

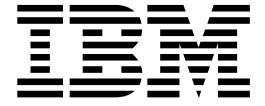
*IBM 3590 Tape Subsystem  
Maintenance Information  
A60 Controller*

SA37-0421-01

October 13, 1999



IBM 3590 Tape Subsystem



# Maintenance Information

*A60 Controller*

Part Number 35L0137  
EC Number F23320A



IBM 3590 Tape Subsystem



# Maintenance Information

*A60 Controller*

**Note!**

Before using this information and the product it supports, be sure to read the information under "Chapter 16. Notices" on page 439.

**Second Edition (Oct99)**

This publication obsoletes and replaces P/N 35L0137 at EC F23320. Changes or additions are indicated by a vertical line in the left

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This manual is for use by service personnel who intend to install, remove, diagnose, repair, or test the IBM Model A60 attach.

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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, B1A, E11, and E1A MI* P/N 05H9018
- *Enterprise Systems Connection Adapter: User's Guide aService Informationnd*, SC23-2474-01
- *IBM Care and Handling of the IBM Magnetic Tape Cartridge*, GA32-0047

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## 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

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## Model RS/6000 H Series Information

The following publications are available for purchase:

- *RS/6000 Enterprise Server Model H Series*, GA21-7091-00, contains information to help users set up, install options, configure, modify, and solve minor problems.
- *7014 Model S00 Rack Installation and Service Guide*, SA38-0550-00, contains information regarding the 7014 Model S00 Rack, which the RS/6000 Enterprise Server Model H Series may be installed in.
- *Diagnostic Information for Multiple Bus Systems*, SA38-0509-06, contains common diagnostic procedures, error codes, service request numbers, and failing function codes. This manual is intended for trained service technicians.

- *RS/6000 Adapters, Devices, and Cable Information for multiple Bus Systems* , SN32-9061-00, contains information about adapters, external devices, and cabling. This manual is intended to supplement information found in the Diagnostic Information for Multiple Bus Systems..
- *PCI Adapter Placement Reference* , SA38-0538-06 contains information regarding slot restrictions for adapters that can be used in this system.
- *Introduction and Planning Guide* ,GA32-0329-05, contains information to help you plan your installation.







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# Chapter 1. Start

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## 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 A60 Controller" on page 385.

Table 1. 3590 A60 Start Table

If you are here for this reason	Perform this action
If you have "FFF" displayed on the A60 Controller 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 274)	Decode the SIM ref codes 1-3 see to "Decoding SIM Refcodes" on page 282) <ul style="list-style-type: none"> <li>• If an A60 Controller 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</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 A60 Controller for Service" on page 380 and return here when complete.</li> <li>3. If an A60 Controller 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</b> .</li> <li>4. 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 395.</li> </ol> </li> <li>• 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, Models B11, B1A, E11 and E1A, Document number SA37-0301-0</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 A60 Retrieving Engineering and Dump Data" on page 381 to get Dump information and then call you next level of support</li> </ul>
You have the MIM message that was sent to the host console (see "Media Information Message" on page 279).	Determine the Refcode from the MIM message and use the first 2 digits as the ASCII Message code to determine a description for for the MIM Message. See "Service and Media Information Messages (SIMs and MIMs)" on page 272 for further information.

Table 1. 3590 A60 Start Table (continued)

If you are here for this reason	Perform this action
<p>You have the SIM sense record from a host EREP report (see "SIM EREP Report (Format 71)" on page 283).</p>	<p>Decode the SIM ref codes 1-3 (refer to "Decoding SIM Refcodes" on page 282)</p> <ul style="list-style-type: none"> <li>• If an A60 Controller 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 Unknown CU hardware error is decoded:               <ol style="list-style-type: none"> <li>1. Go to "Prepare the A60 Controller for Service" on page 380 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 A60 Controller for Service" on page 380 and return here when complete.</li> <li>4. For A60 Controller, go to the <i>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509 'Start of call MAP'</i> 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 395.</li> </ol> </li> <li>• 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, Models B11, B1A, E11 and E1A, Document number SA37-0301-0 START</i> 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 A60 Retrieving Engineering and Dump Data" on page 381 to get Dump information and then call you next level of support</li> </ul>
<p>You have the MIM message that was sent to the host EREP report, see "ES/9000 EREP Reports" on page 283.</p>	<p>Determine the Refcode from the MIM message and use the first 2 digits as the ASCII Message code to determine a description for for the MIM Message. See "Service and Media Information Messages (SIMs and MIMs)" on page 272 for further information.</p>

Table 1. 3590 A60 Start Table (continued)

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 287 to decode ERA 48 View the detailed data for the appropriate SIM entry and record the Refcodes 1-3.</p>	<p>Connect the Service Terminal (see "A60 Service Terminal Connection and Menus" on page 304) and view the 3590 SIM log (see "Model A60 Menu Tree" on page 305).</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 282).</p> <ol style="list-style-type: none"> <li>1. If an A60 Controller 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>2. 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 A60 Controller for Service" on page 380 and return here when complete.</li> <li>c. For A60 Controller, go to the <i>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509 'Start of call MAP'</i> and perform the procedure to verify correct system operation.</li> <li>d. 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 395.</li> </ol> </li> <li>3. 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 START</i> section and continue with isolation.</li> <li>4. If an A60 Controller MDE (Microcode Detected Error) is decoded: Determine the MDE code (Refcode 2) and go to "3590 A60 Retrieving Engineering and Dump Data" on page 381 to get Dump information. Then, call your next level of support.</li> </ol>
A60 Controller 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 A60 subsystem.
Power problems	Go to the "MAP none: A60 Controller Power Problems" on page 134 and determine if a power problem exists for the A60 Controller.
A problem was reported to the host but you do not have the SIM information needed above	<p>Connect the Service Terminal (See "A60 Service Terminal Connection and Menus" on page 304) and view the 3590 SIM log (see "Model A60 Menu Tree" on page 305).</p> <p>View the detailed data for the appropriate SIM entry and record the Refcodes 1-3.</p>

Table 1. 3590 A60 Start Table (continued)

If you are here for this reason	Perform this action
<p>you suspect a problem with the 3590 A60 Controller or a drive connected through the 3590 A60 Controller but you do not have any error information from the host.</p>	<p>Connect the Service Terminal (see “A60 Service Terminal Connection and Menus” on page 304) and view the 3590 SIM log (see “Model A60 Menu Tree” on page 305).</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 282).</p> <ol style="list-style-type: none"> <li>1. If an A60 Controller 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>2. If an Unknown CU hardware error is decoded: <ol style="list-style-type: none"> <li>a. Go to “Prepare the A60 Controller for Service” on page 380 and return here when complete.</li> <li>b. Record the AIX error log sequence number (Refcodes 2 and 3).</li> <li>c. For A60 Controller, go to the <i>Models 140 and 240 Diagnostic Information for Multiple Bus Systems, SA38-0509 ‘Start of call MAP’</i> and perform the procedure to verify correct system operation.</li> <li>d. 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 395.</li> </ol> </li> <li>3. 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 START</i> section and continue with isolation.</li> <li>4. If a A60 Controller MDE (Microcode Detected Error) is decoded: Determine the MDE code (Refcode 2) and go to “3590 A60 Retrieving Engineering and Dump Data” on page 381 to get Dump information. Then, call your next level of support.</li> </ol>
<p>Set Error Match Code (EMC) actions</p>	<p>See “3590 A60: Set Error Match Codes” on page 382.</p>
<p>Retrieve Dump/Engineering Data</p>	<p>See “3590 A60 Retrieving Engineering and Dump Data” on page 381.</p>
<p>Set Service Mode on the A60 Controller</p>	<p>See “Setting Service Mode in the A60 Controller” on page 381.</p>
<p>Update 3590 Drive Microcode</p>	<p>See “Updating 3590 Device Microcode from A60 Using TAPEUTIL” on page 385.</p>
<p>Update A60 Controller AIX Code</p>	<p>See “3590 A60 Subsystem Microcode Addition or Activation” on page 358.</p>
<p>Analyze Error Log Data</p>	<p>See “ES/9000 EREP Reports” on page 283</p>

Table 1. 3590 A60 Start Table (continued)

If you are here for this reason	Perform this action
View 3590A60 Controller SIM log	See "A60: View SIMs in the 3590 CU SIM Log:" on page 384.
Close SIM(s) in 3590 A60 Controller	See "A60: View SIMs in the 3590 CU SIM Log:" on page 384.
Vary devices online/offline from the 3590 A60 Controller	See "Varying On/Off 3590 drives from the A60 Controller" on page 385.
Run Diagnostics from the 3590 A60 Controller Service Terminal	See "Running Diagnostics from the A60 Controller" on page 389.



## 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 *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0* 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 A60 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 "A60 Controller Microcode SRN's" on page 293 to determine what type of error the A60 Controller is displaying.



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## Chapter 2. A60 Controller Problem Determination and Isolation

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### System Management Services

The System Management Services provides a way to view information about your computer and perform tasks such as setting passwords and changing device configurations.

#### Text-Based System Management Services

The text-based Open Firmware command line and System Management Services are available if an ASCII terminal is attached to your system unit.

**Note:** If the A60 Controller is part of a 3494 Dataserver in a D14 frame, the Library Manager can be used as the ASCII terminal. If using the Library Manager, any where the Lap top is referred to, use the LM

The text-based Open Firmware command line allows you to configure some adapters, and the System Management Services makes it possible for you to view information about your system unit and to perform such tasks as setting passwords and changing device configurations.

After the text-based System Management Services starts, the following screen appears.

```
System Management Services
```

1. Display Configuration
2. Multiboot
3. Utilities
4. Select Language

```
|X=Exit|
```

```
====>
```

Selecting the numbered options provides capabilities described on the following pages.

After you have finished using the text-based System Management Services, entering x (for exit) boots your computer.

## Display Configuration

This option provides information about the setup of your computer. A screen similar to the following is displayed.

```
Device
PowerPC 604
L2-Cache, 0512K
Memory
  slotA=8MB
  slotB=8MB
LPT
  addr=3BC
COM
  addr=3F8
COM
  addr=2F8
Audio
Keyboard
Mouse
Diskette
  addr=3F0
Integrated Ethernet
  addr=80005AF67BD
SCSI cntlr id=7

PCI Adapters
```

```
|P=prev-page| |N=next-page|
```

```
|x=Exit|
```

## MultiBoot Menu

Multiboot Menu

1. Select Software
2. Software Default
3. Install From
4. Select Boot Devices
5. OK Prompt
6. Multiboot Startup laptopOFF> (or laptopON>)

|X=Exit|

====>

The **Select Software** option shows the names of the operating system installed. This option may not be supported by all operating systems.

In the case of AIX, this is a supported option if you receive a message saying:  
No Operating System Installed

information in non-volatile storage could have been lost, as would happen if the battery had been removed. In order to recreate this value issue the bootlist command under AIX with the appropriate parameters as to the location of the operating system in a particular hard disk. Please see the explanation of the bootlist command in your AIX documentation for more information.

The **Software Default** option lets you select the default operating system to start the system. This option may not be supported by all operating systems.

The **Install From** option produces a list of devices, for example the CD-ROM, where the operating system is installed from. You select one of the devices and the system searches the device for an operating system to install and, if supported by the operating system in that device, the name of the operating system displays.

The **Select Boot Devices** option provides a list of devices that can be selected to be stored on the boot list. Up to five devices are supported.

The **OK** prompt provides access to the Open Firmware command prompt.

The **Multiboot Startup laptopOFF> (or laptopON>)** option toggles between OFF and ON and selects if the Multiboot menu invokes automatically on startup or not.

### Select Boot Devices

This selection enables you to view and change the custom boot list, which is the sequence of devices read at startup time.

Select Boot Devices

1. Display Current Settings
2. Restore Default Settings
3. Configure 1st Boot Device
4. Configure 2nd Boot Device
5. Configure 3rd Boot Device
6. Configure 4th Boot Device
7. Configure 5th Boot Device

|X=Exit|

====>

Selecting the Display Current Settings option lists the current order of devices in the boot list. The following screen shows an example of this display. For CD-ROM boot, go to the Install From icon and then select CD-ROM Drive as a boot device.

Current Boot Sequence

1. Diskette
2. Ethernet (Integrated)
3. SCSI CD-ROM id=3 (slot=1)
4. SCSI 500MB Hard Disk id=6 (slot=1)
5. SCSI 500MB Hard Disk id=5 (slot=5)

|X=Exit|

====>

Selecting any of the Configure Boot Device options displays the following screen.

Configure Nth Boot Device

Device Number	Current Position	Device Name
1	1	Diskette
2	2	Ethernet
3	3	SCSI CD-ROM
4	4	SCSI 4.5GB Hard Disk
5	-	

|P=prev-page| |N=next-page|

|X=Exit|

====>

## Utilities

The Utilities screen enables you to select from the following system management tools.

### Utilities

1. Set Password and Unattended Start Mode
2. SCSI Spin-Up
3. Display Error Log
4. Remote Initial Program Load Setup
5. Change SCSI id
6. Update System Firmware
7. Update Service Processor
8. Select Console

|X=Exit|

====>

**Set Password and Unattended Start Mode:** Entering this selection permits access to the following options.

### Password Utilities

1. Set Power On Password
2. Remove Power On Password
3. Unattended Start Mode laptopOFF>
4. Set Privileged-Access Password
5. Remove Privileged-Access Password

|X=Exit|

====>

**Set Power On Password:** Setting a power-on password helps protect information stored in your computer. You can use any combination of up to eight characters (A–Z, a–z, and 0–9) for your password. The password you type is not displayed on the screen. Press Enter when you are finished; you are required to type the password again for verification.

To remove a previously set power-on password, select **Remove Power-On Password**.

**Note:** If you *forget* the power-on password, the battery must be removed for longer than 30 seconds to reset the NVRAM. Contact your service representative for assistance.

A password can be set only after the system is turned off and on again. **Set Privileged-Access Password:** The privileged-access protects against the unauthorized starting of the system programs.

If you previously set a privileged-access and want to remove it, select **Remove Privileged-Access Password**.

**Note:** If you *forget* the power-on password, the battery must be removed for longer than 30 seconds to reset the NVRAM. Contact your service representative for assistance.

**Remote Initial Program Load Setup:** This option allows you to enable and set up the remote startup capability of your computer. You are asked to specify the network parameters.

Network Parameters

1. IP Parameters
2. Adapter Parameters
3. Ping

|X=Exit|  
'-----'

====>

**Note:** Some applications may require that IP addresses contain leading zeroes for numbers less than 100. For example, 129.132.4.20 may need to be entered as 123.132.004.020.



Selecting the **IP Parameters** option displays the following screen.

```
IP Parameters
1. Client IP Address  000.000.000.000
2. Server IP Address  000.000.000.000
3. Gateway IP Address 000.000.000.000
4. Subnet Mask       000.000.000.000

                                     |X=Exit|
                                     |-----|

====>
```

Selecting the **Adapter Parameters** option allows you to view an adapter's hardware address as well as configure network adapters that require setup.

```
Adapter Parameters

Device      Slot      HW Address
1. 3Com,3C905  Slot=1    80005AFC67BD
2. Token-Ring Slot=3    800032E54A12

                                     |X=Exit|
                                     |-----|
```

Selecting option 1 (3Com,3C905) displays the following 100Mb Ethernet configuration menus.

```
3Com Etherlink Fast XL

1. Media Type      [Auto]
2. Full Duplex     [Auto]

                                     |X=Exit|
                                     |-----|
```

Selecting the Media Type option allows you the change the media employed by the Ethernet adapter.

MEDIA TYPE  
1. 10 BaseT  
2. 100 Base TX  
3. Auto

Selecting the Full Duplex option allows you to change how the Ethernet adapter communicates with the network.

```
Full Duplex
1. Yes
2. No
3. Auto
```

**Ping**, the last option available from the Network Parameters Menu, allows you to test a connection to a remote system unit. After selecting the Ping option, you must choose which adapter communicates with the remote system.

Device	Slot	Hardware Address
1. Ethernet	Integrated	0231589248
2. Token Ring	Slot=3	5123848932

==>

After choosing which adapter to use to ping the remote system, you must provide the addresses needed to communicate with the remote system.

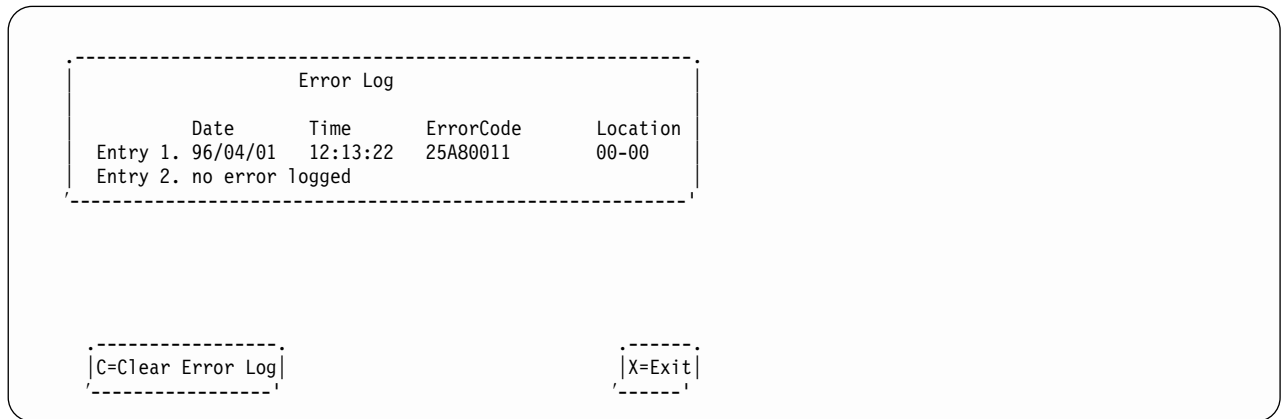
```
Ping
1. Client IP Address 129.132.4.20
2. Server IP Address 129.132.4.10
3. Gateway IP Address 129.132.4.30
4. Subnet Mask      255.255.255.0

|E=Execute|           |X=Exit|
====>
```

### Hard Disk Spin Up Delay

Selecting this utility allows you to adjust the hard disk spin up delay in your system unit.

**Display Error Log:** A screen similar to the following is displayed when you select this option. You can view or clear your computer's error log.



**Change SCSI ID:** This option allows you to view and change the addresses of the SCSI controllers attached to your computer.

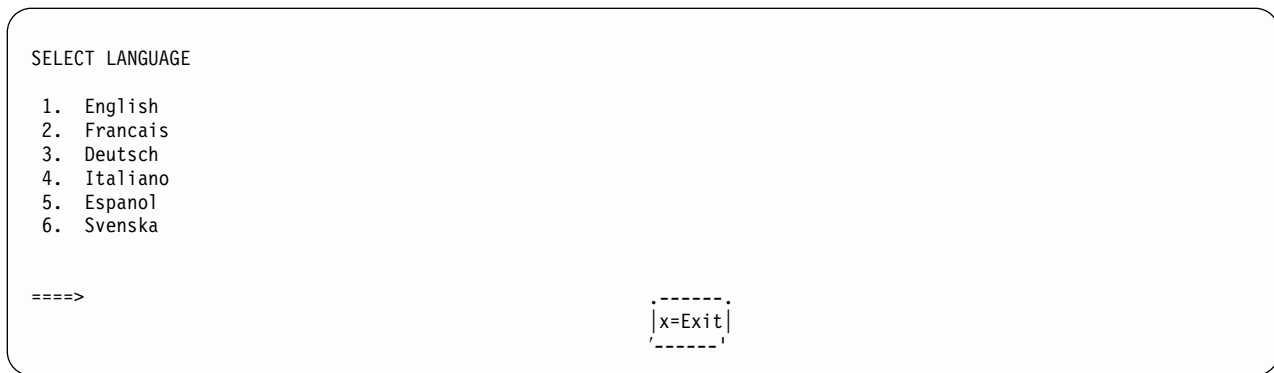
**Update Service Processor Firmware:**

**Select Console:** Selecting this option allows you to define which display is used by the system for system management.

