

**bicolored.** Having two colors.

**BM or bill of materials.** A list of specific types and amounts of direct materials expected to be used to produce a given job or quantity of output.

**BOB.** Beginning-of-block.

**BOT.** Beginning-of-tape.

**buffer.** A routine or storage used to compensate for a difference in rate of flow of data or time of occurrence of events, when transferring data from one device to another.

**bus.** A facility for transferring data between several devices located between two end points, only one device being able to transmit at a given moment.

## C

**caution (notice).** A word to call attention to possible personal harm to people. Contrast with *attention* and *danger*.

**CCW.** Channel command word.

**CCW chain.** A list of channel command words to be performed in sequence.

**CE.** Customer engineer; field engineer; service representative.

**CEM.** customer engineering memorandum.

**CER.** Channel error register.

**channel command.** An instruction that directs a data channel, control unit, or device to perform an operation or set of operations.

**char.** Character.

**CHK.** Check.

**cm.** Centimeter.

**command.** A control signal that initiates an action or the start of a sequence of actions.

**concurrent.** Refers to diagnostic procedures that can be run on one control unit while the rest of the subsystem remains available for customer applications.

**contingent connection.** A connection between a channel path and a drive caused when a unit check occurs during an I/O operation.

**controller.** A device that provides the interface between a system and one or more tape drives.

**CP.** Circuit protector.

**CRC.** Cyclic redundancy check.

**CRR.** Channel request register.

**ctrl.** Control.

**CU.** Control unit.

## D

**danger (notice).** A word to call attention to possible lethal harm to people. Contrast with *attention* and *caution*.

**data.** Any representations such as characters or analog quantities to which meaning is or might be assigned.

**data buffer.** The storage buffer in the control unit. This buffer is used to increase the data transfer rate between the control unit and the channel.

**data check.** A synchronous or asynchronous indication of a condition caused by invalid data or incorrect positioning of data.

**dc.** Direct current.

**degradation.** A decrease in quality of output or throughput or an increase in machine error rate.

**degraded.** Decreased in quality of output or throughput or increased machine error rate.

**deserialize.** To change from serial-by-bit to parallel-by-byte.

**detented.** A part being held in position with a catch or lever.

**DEV.** Device.

**DIAG.** Diagnostic section of maintenance information manual.

**direct access storage.** A storage device in which the access time is independent of the location of the data.

**DLR.** Device level register.

**DLX.** Device configuration register (hexadecimal 13).

**DRAM.** Dynamic random-access memory.

**drive, magnetic tape.** A mechanism for moving magnetic tape and controlling its movement.

**DRV.** Drive.

**DSE.** Data security erase.

**DSE (register).** Device status and error register.

**DSH.** Control unit serial high register.

**DSL.** Control unit serial low register.

**DSP.** Digital signal processor.

## E

**EBCDIC.** Extended binary-coded decimal interchange code.

**EC.** Edge connector. Engineering change.

**ECC.** Error correction code.

**EEPROM.** Electrically erasable programmable read-only memory.

**EIA.** Electronics Industries Association.

**EIA unit.** A unit of measure, established by the Electronic Industries Association, equal to 44.45 millimeters (1.75 inches).

**end-of-block (EOB).** A code that marks the end of a block of data.

**end-of-file (EOF).** A code that marks the end of a file of data.

**end-of-tape (EOT).** The end of the recording area on a tape.

**EOB.** End-of-block.

**EOF.** End-of-file.

**EOT.** End-of-tape.

**EPO.** Emergency power off.

**EPROM.** Erasable programmable read only memory.

**EQC.** Equipment check.

**equipment check.** An asynchronous indication of a malfunction.

**EREP.** Environmental recording, editing, and printing.

**Error log.** A dataset or file in a product or system where error information is stored for later access.

**ESCON.** Enterprise Systems Connection.

**Enterprise Systems Connection (ESCON).** A set of IBM products and services that provide a dynamically connected environment within an enterprise. The ESCON channel connection allows the 3590 Model A00 to communicate directly with a System/390.

**ESD.** Electrostatic discharge.

## F

**fault symptom code (FSC).** A hexadecimal code generated by the drive or the control unit microcode in response to a detected subsystem error.

**fiducial.** A target used for teaching a physical location to a robot.

**FC.** Feature code.

**FCC.** Federal communications commission.

**FE.** Field engineer, customer engineer, or service representative.

**FID.** FRU identifier (may be more than one FRU).

**field replaceable unit (FRU).** An assembly that is replaced in its entirety when any one of its components fails.

**file.** A named set of records stored or processed as a unit. Also referred to as a dataset.

**file protection.** The processes and procedures established in an information system that are designed to inhibit unauthorized access to, contamination of, or deletion of a file.