If no console is selected within two minutes, the console defaults to Serial Port 2.

**Select Language**

This option allows you to change the language used by the text-based System Management Services screens.



**Note:** Your ASCII terminal must support the ISO-8859 character set in order to properly display languages other than English.

## Open Firmware Command Prompt

To enter the Open Firmware command line, you must press the F8 key *after the keyboard icon appears* during startup.

If you have pressed the F8 key, the Open Firmware command line (an "OK" prompt) appears after the initialization and power-on self test (POST) are complete.

The OK Prompt provides access to the Open Firmware command prompt. The Open Firmware command prompt is used for debug purposes and device driver development. Information about the commands are available in the IEEE Standard 1275.

The Open Firmware command line is used to set up adapters that are not configurable with the System Management Services. Your adapter documentation directs you to use this option if it is needed.

To exit from the Open Firmware command enter `reset-all` or power the system down and reboot.

To enter the graphical System Management Services instead of the Open Firmware command line, you must press the F1 key *after the keyboard icon appears* during startup.

To start the text-based System Management Services instead of the Open Firmware command line, press 1 on the ASCII terminal keyboard when the keyboard text symbol appears during startup.

---

## Error Code to FRU Index

The Error Code to FRU Index lists error symptoms and possible causes. The most likely cause is listed first. Use this index to help you decide which FRUs to replace when servicing the system.

When the codes in the following tables indicated a FRU within the A60 Controller to be replaced, go the table shown in Table 43 on page 310, to specify the correct R/R procedure

### Notes:

1. If more than eight digits are displayed in the operator panel, use only the first eight digits to find the error in the tables.
2. Licensed programs frequently rely on network configuration, and system information stored on the VPD on the operator panel. If the MAPs indicate that the Operator Panel should be replaced, swap the VPD from the old operator panel to the new one. If the old VPD module has to be replaced call technical support for recovery instructions. If recovery is not possible, notify the system owner that new keys for licensed programs may be required.
3. If a network adapter or the I/O board is replaced, the network administrator must be notified so that the client IP addresses used by the server can be changed. In addition, the operating system configuration of the network controller may need to be changed in order to enable system startup. Also ensure that any client or server that addresses this system is updated.
4. Each power supply has a test switch. It is necessary to remove the power supply from the A60 Controller enclosures to access this test switch. If you are instructed to replace a power supply, see "Removal and Replace of the Power Supply or Power Supply Fan Assembly" on page 312. Once the power supply is removed, before replacing with a new supply, follow the procedure shown after the removal to ensure that the supply is faulty.
5. For Service Processor Menu's, see "Chapter 12. Operator Panel" on page 303.

If you replace FRUs and the problem is still not corrected, go to "MAP 1540: Minimum Configuration" on page 105, unless otherwise indicated in the tables.

If you replace FRUs and the problem is corrected, go to Map 410 Repair Checkout in the Diagnostic Information for Multiple Bus Systems.

## Firmware/POST Error Codes

If you replace FRUs and the problem is still not corrected, go to “MAP 1540: Minimum Configuration” on page 105.

If you replace FRUs and the problem is corrected, go to Map 410 Repair Checkout in the Diagnostic Information for Multiple Bus Systems.

Table 2. Firmware Error Codes.

Error Code	Description	Action / Possible Failing FRU
203w0xyz	<ul style="list-style-type: none"> <li>• w=loop number</li> <li>• x=0 missing link</li> <li>• y=port number</li> <li>• z=c for interconnect z=b missing link back z=E RIO de-configured</li> </ul>	Check Cables, then Remote I/O
20A80xxx	Remote initial program load (RIPL) error	
20A80000	Insufficient information to boot	Verify the IP address
20A80001	Client IP address is already in use by other network device	Change the IP address
20A80002	Cannot get gateway IP address	Refer to “Firmware Checkpoints” on page 57 table using code E174
20A80003	Cannot get server hardware address	Refer to “Firmware Checkpoints” on page 57 table using code E174
20A80004	Bootp failed	Refer to “Firmware Checkpoints” on page 57 table using code E175
20A80005	File transmission (TFTP) failed	Check network connection, try again
20D00xxx	Unknown/Unrecognized device	
20D0000F	Self-test failed on device, no error/location code information available	Check the System Management Services error log entry (described in “Step 1020-4” on page 78) for this error code. The location code (if present) in the error log entry should identify the location of the failing device.
20D00010	Self-test failed on device, cannot locate package	Contact your service support representative for assistance.
20D00011	Cannot determine Machine Model	The machine model is part of the System Vital Product Data. Perform corrective actions listed for errors 2BA00050 and 2BA00051.
20E00xxx	Security	
20E00000	Power on Password entry error	The password has been entered incorrectly.  Retry installing the password.
20E00001	Privileged-access password entry error	The password has been entered incorrectly.  Retry installing the password.



Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
20E00002	Privileged-access password jumper not enabled	The privileged-access password jumper is not in the correct position for password initial entry.  Consult the system's User's Guide for jumper location and position.
20E00003	Power on Password must be set for Unattended mode	Unattended mode requires the setting of the Power On password before it is enabled.
20E00004	Battery drained or needs replacement	1. Replace battery 2. Replace I/O board (See notes on 21.)
20E00005	EEPROM locked	1. Turn off, then turn on system unit. 2. Replace the I/O board (See notes on 21.)
20E00008	CMOS corrupted or tampering evident, CMOS initialized	Check your machine for evidence of tampering.  If no tampering evident: 1. Replace battery, restore NVRAM data (passwords, startup data). 2. Replace I/O board. (See notes on 21.)
20E00009	Invalid password entered - system locked	The password has been entered incorrectly 3 times.  Turn off, then turn on the system unit, then enter the password correctly.
20E0000A	EEPROM lock problem	If for privileged-access password install, is jumper in correct position?  Consult the system's User's Guide for jumper location and position. 1. Turn off, turn on system unit. 2. Replace I/O board (See notes on 21.)
20E0000B	EEPROM write problem	1. Turn off, turn on system unit. 2. Replace I/O board (See notes on 21.)
20E0000C	EEPROM read problem	1. Turn off, turn on system unit. 2. Replace I/O board (See notes on 21.)
20E00017	Cold boot needed for password entry	Turn off, turn on system unit.
20EE0xxx	Informational	
20EE0003	IP parameter requires three dots "."	Enter valid IP parameter.  Example: 000.000.000.000
20EE0004	Invalid IP parameter	Enter valid (numeric) IP parameter.  Example: 000.000.000.000
20EE0005	Invalid IP parameter (>255)	Enter valid (numeric) IP parameter in the range of 0 to 255.  Example: 255.192.002.000

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
20EE0006	No SCSI controllers present	The I/O board should always have (at least) 2 integrated PCI SCSI controllers; replace the I/O board. (See notes on 21.)
20EE0007	Keyboard not found	<ol style="list-style-type: none"> <li>1. Plug in keyboard.</li> <li>2. Replace I/O board (See notes on 21.)</li> </ol>
20EE0008	No configurable adapters found in the system	<p>This warning occurs when the selected SMS function cannot locate any devices/adapters supported by the function. If a supported device is installed:</p> <ol style="list-style-type: none"> <li>1. Replace the device or adapter.</li> <li>2. Replace I/O board (See notes on 21.)</li> </ol>
20EE0009	Unable to communicate with the Service processor	<ol style="list-style-type: none"> <li>1. Replace the Service Processor.</li> <li>2. Replace I/O board (See notes on 21.)</li> <li>3. Replace the system board.</li> </ol>
20EE000A	Pointer to the operating system found in non-volatile storage.	<p>Values normally found in non-volatile storage that point to the location of an Operating System were not found. This can happen for two reasons, either your installed Operating System doesn't support storing the values or some event occurred that caused the system to lose non-volatile storage information (drainage or replacement of the battery). If you are running AIX, this information can be reconstructed by running the bootlist command specifying the device that the Operating System is installed on. Please refer to your AIX documentation for the exact syntax and usage of the bootlist command.</p> <p>In order to boot the Operating System so that the above mentioned values can be reconstructed, power the system down and power it back up again, this should cause the system to look for the Operating System in the devices contained in the custom boot list or in the default boot list, depending on the condition of the system. If this is not successful, modify the Boot Sequence (also known as boot list) to include devices that are known to contain a copy of the Operating System. This can be accomplished by using the System Management Services Menus. For example, select a hard disk known to have a copy of the Operating System as the first and only device in the boot sequence (boot list) and attempt to boot again.</p>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
20EE000B	The system was not able to find an operating system on the device list that was attempted.	<p>Modify the Boot Sequence (also known as boot list) to include devices that are known to contain a copy of the Operating System. This can be accomplished by using the System Management Services Menus. For example, select a hard disk known to have a copy of the Operating System as the first and only device in the boot sequence (boot list) and attempt to boot again. If the SMS menus do not display valid SCSI devices which were previously available:</p> <ol style="list-style-type: none"> <li>1. Ensure SCSI signal and power cables are securely connected and not damaged.</li> <li>2. Replace the I/O board.</li> </ol>
21A000xxx	SCSI Device Errors	<p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. Before replacing any system components:               <ol style="list-style-type: none"> <li>a. Ensure that the controller and each device on the SCSI bus is assigned a unique SCSI ID.</li> <li>b. Ensure SCSI bus is properly terminated.</li> <li>c. Ensure SCSI signal and power cables are securely connected and not damaged.</li> </ol> </li> <li>2. The location code information is required to identify the ID of SCSI device failures as well as to indicate the location of the controller to which the device is attached.</li> </ol>
21A00001	Test Unit Ready Failed - hardware error	<p>Refer to the notes in error code 21A000xxx.</p> <ol style="list-style-type: none"> <li>1. Replace the SCSI device.</li> <li>2. Replace the SCSI cable.</li> <li>3. Replace the SCSI controller.</li> </ol>
21A00002	Test Unit Ready Failed - sense data available	<p>Refer to the notes in error code 21A000xxx.</p> <ol style="list-style-type: none"> <li>1. Replace the media (Removable media devices).</li> <li>2. Replace the SCSI device.</li> </ol>
21A00003	Send Diagnostic Failed	<p>Refer to the notes in error code 21A000xxx. Replace the SCSI device.</p>
21A00004	Send Diagnostic Failed - DevOfI cmd	<p>Refer to the notes in error code 21A000xxx. Replace the SCSI device.</p>
21E00xxx	SCSI Tape	<p>Refer to 21A00xxx for a description and repair action for the xxx value.</p>
21ED0xxx	SCSI Changer	<p>Refer to 21A00xxx for a description and repair action for the xxx value.</p>
21EE0xxx	Other SCSI device type	<p>Refer to 21A00xxx for a description and repair action for the xxx value.</p>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
21F00xxx	SCSI CD-ROM	Refer to 21A00xxx for a description and repair action for the xxx value.
21F20xxx	SCSI Read/Write Optical	Refer to 21A00xxx for a description and repair action for the xxx value.
25000000	Memory Controller Failed.	Replace the system board.
25010xxx	Flash Update Problem	
25010000	No diskette in drive	Insert diskette containing firmware image.
25010001	Diskette seek error	<ol style="list-style-type: none"> <li>1. Retry function.</li> <li>2. Replace diskette drive.</li> <li>3. Replace diskette cable.</li> <li>4. Replace I/O board. (See notes on 21.)</li> </ol>
25010002	Diskette in drive does not contain an *.IMG file	Insert diskette with firmware update file.
25010003	Cannot open OPENPROM package	Replace I/O board (See notes on 21.)
25010004	Cannot find OPENPROM node	Replace I/O board (See notes on 21.)
25010006	System id does not match image system id	Make sure correct firmware update diskette is being used with this system.
25010007	Image has bad CRC	Replace firmware updated diskette.
25010008	Flash is write protected, update cancelled	<ol style="list-style-type: none"> <li>1. Turn off, turn on system unit and retry.</li> <li>2. Replace I/O board. (See notes on 21.)</li> </ol>
25010009	Flash module is unsupported or not recognized	Make sure correct firmware update diskette is being used with this system.
2501000A	Flash write protected	<ol style="list-style-type: none"> <li>1. Turn off, turn on system unit, retry.</li> <li>2. Replace I/O board (See notes on 21.)</li> </ol>
25A0xxx0	L2 Cache controller problem	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Replace the system board.</li> </ol> <p>See error code 2B2xxx22 for xxx definitions.</p>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
25A0xxx1	L2 Cache controller problem	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Replace the system board.</li> </ol> <p>See error code 2B2xxx22 for xxx definitions.</p>
25A1xxx1 25A1xxx2 25A1xxx3 25A1xxx4 25A1xxx5 25A1xxx6 25A1xxx7 25A1xxx8 25A1xxx9 25A1xxxA 25A1xxxB	L2 SRAM failure	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card.</li> </ol> <p>See error code 2B2xxx22 for xxx definitions.</p>
25A80xxx	NVRAM problems	<p><b>NVRAM problem resolution:</b></p> <ol style="list-style-type: none"> <li>1. Errors reported against NVRAM can be caused by low Battery voltage and (more rarely) power outages that occur during normal system usage. With the exception of the 25A80000 error, these errors are warnings that the NVRAM data content had to be re-established and do not require any FRU replacement unless the error is persistent. When one of these errors occurs, any system customization (eg. boot device list) information has been lost, the system may need to be re-configured.</li> <li>2. If the error is persistent, replace the battery.</li> <li>3. If the error is persistent after battery replacement, or the error code is 25A80000, replace the I/O board. (See notes on 21.)</li> </ol>
25A80000	Initialization failed, device test failed	Refer to Action under error code 25A80xxx.

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
25A80001	Init-nvram invoked, ALL of NVRAM initialized	Refer to Action under error code 25A80xxx.
25A80002	Init-nvram invoked, some data partitions may have been preserved	Refer to Action under error code 25A80xxx.
25A80011	Data corruption detected, ALL of NVRAM initialized	Refer to Action under error code 25A80xxx.
25A80012	Data corruption detected, some data partitions may have been preserved	Refer to Action under error code 25A80xxx.
25A80100	NVRAM data validation check failed	Turn off, turn on system unit and retry the operation before replacing any system component. Refer to Action under error code 25A80xxx.
25A80201	Unable to expand target partition while saving configuration variable	Refer to Action under error code 25A80xxx.
25A80202	Unable to expand target partition while writing error log entry	Refer to Action under error code 25A80xxx.
25A80203	Unable to expand target partition while writing VPD data	Refer to Action under error code 25A80xxx.
25A80210	Setenv/\$Setenv parameter error - name contains a null character	Refer to Action under error code 25A80xxx.
25A80211	Setenv/\$Setenv parameter error - value contains a null character	Refer to Action under error code 25A80xxx.
25AA0xxx	EEPROM problems	EEPROM problem resolution: <ol style="list-style-type: none"> <li>1. Ensure that the EEPROM Security jumper is in the correct position if doing a privileged-access password install.</li> <li>2. Retry the operation.</li> <li>3. If retries do not solve the problem, replace the I/O board. (See notes on 21.)</li> </ol>
25AA0000	Unable to unlock EEPROM	Refer to Action under error code 25AA0xxx.
25AA0001	Read-Recv error	Refer to Action under error code 25AA0xxx.
25AA0002	Read-Trans error	Refer to Action under error code 25AA0xxx.
25AA0003	Write-enable error	Refer to Action under error code 25AA0xxx.
25AA0004	Write-recv error	Refer to Action under error code 25AA0xxx.
25AA0005	Write-disable error	Refer to Action under error code 25AA0xxx.
25AA0006	Write-Trans error	Refer to Action under error code 25AA0xxx.
25AA0007	Unable to lock EEPROM	Refer to Action under error code 25AA0xxx.

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
25B00001	No memory modules detected in either memory card 1 or 2	<ol style="list-style-type: none"> <li>1. Reseat any installed memory card(s) and retry.</li> <li>2. Reseat any installed memory modules on the installed memory cards.</li> <li>3. Replace memory card(s).</li> </ol>
25Cyyxxx	Memory card problems	<p>See "Memory PD Bits" on page 53 for definition of "yy".</p> <p>Use the location code obtained from the SMS Error Log utility (described in MAP Step 1020-4) to identify which memory module (or memory module pair) the error is reported against.</p>
25Cyy001	Memory module is not supported	<p>Replace unsupported memory module.</p> <p><b>Note:</b></p> <p>Memory module must be replaced with a supported type memory module. If an unsupported memory module is replaced the same unsupported type, the error does not go away.</p> <p>There may be 2 memory module related memory errors reported to indicate a memory module pair. One of the 2 indicated memory modules may be good, when replacing memory replace 1 memory module at a time, not both.</p> <p>See "Memory PD Bits" on page 53 for definition of "yy".</p>
25Cyy002	Memory module fails memory test	<ol style="list-style-type: none"> <li>1. Replace memory module.</li> <li>2. Replace memory card.</li> <li>3. Replace the system board.</li> </ol> <p>See "Memory PD Bits" on page 53 for definition of "yy".</p>
25Cyy003	PD bits are mis-matched or missing one memory module	<ol style="list-style-type: none"> <li>1. Make sure both memory modules in the pair are the same type.</li> <li>2. Replace the system board.</li> </ol> <p>See "Memory PD Bits" on page 53 for definition of "yy".</p>
25Cyy004	Memory modules are disabled	Remove this unused memory module.

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
25Cyy005	Memory module failed address test.	<ol style="list-style-type: none"> <li>1. Replace memory module.</li> <li>2. Replace memory card.</li> <li>3. Replace the system board.</li> <li>4. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>5. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card.</li> </ol> <p>See "Memory PD Bits" on page 53 for definition of "yy".</p>
25Cyy006	Memory module failed inter-extent test	<ol style="list-style-type: none"> <li>1. Replace the system board.</li> <li>2. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card.</li> </ol> <p>See "Memory PD Bits" on page 53 for definition of "yy".</p>
25Cyy007	Memory module failed extent access test	<ol style="list-style-type: none"> <li>1. Replace the system board.</li> <li>2. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card.</li> </ol> <p>See "Memory PD Bits" on page 53 for definition of "yy".</p>
25Cyy008	Memory module has been deconfigured	<ol style="list-style-type: none"> <li>1. Swap the memory module with the other memory module of the same pair, and retest. Look for any new error code.</li> <li>2. Replace the memory module based on the new error code.</li> </ol> <p>See "Memory PD Bits" on page 53 for definition of "yy".</p>



Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
26020001	Invalid PCI adapter vendor ID	<ol style="list-style-type: none"> <li>1. Move adapter to another slot (behind a different PCI bridge).</li> <li>2. Check for available firmware updates for adapter. Apply update if available.</li> <li>3. Run AIX diagnostics on adapter. Replace if indicated.</li> <li>4. Replace adapter.</li> <li>5. Check for system firmware updates. Apply if update available.</li> <li>6. Replace power supply.</li> <li>7. Replace I/O board (See notes on 21.)</li> </ol>
26020002	Invalid PCI adapter device ID	<ol style="list-style-type: none"> <li>1. Move adapter to another slot (behind a different PCI bridge).</li> <li>2. Check for available firmware updates for adapter. Apply update if available.</li> <li>3. Run AIX diagnostics on adapter. Replace if indicated.</li> <li>4. Replace adapter.</li> <li>5. Check for system firmware updates. Apply if update available.</li> <li>6. Replace power supply.</li> <li>7. Replace I/O board. (See notes on 21.)</li> </ol>
26020003	Invalid PCI adapter class code	<ol style="list-style-type: none"> <li>1. Move adapter to another slot (behind a different PCI bridge).</li> <li>2. Check for available firmware updates for adapter. Apply update if available.</li> <li>3. Run AIX diagnostics on adapter. Replace if indicated.</li> <li>4. Replace adapter.</li> <li>5. Check for system firmware updates. Apply if update available.</li> <li>6. Replace power supply.</li> <li>7. Replace I/O board (See notes on 21.)</li> </ol>
26020007	Failed to allocate bus resources to PCI adapter	<ol style="list-style-type: none"> <li>1. Move adapter to another slot (behind a different PCI bridge).</li> <li>2. Check for available firmware updates for adapter. Apply update if available.</li> <li>3. Run AIX diagnostics on adapter. Replace if indicated.</li> <li>4. Replace adapter.</li> <li>5. Check for system firmware updates. Apply if update available.</li> <li>6. Replace power supply.</li> <li>7. Replace I/O board (See notes on 21.)</li> </ol>
26800Cxx	Machine Check occurred	<p>If the location code shown on the operator panel identifies a card slot:</p> <ol style="list-style-type: none"> <li>1. Replace the adapter in the slot identified.</li> <li>2. Replace the I/O board (See notes on 21.)</li> </ol> <p>If the location code shown does not identify a card slot, or if there is no location code, replace the I/O board (See notes on 21.)</p>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
26800Dxx	Machine Check occurred. Unable to isolate to a single device.	<ol style="list-style-type: none"> <li>1. Attempt to reboot the system in Service Mode, this preserves the AIX error log. If the reboot fails, attempt to reboot CD-ROM. If the reboot is successful, run Diagnostics in Problem Determination mode to determine the cause of failure. Otherwise continue.</li> <li>2. Go to MAP 1540: Minimum Configuration, "Step 1540-25" on page 129.</li> </ol>
28030xxx	RTC errors	<ol style="list-style-type: none"> <li>1. Errors reported against the Real Time Clock (RTC) can be caused by low battery voltage and (more rarely) power outages that occur during normal system usage. These errors are warnings that the RTC data content needs to be re-established and do not require any FRU replacement unless the error is persistent. When one of these errors occurs, the Power On Password and Time and Date information has been lost. <ul style="list-style-type: none"> <li>• To set/restore a Power On Password, use the SMS utility.</li> <li>• To set/restore the Time and Date, use the Operating System facility.</li> </ul> </li> <li>2. If the error is persistent, replace the battery.</li> <li>3. If the error is persistent after battery replacement, replace the I/O board (See notes on 21.)</li> </ol>
28030001	RTC initialization required- RTC not updating, corrected.	Refer to Action under error code 28030xxx.
28030002	Bad time/date values	<ol style="list-style-type: none"> <li>1. Set the time and date.</li> <li>2. Refer to Action under error code 28030xxx.</li> </ol>
28030003	RTC initialization required. RTC not updating, not corrected.	Replace the I/O board (See notes on 21.)
28030004	RTC operating parameters (data format) changed.	<ol style="list-style-type: none"> <li>1. Set/restore the time and date.</li> <li>2. Refer to Action under error code 28030xxx.</li> </ol>
28030005	RTC battery error.	<ol style="list-style-type: none"> <li>1. Replace the battery. <b>Note:</b> Password, Time, and Date must be reset.</li> <li>2. Refer to Action under error code 28030xxx.</li> </ol>
28030006	Processor frequency measurement error.	Replace the I/O board (See notes on 21.) <b>Note:</b> Replacing the battery does not correct this error condition.
29000002	Keyboard/Mouse controller failed self-test	Replace the I/O board (See notes on 21.)

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
29A00003	Keyboard not present/detected	<ol style="list-style-type: none"> <li>1. Keyboard</li> <li>2. Replace the I/O board (See notes on 21.)</li> </ol>
29A00004	Keyboard stuck key test failed	<ol style="list-style-type: none"> <li>1. Keyboard</li> <li>2. Replace the I/O board (See notes on 21.)</li> </ol>
29B00004	Mouse not present/detected	<ol style="list-style-type: none"> <li>1. Mouse</li> <li>2. Replace the I/O board (See notes on 21.)</li> </ol>
2B284A00	Illegal condition detected	Contact your next level of support. Do not replace any FRUs in an attempt to fix this problem.
2B200402	Unsupported Processor	CPU card.
2B2xxx22	Processor disabled	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card.</li> </ol> <p>Where xxx indicates the processor type as follows:</p> <p><b>000</b> 166 Mhz 1 or 2 way Processor card</p> <p><b>200</b> 166 Mhz 1 or 2 way Processor card</p> <p><b>211</b> Down level VPD. Contact service person.</p> <p><b>251</b> 166 Mhz 1 way Processor card</p> <p><b>261</b> 166 Mhz 2 way Processor card</p> <p><b>451</b> 332 Mhz 1 way Processor card</p> <p><b>461</b> 332 Mhz 2 way Processor card</p> <p><b>8A8</b> 340 Mhz 2 way Processor card</p>
2B2xxx31	Processor failed	See error code 2B2xxx22 for action.
2B2xxx42	Unsupported processor type	See error code 2B2xxx22 for action.
2B200402	Unsupported processor	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card.</li> </ol>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
2BA00xxx	Service Processor	
2BA00000	Service processor POST failure	<ol style="list-style-type: none"> <li>1. Unplug the system power cable and wait until the system power indicator remains off and the operator panel is blank.</li> <li>2. Plug the system power cable back in and retry the operation.</li> <li>3. Replace the I/O board. (See notes on 21.)</li> </ol>
2BA00012	Service processor reports self-test failure	<ol style="list-style-type: none"> <li>1. Unplug the system power cable and wait until the system power indicator remains off and the operator panel is blank.</li> <li>2. Plug the system power cable back in and retry the operation.</li> <li>3. Replace the I/O board (See notes on 21.)</li> </ol>
2BA00013	Service processor reports bad NVRAM CRC	<ol style="list-style-type: none"> <li>1. If problem persists, replace battery.</li> <li>2. Replace the I/O board (See notes on 21.)</li> </ol>
2BA00014	Service processor reports bad service processor firmware	Use service processor firmware diskette to re-program firmware.
2BA00017	Service processor reports bad or low battery	<ol style="list-style-type: none"> <li>1. Replace the battery.</li> <li>2. Replace the I/O board (See notes on 21.)</li> </ol>
2BA00018	EPOW test failure	1. Replace the I/O board (See notes on 21.)
2BA00019	IRQ13 test failure	1. Replace the I/O board (See notes on 21.)
2BA00024	Service processor reports bad Power Controller firmware	Use the System Firmware diskette to re-program the System firmware.
2BA00040	Service processor reports Service Processor VPD module not present	1. Use the Service Processor Firmware diskette to re-program the Service Processor firmware.
2BA00041	Service processor VPD is corrupted	1. Use the service processor firmware diskette to re-program the service processor firmware.
2BA00050	Service processor reports system operator panel VPD module not present or not recognizeable	<p>Replace the operator panel control assembly. (See notes on 21.)</p> <p><b>Note:</b> Swap the old VPD module from the old operator panel control assembly to the new one.</p>
2BA00051	System operator panel VPD data corrupted	<p>Replace the operator panel control assembly. (See notes on 21.)</p> <p><b>Note:</b> Swap the old VPD module from the old operator panel control assembly to the new one.</p>
2BA00060	Service processor reports I/O board VPD module not present	Replace the I/O board (See notes on 21.)
2BA00061	Service processor reports I/O board VPD data corrupted	Replace the I/O board (See notes on 21.)

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
2BA00062	Service processor reports system board VPD module not present	Replace the system board.
2BA00063	Service processor reports system board VPD data corrupted	Replace the system board.
2BA00064	Service processor reports PCI riser card VPD module not present	Replace the PCI riser card.
2BA00065	Service processor reports PCI riser card VPD data corrupted	Replace the PCI riser card.
2BA00066	Service processor reports PCI expansion card VPD module not present	Replace the PCI expansion card.
2BA00067	Service processor reports PCI expansion card VPD data corrupted	Replace the PCI expansion card.
2BA00070	Service processor reports CPU card VPD module not present	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card.</li> </ol>
2BA00071	VPD data corrupted for CPU in processor card connector #1	Replace the CPU card in processor card connector #1.
2BA00073	VPD data corrupted for CPU in processor card connector #2	Replace the CPU card in processor card connector #2.
2BA00100	Service processor firmware recovery information could not be written to diskette	<ol style="list-style-type: none"> <li>1. Check diskette media write protect tab.</li> <li>2. Replace the diskette drive.</li> </ol>
2BA00101	Service processor is not installed, update cancelled	1. Retry operation.
2BA00102	No service processor update diskette in drive	Insert the diskette.
2BA00103	Service processor firmware update file is corrupted, update cancelled	<ol style="list-style-type: none"> <li>1. Obtain new service processor firmware diskette.</li> <li>2. Retry operation.</li> </ol>
2BA00104	Service processor firmware update file is the same level as the service processor firmware, update cancelled	<ol style="list-style-type: none"> <li>1. Obtain new level of service processor firmware.</li> <li>2. Retry operation.</li> </ol>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
2BA00200	Service processor firmware update error occurred, update not completed  Error occurred during service processor flash write operation.	Service processor firmware update error recovery procedure: 1. Turn the system Off. 2. Unplug power cable and then plug power cable back in. 3. Turn the system On. 4. Retry operation. If problem persists: 5. Replace I/O board.
2BA00201	Service processor firmware update error occurred, update not completed  Error occurred while reading service processor CRC.	See error code 2BA00200 for recovery procedure.
2BA00202	Service processor firmware update error occurred, update not completed  Error occurred while verifying service processor CRC.	See error code 2BA00200 for recovery procedure.
2BA00203	Service processor firmware update error occurred, update not completed  Error occurred while reading new service processor CRC after updating service processor firmware.	See error code 2BA00200 for recovery procedure.
2BA00204	Service processor firmware update error occurred, update not completed  Error occurred while calculate CRC write.	See error code 2BA00200 for recovery procedure.
2BA00300	Service Processor reports Slow Fan number 0	1. Replace Fan 0. 2. If problem persists, replace power supply. 3. Replace I/O Board (See notes on 21.)
2BA00301	Service Processor reports Slow Fan number 1	1. Replace Fan 1. 2. If problem persists, replace power supply. 3. Replace I/O Board. (See notes on 21.)
2BA00302	Service Processor reports Slow Fan number 2	1. Replace Fan 2. 2. If problem persists, replace power supply. 3. Replace I/O Board (See notes on 21.)
2BA00303	Service Processor reports Slow Fan number 3	1. Replace Fan 3. 2. If problem persists, replace Power Supply. 3. Replace I/O Board (See notes on 21.)
2BA00309	Service Processor reports Generic Cooling Alert	1. Check for cool air flow obstructions to the system. 2. Replace I/O Board (See notes on 21.)

Table 2. Firmware Error Codes. (continued)

<b>Error Code</b>	<b>Description</b>	<b>Action / Possible Failing FRU</b>
2BA00310	Service Processor reports CPU Over Temperature Alert	1. Check for cool air flow obstructions to the system. 2. If the problem persists, replace CPU card
2BA00311	Service Processor reports IO Over Temperature Alert	1. Check for cool air flow obstructions to the system. 2. Replace I/O Board (See notes on 21.)
2BA00312	Service Processor reports Memory Over Temperature Alert	1. Check for cool air flow obstructions to the system. 2. Replace memory card.
2BA00313	Service Processor reports Generic Power Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00314	Service Processor reports 5V Over Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00315	Service Processor reports 5V Under Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00316	Service Processor reports 3.3V Over Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00317	Service Processor reports 3.3V Under Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00318	Service Processor reports 2.5V Over Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00319	Service Processor reports 2.5V Under Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00320	Service Processor reports +12V Over Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00321	Service Processor reports +12V Under Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00322	Service Processor reports -12V Over Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00323	Service Processor reports -12V Under Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00324	Service Processor reports 5V Standby Over Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00325	Service Processor reports 5V Standby Under Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00326	Service Processor reports PCI Expansion Card 5V Over Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00327	Service Processor reports PCI Expansion Card 5V Under Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00328	Service Processor reports PCI Expansion Card 3.3V Over Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)
2BA00329	Service Processor reports PCI Expansion Card 3.3V Under Voltage Alert	1. Replace power supply. 2. Replace I/O Board (See notes on 21.)

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
2BA00330	Service Processor reports PCI Expansion Card +12V Over Voltage Alert	<ol style="list-style-type: none"> <li>1. Replace power supply.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00331	Service Processor reports PCI Expansion Card +12V Under Voltage Alert	<ol style="list-style-type: none"> <li>1. Replace power supply.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00332	Service Processor reports PCI Expansion Card -12V Over Voltage Alert	<ol style="list-style-type: none"> <li>1. Replace power supply.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00333	Service Processor reports PCI Expansion Card -12V Under Voltage Alert	<ol style="list-style-type: none"> <li>1. Replace power supply.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00334	Service Processor reports Generic Slow Shutdown request	<ol style="list-style-type: none"> <li>1. Replace power supply.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00335	Service Processor reports CPU Critical Over Temperature Slow Shutdown request	<ol style="list-style-type: none"> <li>1. Check for cool air flow obstructions to the system.</li> <li>2. Check fans for obstructions that prevent them from normal operation (example: a cable caught in the fan preventing it from spinning).</li> <li>3. If problem persists, replace CPU card.</li> </ol>
2BA00336	Service Processor reports IO Critical Over Temperature Slow Shutdown request	<ol style="list-style-type: none"> <li>1. Check for cool air flow obstructions to the system.</li> <li>2. Check fans for obstructions that prevent them from normal operation (example: a cable caught in the fan preventing it from spinning).</li> <li>3. If problem persists, replace I/O Board (See notes on 21.)</li> </ol>
2BA00337	Service Processor reports Memory Critical Over Temperature Slow Shutdown request	<ol style="list-style-type: none"> <li>1. Check for cool air flow obstructions to the system.</li> <li>2. Check fans for obstructions that prevent them from normal operation (example: a cable caught in the fan preventing it from spinning)</li> <li>3. If problem persists, replace Memory card.</li> </ol>
2BA00338	Service Processor reports Generic Fast Shutdown request	<ol style="list-style-type: none"> <li>1. Replace power supply.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00340	Service Processor reports Locked fan - Fast Shutdown request fan number 1	<ol style="list-style-type: none"> <li>1. Replace fan 1.</li> <li>2. If problem persists, replace power supply.</li> <li>3. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00341	Service Processor reports Locked fan - Fast Shutdown request fan number 2	<ol style="list-style-type: none"> <li>1. Replace fan 2.</li> <li>2. If problem persists, replace power supply.</li> <li>3. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00342	Service Processor reports Locked fan - Fast Shutdown request fan number 3	<ol style="list-style-type: none"> <li>1. Replace fan 3.</li> <li>2. If problem persists, replace power supply.</li> <li>3. Replace I/O Board (See notes on 21.)</li> </ol>



Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
2BA00343	Service Processor reports Locked fan - Fast Shutdown request fan number 4	<ol style="list-style-type: none"> <li>1. Replace fan 4.</li> <li>2. If problem persists, replace power supply.</li> <li>3. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00350	Service Processor reports Generic Immediate Shutdown request	<ol style="list-style-type: none"> <li>1. Replace power supply.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00351	Service Processor reports Generic AC power loss EPOW	<ol style="list-style-type: none"> <li>1. Replace power supply.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00352	Service Processor reports Loss of AC power (outlet)	<ol style="list-style-type: none"> <li>1. Replace power supply.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00353	Service Processor reports Loss of AC power (power button)	<ol style="list-style-type: none"> <li>1. Replace power supply.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00360	Service Processor reports Slow DASD Fan #1	<ol style="list-style-type: none"> <li>1. Replace DASD Fan 1.</li> <li>2. If problem persists, replace power supply.</li> <li>3. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00361	Service Processor reports Slow DASD Fan #2	<ol style="list-style-type: none"> <li>1. Replace DASD Fan 2.</li> <li>2. If problem persists, replace power supply.</li> <li>3. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00362	Service Processor reports Slow DASD Fan #3	<ol style="list-style-type: none"> <li>1. Replace DASD Fan 3.</li> <li>2. If problem persists, replace power supply.</li> <li>3. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00363	Service Processor reports Slow DASD Fan #4	<ol style="list-style-type: none"> <li>1. Replace DASD Fan 4.</li> <li>2. If problem persists, replace power supply.</li> <li>3. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00364	Service Processor reports Locked DASD Fan #1	<ol style="list-style-type: none"> <li>1. Remove Obstruction from DASD Fan 1.</li> <li>2. Replace DASD Fan 1.</li> <li>3. If problem persists, replace power supply.</li> <li>4. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00365	Service Processor reports Locked DASD Fan #2	<ol style="list-style-type: none"> <li>1. Remove Obstruction from DASD Fan 2.</li> <li>2. Replace DASD Fan 2.</li> <li>3. If problem persists, replace power supply.</li> <li>4. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00366	Service Processor reports Locked DASD Fan #3	<ol style="list-style-type: none"> <li>1. Remove Obstruction from DASD Fan 3.</li> <li>2. Replace DASD Fan 3.</li> <li>3. If problem persists, replace power supply.</li> <li>4. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00367	Service Processor reports Locked DASD Fan #4	<ol style="list-style-type: none"> <li>1. Remove Obstruction from DASD Fan 4.</li> <li>2. Replace DASD Fan 4.</li> <li>3. If problem persists, replace power supply.</li> <li>4. Replace I/O Board (See notes on 21.)</li> </ol>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
2BA00368	Service Processor reports Slow CEC Fan #1	<ol style="list-style-type: none"> <li>1. Replace CEC Fan 1.</li> <li>2. If problem persists, replace power supply.</li> <li>3. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00369	Service Processor reports Slow CEC Fan #2	<ol style="list-style-type: none"> <li>1. Replace CEC Fan 2.</li> <li>2. If problem persists, replace power supply.</li> <li>3. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00370	Service Processor reports Slow CEC Fan #3	<ol style="list-style-type: none"> <li>1. Replace CEC Fan 3.</li> <li>2. If problem persists, replace power supply.</li> <li>3. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00371	Service Processor reports Locked CEC Fan #1	<ol style="list-style-type: none"> <li>1. Remove obstruction from CEC Fan 1.</li> <li>2. Replace CEC Fan 1.</li> <li>3. If problem persists, replace power supply.</li> <li>4. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00372	Service Processor reports Locked CEC Fan #2	<ol style="list-style-type: none"> <li>1. Remove obstruction from CEC Fan 2.</li> <li>2. Replace CEC Fan 2.</li> <li>3. If problem persists, replace power supply.</li> <li>4. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00373	Service Processor reports Locked CEC Fan #3	<ol style="list-style-type: none"> <li>1. Remove obstruction from CEC Fan 3.</li> <li>2. Replace CEC Fan 3.</li> <li>3. If problem persists, replace power supply.</li> <li>4. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00374	Service Processor reports power supply #1 and DASD Fans failed	<ol style="list-style-type: none"> <li>1. Replace power supply #1 and Failing DASD Fans.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00375	Service Processor reports power supply #2 and DASD Fans failed	<ol style="list-style-type: none"> <li>1. Replace power supply #2 and Failing DASD Fans.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00376	Service Processor reports power supply failure	<ol style="list-style-type: none"> <li>1. Replace failing power supply.</li> <li>2. Replace I/O Board (See notes on 21.)</li> </ol>
2BA00399	Service Processor reports Unsupported value in EPOW	Replace I/O Board (See notes on 21.)
40100005	A loss of system power detected	Possible main power loss. If not, replace power supply.
40100007	Immediate shutdown	Possible main power loss. If not, replace power supply.
40110000	Redundant power supply fail	<ol style="list-style-type: none"> <li>1. Power supply.</li> <li>2. I/O board (See notes on 21.)</li> </ol>
40110001	Power supply fail	<ol style="list-style-type: none"> <li>1. Power supply.</li> <li>2. I/O board. (See notes on 21.)</li> </ol>
40110002	Voltage is present, but not detected on both processor cards	Replace power supply.