**FLASH EEPROM.** An electrically erasable programmable read-only memory (EEPROM) that can be updated.

**FMR.** Field microcode replacement.

**format.** The arrangement or layout of data on a data medium.

**formatter.** Part of a magnetic tape subsystem that performs data conversion, speed matching, encoding, first level error recovery, and interfaces to one or more tape drives.

**FP.** File protect.

**frayed.** Damaged as if by an abrasive substance.

**FRU.** Field replaceable unit.

**FSC.** Fault symptom code.

**FSI.** Fault symptom index.

**functional microcode.** Microcode that is resident in the machine during normal customer operation.

## G

**g.** Gram.

**gnd.** Ground.

## H

**hertz (Hz).** Unit of frequency. One hertz equals one cycle per second.

**hex.** Hexadecimal.

**Hz.** Hertz (cycles per second).

## I

**ID.** Identifier.

**identifier (ID).** (1) In programming languages, a lexical unit that names a language object; for example, the names of variables, arrays, records, labels, or procedures. An identifier usually consists of a letter optionally followed by letters, digits, or other characters. (2) One or more characters used to identify or name data element and possibly to indicate certain properties of that data element. (3) A sequence of bits or characters that identifies a program, device, or system to another program, device, or system.

**IDRC.** Improved Data Recording Capability.

**IML.** Initial microprogram load.

**Improved Data Recording Format.** An improved data recording mode that can increase the effective data capacity and the effective data rate when enabled and invoked.

**initial microprogram load (IML).** The action of loading a microprogram from an external storage to writable control storage.

**initiator.** The component that executes a command. The initiator can be the host system or the tape control unit.

**INST.** Installation.

**interblock gap (IBG).** An area on a data medium to indicate the end of a block or physical record.

**interface.** A shared boundary. An interface might be a hardware component to link two devices or it might be a portion of storage or registers accessed by two or more computer programs.

**interposer.** The part used to convert a 68-pin connector to a 50-pin D-shell connector.

**intervention required.** Manual action is needed.

**INTRO.** Introduction.

**I/O.** Input/output.

**IOP.** Input/output processor.

**IPL.** Initial program load.

**ITST.** Idle-time self-test.

## K

**km.** kilometer.

## L

**LAN.** Local area network. A computer network within a limited area.

**LED.** Light-emitting diode.

**loadable.** Having the ability to be loaded.

**LZ-1.** Lempel-Ziv electronic data compactor.

## M

**magnetic tape.** A tape with a magnetical surface layer on which data can be stored by magnetic recording.

**MAP.** Maintenance analysis procedure.

**mask.** A pattern of characters that controls the retention or elimination of portions of another pattern of characters. To use a pattern of characters to control the retention or elimination of portions of another pattern of characters.

**master file.** A file used as an authority in a given job and that is relatively permanent, even though its contents may change. Synonymous with main file.

**media capacity.** The amount of data that can be contained on a storage medium, expressed in bytes of data.

**micro.** One millionth of.

**microcode.** (1) One or more micro instructions. (2) A code, representing the instructions of an instruction set, implemented in a part of storage that is not program-addressable. (3) To design, write, and test one or more micro instructions. (4) See also *microprogram*.

**microdiagnostic routine.** A program that runs under the control of a supervisor, usually to identify field replaceable units.

**microdiagnostic utility.** A program that is run by the customer engineer to test the machine.

**microinstruction.** A basic or elementary machine instruction.

**microprogram.** A group of microinstructions that when executed performs a preplanned function.

The term microprogram represents a dynamic arrangement or selection of one or more groups of microinstructions for execution to perform a particular function. The term microcode represents microinstructions used in a product as an alternative to hard-wired circuitry to implement certain functions of a processor or other system component.

**MIM.** Media information message.

**mm.** Millimeter.

**modifier.** That which changes the meaning.

**mount a device.** To assign an I/O device with a request to the operator.

**MP.** Microprocessor.



**ms.** Millisecond.

**MSG.** Message.

**multipath.** Pertaining to using more than one path.

## N

**N/A.** Not applicable.

**node.** In a network, a point at which one or more functional units connect channels or data circuits.

**NVS.** Nonvolatile storage. A storage device whose contents are not lost when power is cut off.

## O

**offline.** Pertaining to the operation of a functional unit without the continual control of a computer. Contrast with *online*.

**online.** Pertaining to the operation of a functional unit that is under the continual control of a computer. Contrast with *offline*.

**OPER.** Operation.

**ov.** Over voltage.

**overrun.** Loss of data because a receiving device is unable to accept data at the rate it is transmitted.

**overtightening.** To tighten too much.

## P

**p bit.** Parity bit.

**parameter.** A variable that is given a constant value for a specified application and that may denote the application.