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
40110003	Voltage is present, but not detected on one processor card. (If the system is running, refer to the AIX error log to find out which processor card is failing. If the system is not running, refer to the service processor error log.)	Replace power supply..
40110004	Low voltage detected in power supply main enclosure.	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power Supply
40110005	Fan warning detected in power supply main enclosure.	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power supply.
40110006	Fan failure detected in power supply main enclosure	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power supply.
40110007	Thermal warning detected in power supply main enclosure	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power supply.
40110008	Thermal failure detected in power supply main enclosure	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power supply.
40110009	High 5.0 volt detected in power supply main enclosure	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power supply.
4011000A	High 5.0 RA volt detected in power supply main enclosure	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power supply.
4011000B	High 5.0 RB volt detected in power supply main enclosure	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power supply.
4011000C	High 3.3 M volt detected in power supply main enclosure	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power supply.
4011000D	High 3.3 volt detected in power supply main enclosure	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power supply.
4011000E	High +12.0 volt detected in power supply main enclosure	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power supply.
4011000F	High -12.0 volt detected in power supply main enclosure	1. Check I <sup>2</sup> C cable to connector on I/O Board. 2. Power supply.
40111002	An unknown power problem detected	1. Power supply. 2. I/O board. (See notes on 21.)

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
40111022	A high 5.0 voltage reading detected	<ol style="list-style-type: none"> <li>1. Power supply.</li> <li>2. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card.</li> </ol>
40111032	A high 3.3 voltage reading detected	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Power supply.</li> </ol>
40111042	A high 2.5 voltage reading detected	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Power supply.</li> </ol>
40111052	A high +12 voltage reading detected	<ol style="list-style-type: none"> <li>1. Power supply.</li> <li>2. I/O board (See notes on 21.)</li> </ol>
40111062	A high -12 voltage reading detected	<ol style="list-style-type: none"> <li>1. Power supply.</li> <li>2. I/O board (See notes on 21.)</li> </ol>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
40111072	A high +5 standby voltage reading detected	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Power supply.</li> </ol>
40111082	A low 5.0 voltage reading detected	<ol style="list-style-type: none"> <li>1. Power supply.</li> <li>2. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card.</li> </ol>
40111092	A low 3.3 voltage reading detected	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Power supply.</li> </ol>
401110A2	A low +5 standby voltage reading detected	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Power supply.</li> </ol>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
401110B2	A low +12 voltage reading detected	<ol style="list-style-type: none"> <li>1. Power supply.</li> <li>2. I/O board (See notes on 21.)</li> </ol>
401110C2	A low -12 voltage reading detected	<ol style="list-style-type: none"> <li>1. Power supply.</li> <li>2. I/O board (See notes on 21.)</li> </ol>
401110D2	A low +5 standby voltage reading detected	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>2. Exchange processor card in processor card connector #1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Power supply.</li> </ol>
40111101	Power good signal low on either processor card 0 or processor card 1. (If the system is running, refer to the AIX error log to find out which processor card is failing. If the system is not running, refer to the service processor error log.)	Replace failing processor card.
40111102	Wrong processor cards plugged into the system	<ol style="list-style-type: none"> <li>1. Remove cards.</li> <li>2. Verify part numbers.</li> <li>3. Install valid card.</li> </ol>
40200001	An unknown cooling problem detected	Cooling problem; check system fans.
40200021	A CPU temperature warning detected	Over temperature on CPU card.
40200023	A critical CPU temperature condition detected	Critical temperature on CPU card.
40200031	An I/O board temperature warning detected	Over temperature on I/O board.
40200033	A critical I/O board temperature condition detected	Critical temperature on I/O board.
40200041	A memory temperature warning detected	Over temperature on the memory card.
40200043	A critical memory temperature condition detected	Critical temperature on the memory card.
40200051	An inlet temperature warning detected	Over temperature on the air flow inlet.
40200053	An inlet memory temperature condition detected	Critical temperature on the air flow inlet.
40210011	A slow fan detected	Check: <ol style="list-style-type: none"> <li>1. Room operating temperature.</li> <li>2. System fans.</li> </ol>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
40210014	<ol style="list-style-type: none"> <li>1. A stopped fan detected.</li> <li>2. Fan connector unplugged.</li> <li>3. Fan sensor defective.</li> <li>4. Loss of a redundant fan and a subsequent locked fan. (If the system is running, refer to the AIX error log to find out which fan is failing. If the system is not running, refer to the service processor error log.)</li> </ol>	<ol style="list-style-type: none"> <li>1. Check connector.</li> <li>2. Failing fan.</li> <li>3. FMC card.</li> </ol>
40210024	<p>Loss of a redundant fan and a subsequent slow fan. (If the system is running, refer to the AIX error log to find out which fan is failing. If the system is not running, refer to the service processor error log.)</p>	<ol style="list-style-type: none"> <li>1. Failing fan.</li> <li>2. FMC card.</li> </ol>
40210091	<p>Loss of a redundant fan. (Refer to the service processor error log to find out which fan is failing.)</p>	<ol style="list-style-type: none"> <li>1. Failing fan.</li> <li>2. FMC card.</li> </ol>
40211804	<p>Failure to communicate with FMC</p>	<ol style="list-style-type: none"> <li>1. Failing fan.</li> <li>2. FMC card.</li> </ol>
40A00000	<p>System firmware IPL failure</p>	<ol style="list-style-type: none"> <li>1. Surveillance mode control is from the Service Processor (service processor) Menus.</li> <li>2. Verify that the system firmware supports service processor surveillance.</li> <li>3. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>4. Exchange processor card in processor card connector #1 with the processor card removed in step 3 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>5. System board.</li> <li>6. I/O board (See notes on 21.)</li> <li>7. If the problem persists, call the support center for assistance.</li> </ol>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
40B00000	The operating system surveillance interval exceeded	<ol style="list-style-type: none"> <li>1. Surveillance mode control is from the Service Processor(service processor) Menus.</li> <li>2. Verify that the Operating System (OS) Heartbeat Utility is installed and has been activated.</li> <li>3. Check for errors or unusual conditions that might prevent the OS from reporting Heartbeat messages; such as system dump, machine check or checkstop error. Review the error log.</li> <li>4. I/O board. (See notes on 21.)</li> <li>5. If the problem persists, call the support center for assistance.</li> </ol>
40B00100	Surveillance timeout on CPU 1	<ol style="list-style-type: none"> <li>1. Check for errors or unusual conditions that might prevent the CPU from reporting Heartbeat messages; such as system dump, machine check or checkstop error. Review the Service Processor error log.</li> <li>2. Replace the CPU card.</li> </ol>
40B00101	Surveillance timeout on CPU 2	<ol style="list-style-type: none"> <li>1. Check for errors or unusual conditions that might prevent the CPU from reporting Heartbeat messages; such as system dump, machine check or checkstop error. Review the Service Processor error log.</li> <li>2. Replace the CPU card.</li> </ol>
40B00102	Surveillance timeout on CPU 3	<ol style="list-style-type: none"> <li>1. Check for errors or unusual conditions that might prevent the CPU from reporting Heartbeat messages; such as system dump, machine check or checkstop error. Review the Service Processor error log.</li> <li>2. Replace the CPU card.</li> </ol>
40B00103	Surveillance timeout on CPU 4	<ol style="list-style-type: none"> <li>1. Check for errors or unusual conditions that might prevent the CPU from reporting Heartbeat messages; such as system dump, machine check or checkstop error. Review the Service Processor error log.</li> <li>2. Replace the CPU card.</li> </ol>
40D00003	An unknown slow shutdown commanded	Critical cooling problem. Check to ensure the temperature is in the ambient range.
40D00004	An unknown fast shutdown commanded	Locked fan failure detected. Make sure all fans are operating normally.
40D00101	Bist on I/O board failed	I/O board (See notes on 21.)
40D00102	BIST on system board fail	System board.
45800000	Memory controller checkstop	<ol style="list-style-type: none"> <li>1. System board.</li> <li>2. If problem is not resolved continue to "Step 1540-25" on page 129.</li> </ol>



Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
45B00001	A non-compatible memory card is detected	Replace the memory card, as indicated by the physical location code, with a compatible memory card supported by this system.
45C00000	Memory checkstop. (Uncorrectable memory error.)	<ol style="list-style-type: none"> <li>1. Attempt to reboot the system in Service Mode. This preserves the AIX error log. If the reboot fails, attempt to reboot from the CD-ROM. If the reboot is successful, run Diagnostics in Problem Determination mode to determine the cause of the failure.</li> <li>2. System board.</li> </ol>
48800909	System vpd error	<ol style="list-style-type: none"> <li>1. Check cable to op-panel</li> <li>2. Replace op-panel</li> <li>3. I/O board (See notes on 21.)</li> </ol>
4880090A	Generic vpd error	Refer to "Step 1540-25" on page 129.
4880090B	Error identifying system type using vpd	<ol style="list-style-type: none"> <li>1. I<sup>2</sup>C bus error.</li> <li>2. Call for support.</li> </ol>
4880090C	Jtag unable to confirm system type using system vpd	<ol style="list-style-type: none"> <li>1. Remove cards.</li> <li>2. Verify part numbers.</li> <li>3. Install valid cards.</li> <li>4. Call for support.</li> </ol>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
4B2xxx00	Checkstop	<ol style="list-style-type: none"> <li>1. Press enter on an attached ASCII terminal keyboard to go into the Service Processor menus.</li> <li>2. Select "System Information" menu.</li> <li>3. Select "Read Progress Indicators from Last System Boot" and use the posted code indicated by the arrow. If the code is "E105" or "0xxx", where xxx is any 3 digits, continue to step 4 instead of the listed action. Otherwise, find the code in the "Bus SRN to FRU Reference Table" on page 53 or "A60 Controller Service Processor Checkpoints" on page 54 or "Firmware Checkpoints" on page 57 and perform the action shown there.</li> <li>4. Attempt to reboot the system in Service Mode, this preserves the AIX error log. If the reboot fails, attempt to reboot CD-ROM. If the reboot is successful, run Diagnostics in Problem Determination mode to determine the cause of failure. Otherwise continue.</li> <li>5. Remove processor card in processor card connector 2 (if installed) and see if the problem is resolved, replace processor card, otherwise continue.</li> <li>6. Exchange processor card in processor card connector 1 with processor card removed from processor card connector 2 in step 5 (replace processor card if only one processor card is exists) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>7. Go to MAP 1540: Minimum Configuration, "Step 1540-25" on page 129.</li> </ol>
4B2xxx01	Checkstop - processor card connector 1 fail	<ol style="list-style-type: none"> <li>1. Attempt to reboot the system in Service Mode, this preserves the AIX error log. If the reboot fails, attempt to reboot from the CD-ROM. If the reboot is successful, run Diagnostics in Problem Determination mode to determine the cause of the failure. Otherwise continue.</li> <li>2. CPU Card in processor card connector 1.</li> <li>3. System board.</li> <li>4. I/O board (See notes on 21.)</li> </ol>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
4B2xxx02	Checkstop - processor card connector 2 fail	<ol style="list-style-type: none"> <li>1. Attempt to reboot the system in Service Mode, this preserves the AIX error log. If the reboot fails, attempt to reboot from the CD-ROM. If the reboot is successful, run Diagnostics in Problem Determination mode to determine the cause of the failure. Otherwise continue.</li> <li>2. CPU Card in processor card connector 2.</li> <li>3. System board.</li> <li>4. I/O board (See notes on 21.)</li> </ol>
4B2xxx10	Machine Check - 0	<ol style="list-style-type: none"> <li>1. Attempt to reboot the system in Service Mode, this preserves the AIX error log. If the reboot fails, attempt to reboot from the CD-ROM. If the reboot is successful, run Diagnostics in Problem Determination mode to determine the cause of the failure. Otherwise continue.</li> <li>2. Remove processor card in slot 2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card else continue.</li> <li>3. Exchange processor card in processor card connector 1 with processor card removed from processor card connector 2 in step 2 (replace processor card if only one processor card is exists) and see if the problem is resolved. If problem is resolved replace processor card else continue.</li> <li>4. Refer to "Step 1540-25" on page 129.</li> </ol>
4B2xxx11	Machine Check - 1 (Stuck Active)	<ol style="list-style-type: none"> <li>1. Remove processor card in processor card connector 2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card else continue.</li> <li>2. Exchange processor card in processor card connector 1 with processor card removed from slot 2 in step 1 (replace processor card if only one processor card is exists) and see if the problem is resolved. If problem is resolved replace processor card else continue.</li> <li>3. Replace the system board.</li> </ol>
4B2xxx41	ABIST fail	<ol style="list-style-type: none"> <li>1. CPU Card in processor card connector 1.</li> <li>2. I/O board (See notes on 21.)</li> </ol>
4B2xxx42	ABIST fail	<ol style="list-style-type: none"> <li>1. CPU Card in processor card connector 2.</li> <li>2. I/O board. (See notes on 21.)</li> </ol>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
4B2xxx43	Service Processor reports JTAG fail	<ol style="list-style-type: none"> <li>1. Remove processor card in slot 2 (if installed) and see if the problem is resolved. If not, continue.</li> <li>2. Exchange processor card in slot 1 with processor card removed from slot 2 in step 1 (replace processor card if only one processor card is exists) and see if the problem is resolved. If not, continue.</li> <li>3. Replace the system board.</li> <li>4. I/O board. (See notes on 21.)</li> </ol>
4B2xxx51	LBIST fail	<ol style="list-style-type: none"> <li>1. CPU Card in processor card connector 1.</li> <li>2. I/O board. (See notes on 21.)</li> </ol>
4B2xxx52	LBIST fail	<ol style="list-style-type: none"> <li>1. CPU Card in processor card connector 2.</li> <li>2. I/O board. (See notes on 21.)</li> </ol>
4B200054	The CPU cards are not compatible with each other (i.e. one is a 166MHz and the other is a 332MHz)	<ol style="list-style-type: none"> <li>1. Remove cards</li> <li>2. Verify part numbers</li> <li>3. Install valid cards</li> </ol>
4B200055	No processor found	<ol style="list-style-type: none"> <li>1. If only one processor card is used, it must be in processor card connector 1.</li> <li>2. If two processor cards are used: <ol style="list-style-type: none"> <li>a. Replace the card in processor card connector 1 with the card in processor card connector 2 and see if the problem is resolved. If not, proceed to the next step.</li> <li>b. Replace the system board.</li> <li>c. Replace the I/O board (See notes on 21.)</li> </ol> </li> </ol>
4B200056	No CPU card in first slot	<ol style="list-style-type: none"> <li>1. If only one processor card is used, it must be in slot #1.</li> <li>2. If two processor cards are used: <ol style="list-style-type: none"> <li>a. Replace the card in slot #1.</li> <li>b. Replace the system board.</li> <li>c. Replace the I/O board (See notes on 21.)</li> </ol> </li> </ol>
4B200057	The CPU cards are not compatible with each other (i.e. one is a 166MHz and the other is a 332MHz)	<ol style="list-style-type: none"> <li>1. Remove cards</li> <li>2. Verify part numbers</li> <li>3. Install valid cards</li> </ol>
4B200058	Compatibility test on processor card 0 failed	<ol style="list-style-type: none"> <li>1. Remove cards</li> <li>2. Verify part numbers</li> <li>3. Install valid cards</li> </ol>
4B200059	Compatibility test on processor card 1 failed	<ol style="list-style-type: none"> <li>1. Remove cards</li> <li>2. Verify part numbers</li> <li>3. Install valid cards</li> </ol>

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
4B2000A	No configured CPU found	<ol style="list-style-type: none"> <li>1. Verify compatibility of CPU cards.</li> <li>2. Verify that cards are properly connected.</li> <li>3. Manually configure a CPU using the Service Processor menu.</li> </ol>
4B201000	Checkstop	<ol style="list-style-type: none"> <li>1. Attempt to reboot the system in Service Mode, this preserves the AIX error log. If the reboot fails, attempt to reboot from the CD-ROM. If the reboot is successful, run Diagnostics in Problem Determination mode to determine the cause of the failure. Otherwise continue.</li> <li>2. CPU card.</li> <li>3. System board.</li> <li>4. PCI adapter.</li> <li>5. I/O board (See notes on 21.)</li> </ol>
4B201020	TEA Error	Refer to "MAP 1540: Minimum Configuration" on page 105.
4BA00000	The system support controller detects the service processor, but cannot establish communication. The system halts	<ol style="list-style-type: none"> <li>1. Replace the I/O board. (See notes on 21.)</li> </ol>
4BA00001	The system support controller cannot detect the service processor.	<ol style="list-style-type: none"> <li>1. Replace the I/O board. (See notes on 21.)</li> </ol>
4BA00800	Unknown error	Check level of Service Processor, if not the latest and problem persist, call for support.
4BA00826	Service processor cannot call home	Replace the I/O board (See notes on 21.)
4BA00827	Flash update floppy/diskette fail	<ol style="list-style-type: none"> <li>1. Put image on another diskette and re-try.</li> <li>2. Replace the floppy drive.</li> </ol>
4BA00828	Flash update (crc) checksum fail	Replace the flash image.
4BA00829	Bad system firmware.	Replace I/O board (See notes on 21.)
4BA00830	Boot fail	See "Boot Problems and Concerns" on page 69.
4BA00831	Bad Service Processor image	<ol style="list-style-type: none"> <li>1. Insert disk containing Service Processor image into the floppy drive.</li> <li>2. Re-power the system.</li> </ol>
4BA00832	Error while doing flash update	<ol style="list-style-type: none"> <li>1. Re-power the system; re-try the flash programming a few times.</li> <li>2. Replace I/O board (See notes on 21.)</li> </ol>
4BA10001	SSC sram fail	Refer to "MAP 1540: Minimum Configuration" on page 105.
4BA10002	SSC sram fail	Refer to "MAP 1540: Minimum Configuration" on page 105.
4BA10003	Service Processor Fail	Replace I/O board.

Table 2. Firmware Error Codes. (continued)

Error Code	Description	Action / Possible Failing FRU
4BA10004	Service Processor Firmware Fail	Restore or update the service processor Flash EPROM.
4BA10005	I <sup>2</sup> C Path Fail.	<ol style="list-style-type: none"> <li>1. I/O board (See notes on 21.)</li> <li>2. Remove processor card in processor card connector #2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>3. Exchange processor card in processor card connector #1 with the processor card removed in step 2 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not, continue.</li> <li>4. System board.</li> </ol>
4BA80013	NVRAM	Refer to "MAP 1540: Minimum Configuration" on page 105..
4BA80014	NVRAM (crc) checksum fail.	Recoverable temporary condition, unless succeeded by 4BA80015.
4BA80015	NVRAM reinitialization fail	Replace NVRAM module.

## Reference Codes

Table 3. Reference Codes

Reference Code	Description	Action / Possible Failing FRU
2B284A00	Illegal condition detected	Contact your next level of support. Do not replace any FRUs in an attempt to fix this problem.

## Memory PD Bits

The following table expands the firmware error code **25Cyyxxx** on page 28, where **yy** is the PD values in the table below. Use these values to identify the type of memory that generated the error.

If you replace FRUs and the problem is still not corrected, go to “MAP 1540: Minimum Configuration” on page 105 unless otherwise indicated in the tables.

*Table 4. Memory Module PD bits*

PD value	Size	Clock Cycle (nsecs)	Parity/ ECC
58	32MB	10	ECC
38	128MB	10	ECC
68	256MB	10	ECC

**Note:** Memory modules must be installed in pairs.

## Bus SRN to FRU Reference Table

The following table is used to locate defective FRUs within the I/O board PCI and ISA buses. The table indicates which devices should be tested for each SRN. For this procedure, if possible, diagnostics are run on the I/O board bus devices with all adapters removed from the failing bus. If a failure is detected on this system with all adapters removed from the failing bus, the I/O board is the isolated FRU. If a failure is not detected, the adapters are added back one at a time, to their original slot location, and the configuration is tested until a failure is detected. The failure is then isolated to the failing FRU.

If a failure has not been detected and all the FRUs have been tested call your technical service support person for assistance.

*Table 5. Bus SRN to FRU Reference Table (A60 Controller only)*

SRN	Bus Identification	Possible Failing Device and AIX Location Code	Associated FRU
9CC-100	PCI Bus 00	Internal SCSI port 1 (10-60)	I/O board. (See notes on 21.)
		Internal Ethernet port (10-80)	I/O board. (See notes on 21.)
		Device installed in I/O Slot 3P (10-68 to 10-6F)	Adapter
		Device installed in I/O Slot 4P (10-70 to 10-77)	Adapter
9CC-101	PCI Bus 01	Device installed in I/O Slot 1P (20-58 to 20-5F)	Adapter
		Device installed in I/O Slot 2P (20-60 to 20-67)	Adapter
9CC-102	PCI Bus 02	Internal/External SCSI port 2 (10-88)	I/O board. (See notes on 21.)
		Device installed in I/O Slot 7P (30-68 to 30-6F)	Adapter
		Device installed in I/O Slot 8P (30-70 to 30-77)	Adapter

Table 5. Bus SRN to FRU Reference Table (A60 Controller only) (continued)

SRN	Bus Identification	Possible Failing Device and AIX Location Code	Associated FRU
9CC-103	PCI Bus 03	Device installed in I/O Slot 5P (40-58 to 40-5F)	Adapter
		Device installed in I/O Slot 6P (40-60 to 40-67)	Adapter
651-730	ISA Bus	Diskette Drive port/device (01-D1-00-00)	I/O board. (See notes on 21.)
		Parallel port/device (01-R1)	I/O board. (See notes on 21.)
		Serial ports (1-3)/device (01-S1 to 01-S3)	I/O board. (See notes on 21.)
		Mouse port/device (01-K1-01-00)	I/O board. (See notes on 21.)
		Keyboard port/device (01-K1-00-00)	I/O board. (See notes on 21.)
		Device installed in I/O Slot 8I (01-01 or 01-02)	Adapter
		Device installed in I/O Slot 9I (01-01 or 01-02)	Adapter

## Checkpoints

Checkpoints are intended to let users and service personal know what the server is doing, with some detail, as it initializes. These checkpoints are not intended to be error indicators, but in some cases a server could hang at one of the checkpoints without displaying an 8-character error code. It is for these hang conditions, only, that any action should be taken with respect to checkpoints. The most appropriate action is included with each checkpoint.

Before taking actions listed with a checkpoint, it is a good idea to look for better symptoms in the Service Processor error log. See the System Information Menu and select **"Read Service Processor Error Logs"**.

### A60 Controller Service Processor Checkpoints

Service Processor checkpoints are in the range E010 to E0FF. The message **OK** indicates successful service processor testing and initialization. Firmware checkpoints are listed in "Firmware Checkpoints" on page 57.

**Note:** Go to "MAP 1540: Minimum Configuration" on page 105 for any of the following conditions:

- A four-digit code in the range of E001 through EFFF displays on the operator panel but is not listed in the checkpoint table.
- A four-digit code displays in the checkpoint table, but does not contain a repair action or FRU listing.
- All of the FRUs listed in the repair action have been replaced and the problem has not been corrected.

If you replace FRUs and the problem is corrected, go to Map 410 Repair Checkout in the Diagnostic Information for Multiple Bus Systems.



Table 6. A60 Controller Service Processor Checkpoints

Checkpoint	Description	Action/ Possible Failing FRU
E000	System Support Controller begins operation. This is an informational checkpoint.	<p><b>Note:</b> Go to “MAP 1540: Minimum Configuration” on page 105 for any of the following conditions:</p> <ul style="list-style-type: none"> <li>• a four-digit code in the range of E001 through EFFF display on the operator panel but is not listed in the checkpoint table.</li> <li>• a four-digit code displays in the checkpoint table, but does not contain a repair action or FRU listing.</li> <li>• All of the FRUs listed in the repair action have been replaced and the problem has not been corrected.</li> </ul>
E010	Starting service processor self-tests	I/O board. (See notes on 21.)
E011	service processor self-tests completed successfully	NA
E012	Begin to set up Service Processor helps	I/O board. (See notes on 21.)
E020	Configuring CMOS	I/O board. (See notes on 21.)
E021	Configuring NVRAM	I/O board. (See notes on 21.)
E030	Beginning to build I <sup>2</sup> C resources.	<ol style="list-style-type: none"> <li>1. CPU Card.</li> <li>2. I/O board. (See notes on 21.)</li> </ol>
E031	Finished building I <sup>2</sup> C resources.	<ol style="list-style-type: none"> <li>1. CPU Card.</li> <li>2. I/O board. (See notes on 21.)</li> </ol>
E040	Starting serial port tests	<ol style="list-style-type: none"> <li>1. I/O board. (See notes on 21.)</li> <li>2. CPU Card.</li> </ol>
E042	Configuring serial port 1	<ol style="list-style-type: none"> <li>1. I/O board. (See notes on 21.)</li> <li>2. CPU Card.</li> </ol>
E043	Configuring serial port 2	<ol style="list-style-type: none"> <li>1. I/O board. (See notes on 21.)</li> <li>2. CPU Card.</li> </ol>
E044	Preparing to set serial port line speed	<ol style="list-style-type: none"> <li>1. I/O board. (See notes on 21.)</li> <li>2. CPU Card.</li> </ol>
E045	Preparing to initialize serial port	<ol style="list-style-type: none"> <li>1. I/O board. (See notes on 21.)</li> <li>2. CPU Card.</li> </ol>
E060	Preparing to auto power-on (AC restored)	<ol style="list-style-type: none"> <li>1. I/O board. (See notes on 21.)</li> <li>2. CPU Card.</li> </ol>
E061	Preparing to auto power-on (Timer)	<ol style="list-style-type: none"> <li>1. I/O board. (See notes on 21.)</li> <li>2. CPU Card.</li> </ol>
E070	Configuring modem	<ol style="list-style-type: none"> <li>1. Modem.</li> <li>2. I/O board. (See notes on 21.)</li> <li>3. CPU Card.</li> </ol>
E072	Preparing to call home	<ol style="list-style-type: none"> <li>1. Modem.</li> <li>2. I/O board. (See notes on 21.)</li> <li>3. CPU Card.</li> </ol>

Table 6. A60 Controller Service Processor Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E075	Entering Service Processor menus	1. I/O board. (See notes on 21.) 2. CPU Card.
E076	Leaving Service Processor menus; attempting to disconnect modems	1. I/O board. (See notes on 21.) 2. CPU Card.
E0A0	Beginning Bring-Up Phase	1. I/O board. (See notes on 21.) 2. CPU Card.
E0B0	Starting CPU BIST	1. CPU Card. 2. I/O board. (See notes on 21.)
E0C0	Starting X5 BIST	1. CPU Card. 2. I/O board. (See notes on 21.)
E0E0	Pulling CPU out of reset	1. CPU Card. 2. I/O board. (See notes on 21.)
E0E1	Pull CPU out of reset: okay	1. Remove processor card in slot 2 (if installed) and see if the problem is resolved. If problem is resolved replace processor card. If not continue. 2. Exchange processor card in slot 1 with the processor card removed in step 1 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not continue. 3. System board. 4. I/O board. (See notes on 21.)
E0E2	Check point for hot-swap fans and power supply.	Power supply hot-swap is in progress. Fans and power supply must be replaced within 5 minutes. After 5 minutes the service processor initiates a fast shutdown of the system.
OK	Service Processor Ready Waiting for Power-On	None. Normal operation.
STBY	Service Processor Ready; System was shutdown by the operating system and is still powered on.	This condition can be requested by a privileged system user with no faults. See service processor error log for possible operating system fault indications.

## Firmware Checkpoints

Firmware uses progress codes (checkpoints) in the range of E1xx to EFFF. These checkpoints occur during system startup and maybe be useful in diagnosing certain problems. Service Processor checkpoints are listed in “Checkpoints” on page 54.

If you replace FRUs and the problem is still not corrected, go to “MAP 1540: Minimum Configuration” on page 105 unless otherwise indicated in the tables.

*Table 7. Firmware Checkpoints.*

Checkpoint	Description	Action/ Possible Failing FRU
E100	Reserved	See the note on 54.
E101	Video enabled, extended memory test	See the note on 54.
E102	Firmware restart	See the note on 54.
E103	Set memory refresh (composite img)	See the note on 54.
E104	Set memory refresh (recovery block)	See the note on 54.
E105	Transfer control to Operating System (normal boot).	See “Boot Problems and Concerns” on page 69.
E108	Run recovery block base memory (test 2K), set stack	See the note on 54.
E109	Copy CRC verification code to RAM	See the note on 54.
E10A	Turn on cache	See the note on 54.
E10B	Flush cache	See the note on 54.
E10C	Jump to CRC verification code in RAM	See the note on 54.
E10D	Compute composite image CRC	See the note on 54.
E10E	Jump back to ROM	See the note on 54.
E10F	Transfer control to Open Firmware	See the note on 54.
E110	Turn off cache, Check if composite image CRC is valid	See the note on 54.
E111	GOOD CRC - jump to composite image	See the note on 54.
E112	BAD CRC - initialize base memory, stack	See the note on 54.
E113	BAD CRC - copy uncompressed recovery block code to RAM	See the note on 54.
E114	BAD CRC - jump to code in RAM	See the note on 54.
E115	BAD CRC - turn on cache	See the note on 54.
E116	BAD CRC - copy recovery block data section to RAM	See the note on 54.
E117	BAD CRC - Invalidate and flush cache, set TOC	See the note on 54.
E118	BAD CRC - branch to high level recovery control routine.	See the note on 54.

Table 7. Firmware Checkpoints. (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E119	Initialize base memory, stack	See the note on 54.
E11A	Copy uncompressed recovery block code to RAM	See the note on 54.
E11B	Jump to code in RAM	See the note on 54.
E11C	Turn on cache	See the note on 54.
E11D	Copy recovery block data section to RAM	See the note on 54.
E11E	Invalidate and flush cache, set TOC	See the note on 54.
E11F	Branch to high level control routine.	See the note on 54.
E120	Initialize I/O and early memory block	See the note on 54.
E121	Initialize service processor	See the note on 54.
E122	No memory detected (system lockup) Note: Disk drive light is on continuously.	Go to "MAP 1240: Memory Problem Resolution" on page 79.
E123	No memory module found in socket.	See the note on 54.
E124	Disable defective memory bank	See the note on 54.
E125	Clear PCI devices command reg, go forth	See the note on 54.
E126	Check valid image - start	See the note on 54.
E127	Check valid image - successful	See the note on 54.
E128	Disable interrupts, set interrupt vectors for Open Firmware.	See the note on 54.
E129	Validate target RAM address	See the note on 54.
E12A	Copy ROM to RAM, flush cache	See the note on 54.
E12B	Set MP operational parameters	See the note on 54.
E12C	Set MP CPU node characteristics	See the note on 54.
E12D	Park secondary processors in parking lot	See the note on 54.
E12E	Primary processor sync	See the note on 54.
E12F	Unexpected return from Open Firmware (system lockup)	See the note on 54.
E130	Build device tree	See the note on 54.
E131	Create ROOT node	See the note on 54.
E132	Create cpus node	See the note on 54.
E133	Create L2 Cache node	See the note on 54.
E134	Create memory node	See the note on 54.
E135	Create memory module node	See the note on 54.
E136	Test memory	See the note on 54.
E137	Create openprom node	See the note on 54.

Table 7. Firmware Checkpoints. (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E138	Create options node	See the note on 54.
E139	Create aliases node and system aliases	See the note on 54.
E13A	Create packages node	See the note on 54.
E140	PreP style load	See the note on 54.
E149	Create boot mgr node	See the note on 54.
E14C	Create terminal-emulator node	See the note on 54.
E14D	Load boot image	See "Boot Problems and Concerns" on page 69.
E14E	Create client interface node/directory	See the note on 54.
E14F	NVRAM validation, config variable token generation	See the note on 54.
E150	Create host (primary) PCI controller node	See the note on 54.
E151	Probing primary PCI bus	Go to "Step 1540-25" on page 129. If a network adapter or I/O board is replaced, see 21.
E152	Probe for adapter FCODE, evaluate if present	Go to "Step 1540-25" on page 129. If a network adapter or I/O board is replaced, see 21.
E153	End adapter FCODE, probe/evaluation	Go to "Step 1540-25" on page 129. If a network adapter or I/O board is replaced, see 21.
E154	Create PCI bridge node	Go to "Step 1540-25" on page 129. If a network adapter or I/O board is replaced, see 21.
E155	Probe PCI bridge secondary bus	Go to "Step 1540-25" on page 129. If a network adapter or I/O board is replaced, see 21.
E156	Create PCI Ethernet node	See the note on 54.
E15A	Create 64 bit host (primary) PCI controller node	See the note on 54.
E15B	Transferring control to Operating System (service mode boot)	See "Boot Problems and Concerns" on page 69.
E15C	Probe primary 64 bit PCI bus	See the note on 54.
E15D	Create host PCI controller node	See the note on 54.
E15E	Create MPIC node	See the note on 54.
E15F	Adapter VPD probe	See the note on 54.
E160	CPU node VPD creation	See the note on 54.
E161	Root node VPD creation	See the note on 54.
E162	service processor node VPD creation	See the note on 54.

Table 7. Firmware Checkpoints. (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E164	Create PCI graphics node (P9)	See the note on 54.
E168	Create PCI graphics node (S3)	See the note on 54.
E16C	GTX100P Subsystem Open request.	See the note on 54.
E16D	GTX100P Planar not detected or failed diagnostics.	See the note on 54.
E16E	GTX100P Subsystem Open successful.	See the note on 54.
E16F	GTX100P Close Subsystem.	See the note on 54.
E170	Start of PCI Bus Probe	See the note on 54.
E171	Executing PCI-Delay function	See the note on 54.
E174	Establish host connection	See "Boot Problems and Concerns" on page 69.
E175	BootP request	See "Boot Problems and Concerns" on page 69. 1. Turn off then on, and retry the boot operation. 2. Verify the network connection (network could be down). 3. Have network administrator verify the server configuration for this client.
E176	TFTP file transfer	See the note on 54.
E177	Transfer failure due to TFTP error condition	See the note on 54.
E178	Create PCI token ring node	See the note on 54.
E180	Service Processor Command setup	See the note on 54.
E183	Service Processor Post	See the note on 54.
E190	Create ISA node	See the note on 54.
E193	Initialize Super I/O	See the note on 54.
E196	Probe ISA bus	See the note on 54.
E19B	Create Service Processor node	See the note on 54.
E19C	Create tablet node	See the note on 54.
E19D	Create NVRAM node	See the note on 54.
E19E	Real time clock (RTC) creation and initialization	Refer to error code 28030xxx in "Firmware/POST Error Codes" on page 22.
E19F	Create EEPROM node	See the note on 54.
E1AD	See description of checkpoint E1DE	See the note on 54.
E1B0	Create lpt node	I/O board (See notes on 21). See the note on 54.
E1B1	Create serial node	See the note on 54.

Table 7. Firmware Checkpoints. (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E1B2	Create audio node	I/O board (See notes on 21). See the note on 54.
E1B3	Create 8042 node	I/O board (See notes on 21). See the note on 54.
E1B6	Probe for (ISA) keyboard	I/O board (See notes on 21). See the note on 54.
E1BA	Enable L2 cache	See the note on 54.
E1BB	Set cache parms for burst	See the note on 54.
E1BC	Set cache parms for 512KB	See the note on 54.
E1BD	Probe for (ISA) mouse	I/O board (See notes on 21). See the note on 54.
E1BE	Create op-panel node	See the note on 54.
E1BF	Create pwr-mgmt node	See the note on 54.
E1C0	Create ISA Ethernet node	See the note on 54.
E1C5	Create ISA interrupt controller (pic) node	I/O board (See notes on 21). See the note on 54.
E1C6	Create dma node	See the note on 54.
E1D0	Create PCI SCSI node	See the note on 54.
E1D3	Create (* wildcard *) SCSI block device node (SD)	See the note on 54.
E1D4	Create (* wildcard *) SCSI byte device node (ST)	See the note on 54.
E1DB	Create floppy controller (FDC) node	I/O board (See notes on 21). See the note on 54.

Table 7. Firmware Checkpoints. (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E1DC	Dynamic console selection	<p>If a console is attached but nothing is displayed on it, follow the steps associated with "All display problems" in the Entry MAP tables.</p> <p>If selection screen(s) can be seen on the terminals and the appropriate key on the input device associated with the desired display or terminal is pressed, within 60 seconds, but there is no response to the keystroke:</p> <ol style="list-style-type: none"> <li>1. If selecting the console with a keyboard attached to the system, replace the keyboard. If replacing the keyboard does not fix the problem, replace the I/O board. (See notes on 21.)</li> <li>2. If selecting the console with an ASCII terminal, suspect the ASCII terminal. Use the Problem Determination Procedures for the terminal. Replace the I/O board if these procedures do not reveal a problem. <b>Note:</b> Terminal settings should be set to: <ul style="list-style-type: none"> <li>• 9600 Baud</li> <li>• No Parity</li> <li>• 8 Data bits</li> <li>• 1 Stop bit</li> </ul> </li> </ol>
E1DD	Early processor exception	<p>I/O board (See notes on 21.)</p> <p>See the note on 54.</p>
E1DE	Alternating pattern of E1DE and E1AD is used to indicate a Default Catch condition before the firmware "checkpoint" word is available.	<ol style="list-style-type: none"> <li>1. I/O board (See notes on 21.)</li> </ol> <p>See the note on 54.</p>
E1DF	Create diskette drive (disk) node	See the note on 54.
E1E0	Program flash	See the note on 54.
E1E1	Flash update complete	See the note on 54.
E1E2	Initialize System I/O	See the note on 54.
E1E3	PReP boot image initialization	See the note on 54.
E1E4	Initialize Super I/O with default values	See the note on 54.
E1E5	XCOFF boot image initialization	See the note on 54.