**PC.** Parity check.

**PCC.** Power control compartment.

**PE.** Parity error. Product engineer.

**PGID.** Path group identification.

**PM.** Preventive maintenance.

**PNEU.** Pneumatics.

**pneumatic.** The parts of the subsystem that control the pressurized air and vacuum.

**POR.** Power-on reset.

**port.** A physical connection for communication between the 3590 and the host processor. The 3590 has two SCSI ports.

**POST.** Power-on self-test.

**Power-on self-test (POST).** A series of diagnostic tests that are run automatically by a device when the power is turned on.

**PROM.** Programmable read only memory.

**PS.** Power supply.

**PTF.** Program temporary fix.

**PWR.** Power.

## R

**RAM.** Random access memory.

**Random access memory.** A storage device into which data is entered and from which data is retrieved in a nonsequential manner.

**RAS.** Reliability, availability, and serviceability.

**record.** A collection of related data or words, treated as a unit.

**recording density.** The number of bits in a single linear track measured per unit of length of the recording medium.

**recoverable error.** An error condition that allows continued execution of a program.

**ref.** Reference.

**reg.** Register.

**reinventor.** To inventory again.

**retension.** The process or function of tightening the tape onto the cartridge, if it is sensed that the tape has a loose wrap on the cartridge.

**RPQ.** Request for price quotation.

**R/W.** Read/write.

## S

**s.** Seconds of time.

**SARS.** Statistical analysis and reporting system. The microcode in the drive that assists in determining if read and write errors are caused by the tape or the hardware.

**SCSI.** Small computer system interface.

**segment.** A part.

**sel.** Select.

**serialize.** To change from parallel-by-byte to serial-by-bit.

**serializer.** A device that converts a space distribution of simultaneous states representing data into a corresponding time sequence of states.

**servo, servos.** An adjective noun for use in qualifying some part or aspect of a servomechanism.

**servomechanism.** A feedback control system in which at least one of the system signals represents mechanical motion.

**SIM.** Service information message.

**small computer system interface (SCSI).** An input and output bus that provides a standard interface between the host system and the 3590.

**SNS.** Sense.

**special feature.** A feature that can be ordered to enhance the capability, storage capacity, or performance of a product, but is not essential for its basic work.

**SR.** Service representative, see also *CE*.

**SRAM.** Static random access memory.

**SS.** Status store.

**ST.** Store.

**standard feature.** The significant design elements of a product that are included as part of the fundamental product.

**START.** Start maintenance.

**Stoplock.** A position-hold mode used when the tape is in a stopped position and under tension.

**subsystem.** A secondary or subordinate system, usually capable of operating independently of, or asynchronously with, a controlling system.

**SUPP.** Support.

**sync.** Synchronous, synchronize. Occurring with a regular or predictable time relationship.

## T

**TAC.** Technical area code.

**tachometer, tach.** A device that emits pulses that are used to measure/check speed or distance.

**tape cartridge.** A container holding magnetic tape that can be processed without separating it from the container.

**tape void.** An area in the tape in which no signal can be detected.

**TCP/IP.** Transmission Control Protocol/Internet Protocol. When in a tape library, the LAN communication path between the host and the library manager. This communication path is used for *tape library* commands that do not require the 3590, while the SCSI bus is used for commands, data, and responses that require the 3590. All SCSI-attached processors require an RS-232 or a LAN attachment for library control.

**TCU.** Tape control unit.

**TH.** Thermal.

**thread/load operation.** A procedure that places tape along the tape path.

**TM.** Tapemark.

**tty.** When in a tape library, the RS-232 communication path between the host and the library manager. This communication path is used for *tape library* commands that do not require the 3590, while the SCSI bus is used for commands, data, and responses that require the 3590. All SCSI-attached processors require an RS-232 or a LAN attachment for library control.

## U

**UART.** Universal asynchronous receiver/transmitter.

**unload.** Prepare the tape cartridge for removal from the drive.

**utilities.** Utility programs.

**utility programs.** A computer program in general support of the processes of a computer; for instance, a diagnostic program.

**uv.** Under voltage.

## V

**VOLSER.** Volume serial number.

**volume.** A certain portion of data, together with its data carrier, that can be handled conveniently as a unit.

**VPD.** Vital product data. The information contained within the tape drive that requires nonvolatile storage used by functional areas of the drive, and information required for manufacturing, RAS, and engineering.

## W

**word.** A character string that is convenient for some purpose to consider as an entity.

**Write.** Write command.

**WT.** world trade.

## X

**XR.** External register.

**XRA.** External register address register.



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