Table 7. Firmware Checkpoints. (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E1E6	Set up early memory allocation heap	See the note on 54.
E1E7	PE boot image initialization	See the note on 54.
E1E8	Initialize primary diskette drive (polled mode)	See the note on 54.
E1E9	ELF boot image initialization	See the note on 54.
E1EA	Firmware flash corrupted, load from diskette	<p>Ensure that the diskette installed contains recovery image appropriate for this system unit.</p> <p>The System Management Services recovery procedure for the flash EEPROM should be executed..</p> <p>If the diskette is installed with the correct recovery image, then suspect:</p> <ol style="list-style-type: none"> <li>1. Diskette</li> <li>2. Diskette drive</li> <li>3. Diskette cable</li> <li>4. I/O board (See notes on 21.)</li> </ol> <p>See the note on 54.</p>
E1EB	Verify flash EPROM recovery image	<p>Ensure that the diskette installed contains recovery image appropriate for this system unit.</p> <p>The System Management Services recovery procedure for the flash EEPROM should be executed. See your next level of support</p> <p>If the diskette is installed with the correct recovery image, then suspect:</p> <ol style="list-style-type: none"> <li>1. Diskette</li> <li>2. Diskette drive</li> <li>3. Diskette cable</li> <li>4. I/O board (See notes on 21.)</li> </ol> <p>See the note on 54.</p>
E1EC	Get recovery image entry point	See the note on 54.
E1ED	Invalidate instruction cache	See the note on 54.
E1EE	Jump to composite image	See the note on 54.
E1EF	Erase flash	See the note on 54.
E1F0	Start O.B.E.	See the note on 54.
E1F1	Begin self-test sequence on boot device(s)	See the note on 54.

Table 7. Firmware Checkpoints. (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E1F2	Power-On Password prompt	Prompt should be visible on the system console.  If a console is attached but nothing is displayed on it, go to the "Entry MAP" on page 70 with the symptom "All display problems."
E1F3	Privileged-Access Password prompt	Prompt should be visible on the system console.  If a console is attached but nothing is displayed on it, go to the "Entry MAP" on page 70 with the symptom "All display problems."
E1F5	Build boot device list	See the note on 54.
E1F6	Determine boot device sequence	See the note on 54.
E1F7	No boot image located	See the note on 54.
E1FB	Scan SCSI bus for attached devices.	See the note on 54.
E1FD	Default Catch	The operator panel alternates between the code E1FD and another Exxx code, where Exxx is the point at which the error occurred. If the Exxx is not listed in this table, go to "MAP 1540: Minimum Configuration" on page 105.
E201	Setup PHB BARC addresses	Replace the I/O board (See notes on 21.) See the note on 54.
E202	Initialize PHB registers and PHB's PCI configuration registers.	Replace the I/O board (See notes on 21.) See the note on 54.
E203	Look for PCI to ISA bridge	Replace the I/O board (See notes on 21.) See the note on 54.
E204	Setup ISA bridge PCI config. registers and initialize	Replace the I/O board (See notes on 21.) See the note on 54.
E206	Look for PRISM on PCG and switch to 50MHz	Replace the I/O board (See notes on 21.) See the note on 54.
E207	Setup Data gather mode and 64/32-bit mode on PCG	Replace the I/O board (See notes on 21.) See the note on 54.
E208	Assign bus number on PCG	Replace the I/O board (See notes on 21.) See the note on 54.
E209	Assign PCI I/O addresses on PCI	Replace the I/O board (See notes on 21.) See the note on 54.
E20?	Assign PCI I/O addresses on PCG	Replace the I/O board. (See notes on 21.) See the note on 54.
E20A	Check MCERs stuck at fault	1. Replace the system board. 2. If the problem persists, go to "MAP 1240: Memory Problem Resolution" on page 79.

Table 7. Firmware Checkpoints. (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E20B	Send memory initialize command, wait for completion.	1. Replace the system board. 2. If the problem persists, go to "MAP 1240: Memory Problem Resolution" on page 79.
E20C	Testing L2 cache	Replace the CPU card (See notes on 21.) See the note on 54.
E211	IPL ROS CRC checking	Replace the I/O board (See notes on 21.) See the note on 54.
E212	Processor POST	Replace the CPU card (See notes on 21.) See the note on 54.
E213	Initial memory configuration	Go to "MAP 1240: Memory Problem Resolution" on page 79.
E214, E218	Memory test	Go to "MAP 1240: Memory Problem Resolution" on page 79.
E216	Copy ROS into RAM. Setup Translation and C environment	Replace the memory card (See notes on 21.) See the note on 54.
E220	Final memory configuration	Go to "MAP 1240: Memory Problem Resolution" on page 79.
E297	Start firmware softload path execution.	See the note on 54.
E298	Start firmware recovery path execution.	See the note on 54.
E299	Start C code execution	See the note on 54.
E3xx	Memory test	Go to "MAP 1240: Memory Problem Resolution" on page 79.
E440	Validate NVRAM, initialize partitions as needed	1. Verify that the system and service processor firmware levels are at the current release levels, update as necessary. 2. Replace the memory card (See notes on 21.) See the note on 54.
E441	Generate /options node NVRAM configuration variable properties	1. Verify that the system and service processor firmware levels are at the current release levels, update as necessary. 2. Replace the memory card (See notes on 21.) See the note on 54.
E442	Validate NVRAM partitions	1. Verify that the system and service processor firmware levels are at the current release levels, update as necessary. 2. Replace the memory card (See notes on 21.) See the note on 54.

Table 7. Firmware Checkpoints. (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E443	Generate NVRAM configuration variable dictionary words	Suspect a system firmware problem if this problem persists. Verify that the system firmware is at the current release level, update as necessary. See the note on 54.

## General Memory Information

Memory cards can be installed in either slot (or both) on the system board, there is no requirement that one be installed before the other.

It is perfectly acceptable for there to be two partially populated memory cards, the first one does not have to be fully populated before memory on the second memory card is usable.

Memory card Memory modules, on the other hand, must be installed in matched (size and speed) pairs. Refer to "Remove and Replace of the Memory modules" on page 350 for removal and replace of the Memory modules. A single Memory module pair may be installed in module slots 1 and 2 (not slots 1 and 3). A second Memory module pair could be installed in module slots 5 and 6 (slots 3 and 4 do not have to be populated first). Along these same lines, there is no requirement that Memory module slots 1 and 2 be populated before another slot pair.

### Problem resolution steps

This section attempts to trouble shoot a problem during the memory testing where the system hangs before an error code can be displayed on the operator panel.

1. Power down the system.
2. Remove and re-install any installed memory cards, power the system up. If the system no longer stops at an E3xx code, re-seating the memory card(s) has corrected the problem.
3. Attempt to isolate the problem to a specific memory card.
  - a. If there is only one memory card installed, tag the card as suspect bad and skip to step 4.
  - b. Remove one of the two memory cards, tag the card as suspect bad and Power the system up. If the system no longer stops at an E3xx code, skip to step 3d.
  - c. Power down the system, remove the installed memory card and install the memory card removed in step 3b. Move the suspect bad tag from the installed memory card to the one just removed, and power the system up. If the system stops at an E3xx code, remove the suspect bad tag and skip to step 7 on page 68, if the system does not stop at an E3xx code, skip to step 4.
  - d. Power down the system, remove the installed memory card and install the memory card removed in step 3b (tagged as suspect bad). Power the system up. If the system stops at an E3xx code again, skip to step 4.
  - e. Remove the suspect bad tag, re-install the second memory card and power the system up. If the system no longer stops at an E3xx code, re-seating the memory cards (again) has corrected the problem. If the system stops at an E3xx code again, skip to step 7 on page 68.
4. Attempt to isolate the problem to a specific Memory module pair on the memory card tagged as suspect bad:
  - a. Power the system down.
  - b. Remove all installed Memory modules from the suspect bad memory card except one pair. Record the original positions of any Memory modules removed so that when instructed to re-install them they can be installed in their original position.
  - c. Power the system up.
  - d. If the system no longer stops at an E3xx code, skip to step 4g on page 68.

- e. Exchange the Memory module pair left installed in step 4b on page 67 with another pair of Memory modules and tag the removed Memory module pair as suspect bad.
  - f. Power the system up. If the system stops at an E3xx code, skip to step 6.
  - g. Power down the system.
  - h. If there are more Memory module pairs to be re-installed on the suspect bad memory card, install another Memory module pair in their original positions on the memory card, and continue with step 4i.  
If there are no more Memory module pairs to be re-installed, you either have a suspect bad Memory module pair or simply reseating the Memory modules on the memory card has corrected the problem. If you have a suspect bad Memory module pair, continue with step 5.
  - i. Power the system up.
  - j. If the system does not stop at an E3xx code, continue at step 4g.
  - k. If the system has stopped at an E3xx code again, replace the Memory module pair that was just re-installed and tag the removed Memory module pair as suspect bad.
  - l. Power the system up. If the system again stops at an E3xx code, continue with step 6. If the system does not stop at an E3xx code, continue with step 4g.
5. Determine which of the suspect bad Memory modules is defective (may be both).
- For each of the two Memory modules tagged as suspect bad:
- a. Power the system down. Removing the currently installed Memory module first, re-install one of the two suspect bad Memory modules in its original position.
  - b. Power the system up. If the system again stops at an E3xx code, the Memory module tagged suspect bad just installed is defective, replace it with the Memory module removed in step 5a. If the system did not stop at an E3xx code, remove the suspect bad tag from the Memory module just installed - it is not defective.
- 6. Replace the memory card
  - 7. Replace the system board.
  - 8. Replace the CPU card(s).

## Boot Problems and Concerns

Depending on the boot device, a checkpoint may be display on the operator panel for an extended period of time while the boot image is retrieved from the device. This is particularly true for Tape and Network boot attempts. If booting from CD-ROM or tape, watch for activity on the drives LED indicator. A linking Led means that the loading of either the boot image or additional information required by the operating system being booted is still in progress. If the check point is displayed for an extended period of time and the drive LED is not indicating any activity there may be a problem loading the boot image from the device.

### Note:

For network boot attempts, if the system is not connected to an active network or if the target server is inaccessible (this can also result from incorrect IP parameters being supplied), the system still attempts to boot and because time-out durations are necessarily long to accommodate retries, the system may appear to be hung.

This procedure assumes that a CD-ROM drive is installed and connected to the integrated SCSI port 1 connector (J12), and a diagnostics CD-ROM is available.

### Notes:

1. Restart the system and get to the Firmware SMS main Menu. Select "Multiboot"
  - a. Check if the intended boot device is correctly specified in the boot sequence
    - If the intended boot device is not correctly identified in the boot sequence, add it to the boot sequence using the SMS menus.
    - If attempting to boot from network go to 1b.
    - If attempting to boot from a disk drive or CD-ROM go to .
  - b. If attempting to boot from the network:
    - Verify that IP parameters are correct.
    - Attempt to "Ping" the target server using the SMS "Ping" utility. If the ping is successful, have network administrator verify the server configuration for this client.
    - Check with network administrator to ensure that the network us up (network could be down).
    - Power Off then On and retry the boot operation.
    - Check Network cabling to adapter.
  - c. Try to boot and run stand-alone diagnostics against the system, particularly again the intended boot device.
    - Turn the power on.
    - Insert the diagnostic CD-ROM into the CD-ROM drive, if you cannot insert the diagnostic CD-ROM:
      - Replace CD-ROM drive
      - Replace power distribution board.
      - Replace I/O board.
    - If the intended boot device is not listed in the "NEW RESOURCE" list go to "MAP 0290: Missing Resource Problem Resolution" in the *Diagnostic Information for Multiple Bus System* manual.
    - If a SRN, not an 8-digit error code, is reported, to the *Diagnostic Information for Multiple Bus System* manual.

- If the diagnostics are successful, it may be necessary to perform an operating system specific recovery process, or reinstall the operation system.
- If unable to load stand-alone diagnostics:
  - 1) Verify proper SCSI bus termination.
  - 2) Check SCSI cabling (signal and power cables).
  - 3) It is possible that another attached SCSI device is causing the problem
    - Disconnect the signal and power cables from any other SCSI devices attached to the SCSI adapter that the CD-ROM drive is attached to.
    - Try to boot the stand-alone diagnostics again.
    - If unable to load stand-alone diagnostics, go to 2.
    - If stand-alone diagnostics load, one of the disconnected devices id causing the problem, reconnect the devices one at a time and return the boot operation until the problem recurs and replace the device that caused the problem. Go to "MAP 0410: Repair Checkout" in the *Diagnostic Information for Multiple Bus System* manual.
- 2. It is possible that another installed adapter is causing the problem.
  - Remove all installed adapters except the one the CD-ROM drive is attached to and the one used for the Service Terminal.
  - Try to boot the stand-alone diagnostics, go to 3
  - If the stand-alone diagnostics load, re-install adapter (and attached devices as applicable) one at a time and return the boot operation until the problem recurs. Then replace the adapter or device that caused the problem (I/O board can also cause the device or adapter to fail). Go to "MAP 0410: Repair Checkout" in the *Diagnostic Information for Multiple Bus System* manual.
- 3. Either the CD-ROM drive, SCSI adapter, or the I/O board is most likely defective.
  - Replace CD-ROM drive.
  - If the CD-ROM drive is attached to a SCSI adapter card rather than the integrated SCSI adapter on the I/O board, replace SCSI adapter.
  - Replace I/O Board.
  - If you replaced the indicated FRUs and the problem is still not corrected, or the above descriptions did not address your particular situation, go to "MAP 1540: Minimum Configuration" on page 105.
  - Go to "MAP 0410: Repair Checkout" in the *Diagnostic Information for Multiple Bus System* manual.

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## Maintenance Analysis Procedures (MAPs)

### Entry MAP

Use the following table to determine your starting point.

**Note:** When possible, run Online Diagnostics in Service Mode. Online Diagnostics perform additional functions, compared to Standalone Diagnostics. This ensures that the error state of the system is captured in NVRAM for your use in fixing the problem. The AIX error log and SMIT are only available when diagnostics are run from the hard drive.



**Notes:**

1. Licensed programs frequently rely on network configuration, and system information stored on the VPD on the operator panel control assembly (connector U2). If the MAPs indicate that the Operator Panel Control Assembly should be replaced, swap the VPD from the old operator panel to the new one. If the old VPD module has to be replaced call technical support for recovery instructions. If recovery is not possible, notify the system owner that new keys for licensed programs may be required.
2. If a network adapter or the I/O board is replaced, the network administrator must be notified so that the client IP addresses used by the server can be changed. In addition, the operating system configuration of the network controller may need to be changed in order to enable system startup. Ensure that all clients or servers that address this system are updated.

*Table 8. Service Actions*

You have parts to exchange or a corrective action to perform.	<ol style="list-style-type: none"> <li>1. Go to the <i>Removal and Replacement Procedures</i>.</li> <li>2. Go to Map 410 Repair Checkout in the Diagnostic Information for Multiple Bus Systems.</li> </ol>
You need to verify that a part exchange or corrective action corrected the problem.	Go to Map 410 Repair Checkout in the Diagnostic Information for Multiple Bus Systems.
You need to verify correct system operation.	Go to Map 420 System Checkout in the Diagnostic Information for Multiple Bus Systems.

*Table 8. Service Actions*

Symptom Analysis
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*Table 8. Service Actions*

You have OK displayed	The Service Processor (SP) is ready. The system is waiting for power on.
You have STBY displayed	The Service Processor (SP) is ready. The system was shutdown by the operating system and is still powered on. This condition can be requested by a privileged system user with no faults. See SP error log for possible operating system fault indications.
You do not have a determined symptom.	Go to "MAP 1020: Problem Determination" on page 75.
You have an 8-digit error code displayed.	Record the error code. Go to "Error Code to FRU Index" on page 21.
You have an SRN.	Go to the Fast Path MAP in the Diagnostic Information for Multiple Bus Systems.
The system POST indicators are displayed on the system console, the system pauses and then restarts. The term "POST indicators" refer to the icons (graphic display) or device mnemonics (ASCII terminal) that appear during the power-on self-test (POST).	Go to "Boot Problems and Concerns" on page 69.

Table 8. Service Actions (continued)

<p>The system stops and POST indicators are displayed on the system console. The term "POST indicators" refer to the icons (graphic display) or device mnemonics (ASCII terminal) that appear during the power-on self-test (POST).</p>	<p>1. Use MAP 1540 to isolate the problem.</p>
<p>The system stops and the message "STARTING SOFTWARE PLEASE WAIT..." is displayed on ASCII terminal, the boot indicator is displayed on a graphics terminal.</p>	<p>Go to "Checkpoints" on page 54.</p>
<p>The system does not respond to the password being entered or the system login prompt is displayed when booting in service mode.</p>	<p>Verify that the password is being entered from the ASCII terminal or keyboard defined as the system console. If so, then the keyboard or its controller may be faulty.</p> <ol style="list-style-type: none"> <li>1. If entering the password from the keyboard which is attached to the system, replace the keyboard. If replacing the keyboard does not fix the problem, replace the I/O board. (See notes on 70.)</li> <li>2. If entering the password from a keyboard which is attached to a ASCII terminal, suspect the ASCII terminal. Use the Problem Determination Procedures for the terminal. Replace the I/O board if these procedures do not reveal a problem.</li> </ol>
<p>The power light on the operator panel does not start flashing within 30 seconds of A/C power application, or the power light on the operator panel is flashing but the operator panel is blank.</p>	<p>Go to "MAP 1520: Power" on page 87.</p>
<p>The power light does not come on, or stay on.</p>	<p>Go to "MAP 1520: Power" on page 87.</p>
<p>The power light on the operator panel is on, but nothing is displayed on the system console, and the operator panel is blank.</p>	<ol style="list-style-type: none"> <li>1. If using a graphic display, go to the <i>Problem Determination Procedures</i> for the display.</li> <li>2. If you do not find a problem then replace the display adapter.</li> <li>3. Go to "MAP 1540: Minimum Configuration" on page 105.</li> </ol>

Table 8. Service Actions (continued)

<p>All display problems.</p>	<ol style="list-style-type: none"> <li>1. If using a graphics display, go to the <i>Problem Determination Procedures</i> for the display.</li> <li>2. If you do not find a problem then replace the display adapter.</li> <li>3. If the problem is with the ASCII terminal:             <ol style="list-style-type: none"> <li>a. Make sure that the ASCII terminal is connected to S1.</li> <li>b. If problems persist, go to the <i>Problem Determination Procedures</i> for the terminal.</li> </ol> </li> <li>4. If you do not find a problem then suspect the I/O board. Go to "MAP 1540: Minimum Configuration" on page 105.</li> </ol>
<p>888 is displayed in the control panel followed by additional error codes.</p>	<p>Go to the Fast Path MAP in the Diagnostic Information for Multiple Bus Systems.</p>
<p>The system stops and a 4-digit number is displayed in the operator panel display.</p>	<p>If the number displayed begins with the character "E0xx" then go to "A60 Controller Service Processor Checkpoints" on page 54. If "E1xx-EFFF" is displayed, then go to "Firmware Checkpoints" on page 57.</p> <p>For all other numbers record SRN 101-xxx, where xxx is the last three digits of the four-digit number displayed in the operator panel, then go to the Fast Path MAP in the Diagnostic Information for Multiple Bus Systems.</p> <p><b>Note:</b> If the operator panel displays 2 sets of numbers, use the bottom set of numbers as the error code.</p>
<p>No codes are displayed on the operator panel within a few seconds of turning on the system. The operator panel is blank before the system is powered on (operator panel should display OK).</p>	<p>Reseat the operator panel cable.</p> <p>If problem not resolved, replace in order:</p> <ol style="list-style-type: none"> <li>1. Operator Panel Control Assembly. Remove the VPD module from the old Operator Panel Control Assembly (connector U2) and place in the new one.</li> <li>2. I/O board (See notes on 70.)</li> </ol>

Table 8. Service Actions (continued)

<p>The SMS configuration list or Boot sequence selection menu shows more SCSI devices attached to a controller/adaptor than are actually attached.</p>	<p>A device may be set to use the same SCSI bus ID as the control adapter. Note the ID being used by the controller/adaptor (this can be checked and/or changed via an SMS utility), and verify that no device attached to the controller is set to use that ID.</p> <p>If settings do not appear to be in conflict:</p> <ol style="list-style-type: none"> <li>1. Replace the SCSI cable.</li> <li>2. Replace the device.</li> <li>3. Replace the SCSI adapter (or I/O board if connected to one of the two integrated SCSI controllers on the I/O board). (See notes on 70 if the I/O board is replaced.)</li> </ol> <p><b>Note:</b> In a "Twin-tailed" configuration where there is more than one initiator device (normally another system) attached to the SCSI bus, it may be necessary to change the ID of the SCSI controller or adapter with the System Management Services.</p>
<p>You cannot load diagnostics.</p>	<p>Go to "MAP 1020: Problem Determination" on page 75.</p>
<p>You have a problem that does not prevent the system from booting.</p>	<p>Go to the Fast Path MAP in the Diagnostic Information for Multiple Bus Systems.</p>
<p>You suspect a cable problem.</p>	<p>See the RS/6000 Adapters, Devices, and Cable Information for Multiple Bus Systems.</p>

Table 8. Service Actions

<p>You Cannot Find the Symptom in this Table</p>
--

Table 8. Service Actions

<p>All other problems.</p>	<p>Go to "MAP 1020: Problem Determination" on page 75.</p>
----------------------------	--

## MAP 1020: Problem Determination

### Purpose of This MAP

Use this MAP to get an error code if you were not provided one by the customer or you are unable to load diagnostics. If you are able to load the diagnostics, go to MAP 0020 in the Diagnostic Information for Multiple Bus Systems.

The Service Processor may have recorded one or more symptoms in its error log. It is a good idea to examine that error log before proceeding (see Service Processor System Information Menu).

The Service Processor may have been set by the user to monitor server operations and to attempt recoveries. You may wish to disable these actions while you diagnose and service the system. If you disable them, you should make notes of their current settings for restoration before you leave. Following are the settings of your interest.

Surveillance	From the Service Processor Setup Menu, go to the Surveillance Setup Menu and disable surveillance.
Unattended Start	From the Service Processor System Power Control Menu, disable unattended start mode.
Reboot Policy	From the System Power Control Menu, go to the Reboot/Restart Policy Setup Menu and set: 1. Number of reboot attempts to 0 (zero) 2. Use OS-Defined restart policy to <b>No</b> 3. Enable supplemental restart policy to <b>No</b> .
Call Out	From the Call-In/Call-Out Setup Menu, go to the Serial Port Selection Menu and disable call-out on both serial ports.

Be prepared to record code numbers and use those numbers in the course of analyzing a problem. Go to "Step 1020-1". \_\_\_\_\_

### Step 1020-1

The following steps analyze a failure to load the diagnostic programs.

**Note:** You are asked questions regarding the operator panel display. You are also asked to perform certain actions based on displayed POST indicators. Please be observant of these conditions.

1. Insert the diagnostic CD-ROM into the CD-ROM drive.
2. Turn the power off.
3. Turn the power on.
4. When the keyboard indicator is displayed (the word **keyboard** on an ASCII terminal or the keyboard icon on a graphical display), press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal.
5. Enter any requested passwords.
6. Wait until the diagnostics are loaded or the system appears to stop.
7. Find your symptom in the following table; then follow the instructions given in the Action column.

Symptom	Action
The diskette LED is blinking rapidly, or EIEA or EIEB is displayed on the operator panel.	The flash EPROM data is corrupted. Call your next level or support.
The system stops with a prompt to enter a password.	Enter the password. You are not allowed to continue until a correct password has been entered. When you have entered a valid password go to the beginning of this table and wait for one of the other conditions to occur.
The diagnostic operating instructions are displayed.	Go to MAP 0020 in the Diagnostic Information for Multiple Bus Systems.
The system login prompt is displayed.	You may not have pressed the correct key or you may not have pressed the key soon enough when you were to indicate a Service Mode IPL of the diagnostic programs. If this was the case start over at the beginning of this Step. <b>Note:</b> Perform the systems shutdown procedure before turning off the system.  If you are sure you pressed the correct key in a timely manner, go to "Step 1020-2" on page 77.
The system does not respond when the password is entered.	Go to "Step 1020-2" on page 77.
The system stopped and a POST indicator is displayed on the system console and an eight-digit error code is not displayed.	If the POST indicator represents: <ul style="list-style-type: none"> <li>• memory, record error code M0MEM002.</li> <li>• keyboard, record error code M0KBD000.</li> <li>• SCSI, record error code M0CON000.</li> <li>• network, record error code M0NET000.</li> <li>• speaker (audio), record error code M0BT0000.</li> </ul> Go to "Step 1020-3" on page 77.
The system stops and a 4-digit number is displayed in the operator panel display.	If the number displayed begins with the character "E0xx" then go to "A60 Controller Service Processor Checkpoints" on page 54. If "E1xx-EFFF" is displayed, then go to "Firmware Checkpoints" on page 57.  For all other numbers record SRN 101-xxx, where xxx is the last three digits of the four-digit number displayed in the operator panel, then go to the Fast Path MAP in the Diagnostic Information for Multiple Bus Systems. <b>Note:</b> If the operator panel displays 2 sets of numbers, use the bottom set of numbers as the error code.
The System Management Services is displayed.	Go to "Step 1020-4" on page 78.

Symptom	Action
All other symptoms.	If you were directed here from the Entry MAP, go to "MAP 1540: Minimum Configuration" on page 105. Otherwise, find the symptom in the "Entry MAP" on page 70.

### Step 1020-2

There is a problem with the keyboard.

Find the type of keyboard you are using in the following table; then follow the instructions given in the Action column.

Keyboard Type	Action
Type 101 keyboard (U.S.). Identify by the size of the Enter key. The Enter key is in only one horizontal row of keys.	Record error code M0KBD001; then go to "Step 1020-3".
Type 102 keyboard (W.T.). Identify by the size of the Enter key. The Enter key extends into two horizontal rows.	Record error code M0KBD002; then go to "Step 1020-3".
Type 106 keyboard. (Identify by the Japanese characters.)	Record error code M0KBD003; then go to "Step 1020-3".
ASCII terminal keyboard	Go to the documentation for this type of ASCII terminal and continue problem determination.

### Step 1020-3

Take the following actions:

1. Find the eight-digit error code in "Error Code to FRU Index" on page 21.

**Note:** If the eight-digit error code is not listed in Error Code to FRU Index, look for it in the following:

- Any supplemental service manual for the device
- The diagnostic problem report screen for additional information
- The Service Hints Service Aid
- The CEREADME file (by using the Service Hints Service Aid).

2. Perform the action listed.

---

**Step 1020-4**

To check the error log for any errors.

- Choose Utilities
- Choose Error Log
- If an error is logged, check the time stamp
- If the error was logged during the current boot attempt, record it
- Look up the error in the “Error Code to FRU Index” on page 21 and perform the listed action
- If no recent error is logged in the error log, go to “MAP 1540: Minimum Configuration” on page 105.



# MAP 1240: Memory Problem Resolution

## Note:

The firmware checkpoint that sent you here could be one of the following:

- E122, E213, E214, E218, E220 or E3xx

These checkpoints are referred to as "a memory checkpoint" in this MAP.

## Purpose of this MAP

This MAP is used to trouble shoot a problem during the memory test when the system stops at a memory checkpoint and no error code is displayed on the operator panel.

## Notes:

1. If the symptom changes while using this MAP, check for loose cards, cables, and obvious problems. If you do not find a problem, go to "MAP 1540: Minimum Configuration" on page 105.
2. The Service Processor may have recorded one or more symptoms in its error log. It is a good idea to examine that error log before proceeding (see Service Processor System Information Menu).
3. The Service Processor may have been set by the user to monitor server operations and to attempt recoveries. You may wish to disable these actions while you diagnose and service the system. If you disable them, you should make notes of their current settings for restoration before you leave. Following are the settings of your interest.

Surveillance	From the service Processor Setup Menu, go to the Surveillance Setup Menu and disable surveillance.
Unattended Start	From the Service Processor System Power Control Menu disable unattended start mode.
Reboot Policy	From the System Power Control Menu go to the Reboot/Restart Policy Setup Menu and set: 1. Number of reboot attempts to 0 (zero) 2. Use OS-Defined restart policy to <b>No</b> 3. Enable supplemental restart policy to <b>No</b> .
Call-Out	From the Call-In/Call-Out Setup Menu, go to the Serial Port Selection Menu and disable call-out on both serial ports.

## General Memory Information

Be sure to unplug the power cable before removing or installing the memory card(s) or memory modules to avoid damage to them.

Memory cards can be installed in either slot (or both) on the system board, there is no requirement that one be installed before the other.

It is perfectly acceptable for there to be two partially populated memory cards in the system, the first memory card does not have to be fully populated before memory on the second memory card is useable.

Memory modules, on the other hand, must be installed in matched (size and speed) pairs. Refer to "Remove and Replace of the Memory modules" on page 350 in Removal and Replacement Procedures for instructions on module removal and installation. A single memory module pair may be installed in module slots J1 and J2 (not slots J1 and J3). A second memory module pair could be installed in

module slots J5 and J6 (slots J3 and J4 do not have to be populated first). Along these same lines, there is no requirement that memory module slots J1 and J2 be populated before another slot pair.

### **Step 1240-1**

1. Ensure that the diagnostics and the operating system are shut down.
2. Turn the power off.
3. Remove and re-install any installed memory card(s).
4. Turn the power on.

#### **Does the system stop with a memory checkpoint displayed on the operator panel?**

**NO** Re-seating the memory card(s) has corrected the problem.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** If there is only one memory card installed tag it as "suspect bad" and go to "Step 1240-7" on page 83.

If there are two memory cards installed go to "Step 1240-2" on page 81.

---

**Step 1240-2**

1. Turn the power off.
2. Remove the memory card from slot J3.
3. Turn the power on.

**Does the system stop with a memory checkpoint displayed on the operator panel?**

**NO** Go to "Step 1240-4" on page 82.

**YES** Go to "Step 1240-3".

---

**Step 1240-3**

1. Turn the power off.
2. Remove the memory card from slot J2.
3. Install the memory card removed from slot J12 or J3 in its original location.
4. Turn the power on.

**Does the system stop with a memory checkpoint displayed on the operator panel?**

**NO** Tag the memory card you removed from slot J13 or J2 "suspect bad" and go to "Step 1240-7" on page 83.

**YES** Go to "Step 1240-6" on page 83.

---

**Step 1240-4**

1. Turn the power off.
2. Remove the memory card from slot J2.
3. Install the memory card removed from slot J12 or J3 in it's original location.
4. Turn the power on.

**Does the system stop with a memory checkpoint displayed on the operator panel?**

**NO** Go "Step 1240-5".

**YES** Tag the memory card in slot J12 or J3 "suspect bad" and go to "Step 1240-7" on page 83.

---

**Step 1240-5**

1. Turn the power off.
2. Install the memory card removed from slot J13 or J2 in it's original location.
3. Turn the power on.

**Does the system stop with a memory checkpoint displayed on the operator panel?**

**NO** Re-seating the memory card(s) has corrected the problem.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Go to "Step 1240-6" on page 83.

---

### Step 1240-6

1. Turn the power off
2. Exchange the following FRUs in the order listed:
  - System board
  - Processor card(s)
3. Turn the power on

#### Does the system stop with a memory checkpoint displayed on the operator panel?

**NO** Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Reinstall the original FRU.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, go to "MAP 1540: Minimum Configuration" on page 105.

---

### Step 1240-7

1. Turn the power off.
2. Remove all installed memory modules from the memory card you tagged "suspect bad". Record the position of the memory modules removed so that when instructed to re-install them they can be installed in their original position.
3. Install one pair of memory modules.
4. Turn the power on.

#### Does the system stop with a memory checkpoint displayed on the operator panel?

**NO** If there are no more memory modules to be installed reseating the modules on the memory card has corrected the problem.

If there was more than one pair of memory modules on the memory card go to "Step 1240-8" on page 84.

**YES** Go to "Step 1240-9" on page 84.

---

### Step 1240-8

1. Turn the power off.
2. Install a pair of memory modules.
3. Turn the power on.

**Does the system stop with a memory checkpoint displayed on the operator panel?**

**NO** Repeat this step until all the memory modules are installed and tested.

If all the memory modules have been installed reseating the memory modules on the memory card has corrected the problem.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Go to "Step 1240-9".

---

### Step 1240-9

The failure may be caused by the last pair of memory modules installed or the memory card. To isolate the failing FRU, do the following:

1. Turn the power off.
2. Exchange the last memory module pair installed.
3. Turn the power on.

**Does the system stop with a memory checkpoint displayed on the operator panel?**

**NO** Go to "Step 1240-11" on page 86.

**YES** Go to "Step 1240-10".

---

### Step 1240-10

One of the FRUs remaining in the system unit is defective.

1. Turn the power off.
2. Exchange the following FRUs in the order listed.
  - Memory card
  - System board
  - Processor card(s)
3. Turn the power on.

**Does the system stop with a memory checkpoint displayed on the operator panel?**

**NO** Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Reinstall the original FRU.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, go to "MAP 1540: Minimum Configuration" on page 105.

---

### **Step 1240-11**

The memory module(s) (may be both) you exchanged in the previous step may be defective. To isolate the failing memory module, do the following:

1. Turn the power off.
2. Re-install one of the memory modules you exchanged in the previous step.
3. Turn the power on.

#### **Does the system stop with a memory checkpoint displayed on the operator panel?**

**NO** Repeat this step with the second memory module you exchanged in the previous step.

If both memory modules have been tested go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Replace the memory module.

If you have not tested both memory modules repeat this step with the second memory module you exchanged in the previous step.

If the symptom did not change and both memory modules have been exchanged go to "Step 1240-10" on page 84.



## MAP 1520: Power

### Notes:

1. This is not a start of call MAP. Use this Power MAP only if you have been directed here from a MAP step in this book or the Diagnostic Information for Multiple Bus Systems.
2. Each power supply has a test switch, if you are instructed to replace a power supply, see "Removal and Replace of the Power Supply or Power Supply Fan Assembly" on page 312.

This procedure is used to locate power problems in system units. If a problem is detected, this procedure helps you isolate the problem to a failing unit.

Observe the following safety notice during service procedures.

### DANGER

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

Before installing or removing signal cables, ensure that the power cords for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected. You must disconnect all power cords from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communication lines.

### CAUTION:

This product is equipped with a three-wire power cord and plug for the user's safety. Use this power cable with a properly grounded electrical outlet to avoid electrical shock.

### DANGER

To prevent electrical shock hazard, disconnect the power cord from the electrical outlet before relocating the system.

### CAUTION:

This system may have two power supplies installed. To reduce the risk of electrical shock, disconnect both power supply cords before servicing.

### Step 1520-1

You may be directed to this MAP for several reasons:

1. The power light on the operator panel is not flashing and the operator panel is blank.  
Go to "Step 1520-2" on page 89.
2. The power LED on the operator panel is flashing and the operator panel is blank.  
Go to "Step 1520-3" on page 90.
3. OK, STBY or DIAG STBY is displayed on the operator panel. There is no indication of activity when the power button on the operator panel is pressed. None of the power LEDs light and none of the fans, including the fan in the power supply, start to turn.  
Go to "Step 1520-3" on page 90.
4. OK, STBY or DIAG STBY is displayed on the operator panel and the power LED on the operator panel is flashing. When the power button on the operator panel is pressed, the system begins to power on, but the power LED on the operator panel does not stay on.  
Go to "Step 1520-3" on page 90.
5. A SRN referenced in the Diagnostic Information for Multiple Bus Systems listed MAP 1520 in the "Actions/Descriptions" column for a Voltage Sensor out of range.  
Go to "Step 1520-10" on page 96.

## **Step 1520-2**

1. Turn the power off.
2. If you have not already done so, open the rear door of the rack unit and locate the power supplies.
3. Unplug the power cord from the Power Distribution Unit (PDU)/Power Distribution Bus (PDB) and the power outlet.
4. Unplug the power cords from the PDU/PDB and the power supplies.
5. Check that the power cord from the power outlet to the PDU/PDB has continuity.
6. Check that the power cords from the PDU/PDB to the power supplies have continuity.
7. Check that the power outlet has been wired correctly with the correct voltage.
8. Plug the power cords into the PDU/PDB and the power supplies.
9. Plug the power cord into the PDU/PDB and the power outlet.

### **Did you find a problem?**

**NO** Go to "Step 1520-3" on page 90.

**YES** Correct the problem. Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

### **Step 1520-3**

1. Turn the power off.
2. If you have not already done so, open the rear door of the rack unit and locate the power supplies.
3. Unplug the power cord from the power outlet.
4. Unplug the power cord from the first (left) power supply.
5. Remove the screw from the center of the power supply handle, grasp the handle of the power supply, pivot it upward and pull the the power supply out of the drawer.
6. Plug the power cord into the power supply.
7. Plug the power cord into the power outlet.

**Does the power LED on the power supply commence flashing within 30 seconds after applying AC power?**

**NO**     Replace the power supply.

Repeat this step for the second (right) power supply if installed.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES**     Repeat this step for the second (right) power supply if installed.

Go to "Step 1520-4" on page 91.

---

### **Step 1520-4**

There is a small dark-colored test switch on the side of the power supply near the power supply connector. It is a normally off momentary switch. Press and hold this switch for a few seconds while observing the fans in the power supply and the power LED on the power supply.

**Does the fan in the power supply (not the two external fans) turn on and the power LED on the power supply change from blinking to solid while you hold the switch? (When you let go of the switch, the fan will turn off and the LED on the power supply will change from solid to blinking.)**

**NO**     Replace the power supply.

Repeat this step for the second (right) power supply if installed.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES**     Repeat this step for the second power supply if installed.

Go to "Step 1520-5" on page 92.

---

### **Step 1520-5**

The power supply is working normally.

1. Unplug the power cord from the power outlet.
2. Unplug the power cords from the power supplies.
3. Re-install the power supplies in the drawer.  
Exchange the operator panel electronics assembly.
4. Plug the power cords into the power supplies.
5. Plug the power cord into the power outlet.
6. Press the Power button on the operator panel to turn the power on.

#### **Does the power LED on the operator panel come on and stay on?**

- NO** Reinstall the original operator panel electronics assembly. Go to "Step 1520-6" on page 93.
- YES** Go to "MAP 410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

## Step 1520-6

**Note:** Either the Fan monitor control card or the power distribution board may be defective.

To test each FRU, exchange the FRUs that have not already been exchanged in the following order.

- Fan monitor control card
  - Power distribution board
1. Turn the power off.
  2. Unplug the power cable from the power supplies.
  3. Exchange one of the FRUs in the list.
  4. Connect the power cables to the power supplies.
  5. Turn the power on.

**Does the fan in the power supply turn on and the power LED on the operator panel come on and stay on?**

**NO** Reinstall the original FRU.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, Go to "Step 1520-7" on page 94.

**YES** Go to "MAP 410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

### **Step 1520-7**

1. Turn the power off.
2. Unplug the power cable from the wall outlet.
3. Record the slot numbers of all the ISA and PCI adapters. Label and record the location of any cables attached to the adapters. Disconnect any cables attached to the adapters and remove all the adapters.
4. Remove the memory card(s).
5. Remove the processor card(s).
6. Unplug the power cable(s) from the disk drive cage backplane(s).
7. Unplug the power cables from all the SCSI devices in the media bay.
8. Unplug all the fans (CPU fan, media blower, DASD blower and I/O blower), except the power supply fans.
9. Plug the power cable into the wall outlet.
10. Turn the power on.

**Do the power supply fans turn on and the power LED on the operator panel come on and stay on?**

**NO** Go to "Step 1520-8" on page 95.

**YES** Go to "Step 1520-9" on page 96.



---

## Step 1520-8

**Note:** Either the I/O board, the System board or the power supplies may be defective.

To test each FRU, exchange the FRUs that have not already been exchanged in the following order.

- I/O board
  - System board
  - Left power supply
  - Right power supply (if installed)
1. Turn the power off.
  2. Unplug the power cables from the power supplies.
  3. Exchange one of the FRUs in the list.
  4. Connect the power cables to the power supplies.
  5. Turn the power on.

**Does the fan in the power supply turn on and the power LED on the operator panel come on and stay on?**

**NO** Reinstall the original FRU.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

**YES** Go to "MAP 410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

### Step 1520-9

One of the parts that was removed or unplugged is causing the problem. Install or connect the parts in the following order:

1. Processor card(s) (One at a time)
2. Memory card(s) (One at a time)
3. Disk drive cage backplane power cable(s).
4. SCSI device power cable(s), lowest bay to highest bay
5. ISA adapters, lowest slot to highest slot
6. PCI adapters, lowest slot to highest slot
7. Fans

Turn the power on after each part is installed or connected. If the system does not power on or the power light on the operator panel does not stay on, the most recently installed or connected part is causing the failure.

1. Turn the power off.
2. Unplug the power cords from the power supplies.
3. Install or connect one of the parts in the list.
4. Plug the power cords into the power supplies.
5. Turn the power on.

#### **Do the power supply fans turn on and the power light on the operator panel come on and stay on?**

**NO** Replace the last part installed.

If the memory card was just installed, remove all of the memory modules. If the system does not come up, replace the memory card.

Re-install the memory modules, one pair at a time, until the problem recurs. Replace the memory module pair that was just installed.

**Note:** The memory module pair must be installed in slots that are next to each other. For example, install the pair in J1 and J2, not J1 and J3.

Repeat these steps until all the parts have been installed.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to "Step 1520-1" on page 87 in this MAP and follow the instructions for the new symptom.

**YES** Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

### Step 1520-10

#### **Does the system contain two power supplies?**

**NO** Go to "Step 1520-11" on page 97.

**YES** Go to "Step 1520-13" on page 98.

---

### **Step 1520-11**

Shut the system down, turn off the system, and remove the power cable(s) from the power supply.

Exchange the following FRUs in order. If the I/O board is to be replaced, see notes on 70.

1. Power Supply
2. Power Cables to I/O Board
3. I/O Board
4. Power Distribution Board

Restart the system and perform Error Log Analysis.

#### **Do you get an SRN indicating a Voltage Sensor is out of range?**

**NO** The last FRU exchanged is defective. Go to "MAP 410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Reinstall the original FRU.

Repeat the FRU replacement steps until a defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all FRUs have been exchanged, go to "Step 1520-12" on page 98.

If the symptom changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to "Step 1540-1" on page 105 and follow the instructions for the new symptom.

---

### **Step 1520-12**

Check that the power outlet is properly wired and is providing the correct voltage.

#### **Did you find a problem?**

**NO** Go to "Step 1540-1" on page 105.

**YES** Correct the problem. Go to "MAP 410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

### **Step 1520-13**

Since the A60 Controller does not have redundant power supplies, it is not necessary to power down the system in order to replace a power supply. The power supplies are symmetrical so replacement starts with the left-hand unit (Power Supply 1). The exception to this rule is if the green LED on the back of one of the power supplies is either blinking or not lit. In this case start with that power supply. See "Removal and Replace of the Power Supply or Power Supply Fan Assembly" on page 312 for instructions on replacing a power supply. Before removing a power supply be sure the "other" power supply is operational by observing the green LED, which should be lit. Also be aware that the power supply exchange process must be completed within five minutes, including moving the fan assembly from the removed supply to the replacement power supply. After five minutes, the Service Processor shuts the system down to avoid overheating devices in the media and DASD bays.

Replace the following FRUs in order:

1. Power Supply 1
2. Power Supply 2

Perform Error log Analysis.

#### **Do you receive an SRN indicating a Voltage Sensor out of range?**

**NO** The last FRU exchanged is defective. Go to "MAP 410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Reinstall the original FRU.

Repeat the FRU replacement steps until a defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all FRUs have been exchanged go to "Step 1520-14".

If the symptom changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to "Step 1540-1" on page 105 and follow the instructions for the new symptom.

---

### **Step 1520-14**

The problem lies within the system unit hardware or with the line voltage/wiring.

Shut the system down, turn off the system, and remove the power cable(s) from the power supplies.

Exchange the following FRUs in order. If the I/O board is to be replaced, see notes on 70

1. Power Cables to I/O Board
2. I/O Board
3. Power Distribution Board

Restart the system and perform Error Log Analysis.

**Do you get an SRN indicating a Voltage Sensor is out of range?**

**NO** The last FRU exchanged is defective. Go to "MAP 410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Reinstall the original FRU.

Repeat the FRU replacement steps until a defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all FRUs have been exchanged go to "Step 1520-12" on page 98.

If the symptom changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to "Step 1540-1" on page 105 and follow the instructions for the new symptom.

---

**Step 1520-15**

Apply AC power to the power supply. Observe the back of the power supply while it is connected to the system.

**Is the light on the back of the power supply on or flashing?**

**NO** Go to "Step 1520-16".

**YES** Go to "Step 1520-22" on page 102.

---

**Step 1520-16**

Remove the power supply from the system. Apply AC power to the power supply.

**Is the light on the back of the power supply flashing?**

**NO** Replace the power supply. Go to "MAP 410: Repair Checkout" in Diagnostic Information for Multiple Bus Systems.

**YES** Go to "Step 1520-17".

---

**Step 1520-17**

1. Find all the cables connecting the Power Distribution Board to the system. Disconnect these cables from the system, but leave them attached to the Power Distribution Board.
2. Insert the power supply and connect AC power.

**Is the light on the back of the Power Supply flashing?**

**NO** Go to "Step 1520-20" on page 102.

**YES** Go to "Step 1520-18" on page 101.

---

### **Step 1520-18**

1. Remove the, processor card(s), and memory card(s) from the I/O board.  
Disconnect the Fan Monitor Control (FMC) from the I/O board.
2. Connect Power to the I/O planar and apply AC power to the system.

#### **Is the light on the back of the Power Supply flashing?**

**NO** Replace in order and try again:

1. I/O board
2. System board

If the power supply light starts flashing, then the last FRU replaced is defective. Go to "MAP 410: Repair Checkout" in Diagnostic Information for Multiple Bus Systems. If the light still does not flash after replacing all the FRUs in the list, go to "Step 1540-1" on page 105.

**YES** Go to "Step 1520-19".

---

### **Step 1520-19**

Perform each of the following steps in order. After each, apply AC power and verify that the light on the back of the power supply is flashing. If the light is not flashing, replace the last part connected to the system and go to "MAP 410: Repair Checkout" in Diagnostic Information for Multiple Bus Systems.

1. Connect the FMC to the Power Distribution Board and to the I/O board.
2. Insert the processor card(s), one at a time and connect power.
3. Insert the memory card(s), one at a time.

If no defective FRU is found, go to "Step 1540-1" on page 105.

---

**Step 1520-20**

Remove all the cables from the Power Distribution Board.

**Is the light on the back of the Power Supply flashing?**

**NO** Replace the Power Distribution Board and go to "MAP 410: Repair Checkout" in Diagnostic Information for Multiple Bus Systems.

**YES** Go to "Step 1520-21".

---

**Step 1520-21**

Reattach the cables to the Power Distribution Board one at a time. After attaching each cable, reapply AC power and observe the light on the back of the power supply.

**Is the light on the back of the power supply flashing?**

**NO** The last cable that was attached to the Power Distribution Board is defective, replace it and go to "MAP 410: Repair Checkout" in Diagnostic Information for Multiple Bus Systems.

**YES** Attach the next cable.

---

**Step 1520-22**

**Does the system appear to power on even though the operator panel is blank?**

**NO**

1. Verify that all cables are connected correctly.
2. Go to "Step 1520-23" on page 103.

**YES**

1. Reseat the operator panel cable and retest.
2. Replace the operator panel control assembly. Be sure to remove the VPD module from the old operator panel control assembly (connector U2) and place it in the new one.



---

**Step 1520-23**

Remove the processor card(s), memory card(s), from the system. Disconnect the FMC from the I/O board. Apply AC power to the system.

**Is anything displayed on the operator panel?**

**NO** Go to "Step 1520-26" on page 104.

**YES**

Go to "Step 1520-25" on page 104.

---

**Step 1520-24**

Install the Service Processor on the I/O board.

**Does the operator panel display "OK"?**

**NO** The service processor is defective. Replace it and go to "MAP 410: Repair Checkout" in Diagnostic Information for Multiple Bus Systems.

**YES** Go to "Step 1520-25" on page 104.

---

### **Step 1520-25**

Install the parts listed below in order. After each, verify that the operator panel displays OK. If not, the last part that was installed is defective. Replace it and go to "MAP 410: Repair Checkout" in Diagnostic Information for Multiple Bus Systems.

1. Fan monitor control card
2. Processor card(s)
3. Memory card(s)

If no defective FRU is found, go to "Step 1540-1" on page 105. \_\_\_\_\_

### **Step 1520-26**

Remove the system board.

#### **Is anything displayed on the operator panel?**

**NO** Replace the parts listed below in order. After each, observe if anything displays on the operator panel. If something displays, the last FRU replaced is defective. Replace it and go to "MAP 410: Repair Checkout" in Diagnostic Information for Multiple Bus Systems.

1. I/O board
2. Power Distribution Board
3. I/O cable from the Power Distribution Board to the I/O board

If no defective FRU is found, go to "Step 1540-1" on page 105.

**YES** The system board is defective. Replace it and go to "MAP 410: Repair Checkout" in Diagnostic Information for Multiple Bus Systems.

## MAP 1540: Minimum Configuration

### Purpose of this MAP

This MAP is used to locate defective FRUs not found by normal diagnostics. For this procedure, diagnostics are run on a minimally-configured system. If a failure is detected on the minimally-configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

### Notes:

1. Be sure to unplug the power cable before removing or installing the Service Processor, processor card(s), memory card(s), System board or I/O board to avoid damaging them.
2. This MAP assumes that a CD-ROM drive is installed and connected to the integrated SCSI adapter connector (port 1), and a Diagnostics CD-ROM disc is available.
3. If a power-on password or privileged-access password is installed, you are prompted to enter the password before the diagnostic CD-ROM loads.
4. The term "POST indicators" refer to the icons (graphic display) or device mnemonics (ASCII terminal) that appear during the power-on self-test (POST).
5. The Service Processor may have recorded one or more symptoms in its error log. It is a good idea to examine that error log before proceeding. Select the System Information Menu and select "**Ready Service Processor Error Logs**".
6. The Service Processor may have been set by the user to monitor server operations and to attempt recoveries. You may wish to disable these actions while you diagnose and service the system. If you disable them, you should make notes of their current settings for restoration before you leave. Following are the settings of your interest.

Surveillance	From the service Processor Setup Menu, go to the Surveillance Setup Menu and disable surveillance.
Unattended Start	From the Service Processor System Power Control Menu disable unattended start mode.
Reboot Policy	From the System Power Control Menu go to the Reboot/Restart Policy Setup Menu and set: 1. Number of reboot attempts to 0 (zero) 2. Use OS-Defined restart policy to <b>No</b> 3. Enable supplemental restart policy to <b>No</b> .
Call Out	From the Call-In/Call-Out Setup Menu, go to the Serial Port Selection Menu and disable call-out on both serial ports.

### Step 1540-1

1. Insert the diagnostic CD-ROM into the CD-ROM drive.

**Note:** If you cannot insert the diagnostic CD-ROM go to "Step 1540-2" on page 107.

2. Ensure that the diagnostics and the operating system are shut down.
3. Turn the power off.
4. Turn the power on.
5. When the keyboard indicator is displayed (the word **keyboard** on an ASCII terminal or the keyboard and hand icon on a graphical display), press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal.
6. Enter the appropriate password if prompted to do so.

**Is the "Please define the System Console" screen displayed?**

**NO** Go to "Step 1540-2" on page 107

**YES** Go to "Step 1540-19" on page 125.

---

## Step 1540-2

1. Turn the power off.
2. If you have not already done so, configure the Service Processor with the instructions in 6 on page 105 and then return here and continue.
3. Exit Service Processor Menus and remove the power cable.
4. Disconnect all external cables (parallel, serial 1, serial 2, serial 3, keyboard, mouse, AUI/RJ45 ethernet, SCSI, etc.)
5. Go to "Prepare the A60 Controller for Service" on page 380 and return here when the A60 Controller is **Offline**
6. Press the **White** button on the operator panel to remove power from the Model A60 Controller
7. Remove two chassis housing screws, refer to Figure 90 on page 330, **2**
8. Unplug the two power cords from the power supply connectors (power supply end). Refer to Figure 90 on page 330, **7** and **4**
9. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
10. Remove two shelf chassis housing screws. Refer to Figure 90 on page 330, **7**.
11. Grasp handle below diskette drive and lift and rotate upwards until upper housing lock into place, refer to Figure 91 on page 331
12. Record the slot numbers of the ISA and PCI adapters. Label and record the location of any cables attached to the adapters. Disconnect any cables attached to the adapters and remove all the adapters.
13. Remove the second processor card, (if present).
  - A60 Controller slot J8.

(If second processor card removed, ensure first processor card is in processor card connector #1.)
14. Record the slot numbers of the memory modules. Remove all installed memory modules except for one pair from the first memory card.

**Note:** Memory modules must be installed in pairs and in the correct slots. For example, install the pair in J1 and J2.
15. Remove the second memory card, (if present).
  - A60 Controller slot J2.
16. Disconnect the SCSI cables from the internal SCSI connectors on the I/O board.
  - A60 Controller connectors J3 and J12.
17. Disconnect the signal and power connectors from the hot-swap bay backplanes.
18. Remove the hot-swap disk drive(s) from the hot-swap bays.
19. Disconnect the signal and power connectors from all the SCSI devices except the CD-ROM drive.
20. Disconnect the diskette drive cable from the diskette drive connector J13 on the I/O board.
21. Plug in the power cable and wait for OK on the operator panel display.
22. Turn the power on.

**Does the system stop with code E1F2, E1F3, STBY, 20EE00B or 4BA00830 displayed on the operator panel?**

**NO** Go to "Step 1540-3" on page 109.

**YES** If a second processor card was removed go to "Step 1540-4" on page 110.  
If the system has only one processor card go to "Step 1540-5" on page 111.

---

### **Step 1540-3**

One of the FRUs remaining in the system unit is defective.

If a memory module is exchanged, ensure that the new module is the same size and speed as the original module.

Turn the power off, remove the power cable, and exchange the following FRUs in order:

1. Processor card
2. Memory modules (pair)
3. Memory card
4. Fan monitor control card
5. I/O board (see notes on page 70)
6. System board
7. Power distribution board

Plug in the power cable and wait for OK on the operator panel display.

Turn the power on.

#### **Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 displayed on the operator panel?**

**NO** Reinstall the original FRU.

Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to "Step 1540-1" on page 105 in this MAP and follow the instructions for the new symptom.

**YES** If the last FRU exchanged was the pair of memory modules go to "Step 1540-7" on page 112.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

### **Step 1540-4**

No failure was detected with this configuration.

1. Turn the power off and remove the power cable.
2. Reinstall the second processor card.
3. Plug in the power cable and wait for OK on the operator panel display.
4. Turn the power on.

### **Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 displayed on the operator panel?**

**NO** One of the FRUs remaining in the system unit is defective.

In the following order, exchange the FRUs that have not been exchanged:

1. Processor card (last one installed)
2. System board
3. I/O board (See notes on page 70)

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems. If you do not find a problem, return to "Step 1540-1" on page 105 and follow the instructions for the new symptom.

**YES** Go to "Step 1540-5" on page 111.



---

### **Step 1540-5**

No failure was detected with this configuration.

1. Turn the power off and remove the power cable.
2. Install a pair of memory modules.
3. Plug in the power cable and wait for OK on the operator panel display.
4. Turn the power on.

#### **Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 displayed on the operator panel?**

**NO** Go to "Step 1540-6".

**YES** Repeat this step until all the memory modules are installed and tested.

After all the memory modules are installed and tested, record the positions of the memory modules in the second memory card. Remove all of the memory modules from the second memory card except one pair. Repeat this step with the second memory card (if previously installed).

Go to "Step 1540-9" on page 114.

---

### **Step 1540-6**

The failure may be caused by the last pair of memory modules installed or the memory card. To isolate the failing FRU, do the following:

1. Turn the power off and remove the power cable.
2. Exchange the last memory module pair installed.
3. Plug in the power cable and wait for OK on the operator panel display.
4. Turn the power on.

#### **Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 displayed on the operator panel?**

**NO** Go to "Step 1540-8" on page 113.

**YES** Go to "Step 1540-7" on page 112.

---

### **Step 1540-7**

The memory module(s) (may be both) you exchanged in the previous step may be defective. To isolate the failing memory module, do the following:

1. Turn the power off and remove the power cable.
2. Reinstall one of the memory modules you exchanged in the previous step.
3. Plug in the power cable and wait for OK on the operator panel display.
4. Turn the power on.

#### **Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 displayed on the operator panel?**

**NO** Replace the memory module.

If you have not tested both memory modules repeat this step with the second memory module you exchanged in the previous step.

If the symptom did not change and both memory modules have been exchanged go to "Step 1540-8" on page 113.

**YES** Repeat this step with the second memory module you exchanged in the previous step.

If both memory modules have been tested go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

### **Step 1540-8**

One of the FRUs remaining in the system unit is defective.

1. Turn the power off and remove the power cable.
2. Exchange the following FRUs in the order listed.
  - Memory card
  - System board
  - I/O board (See notes on page 70)
  - Fan monitor control card
  - Power supply
  - Power distribution board
3. Plug in the power cable wait for OK on the operator panel display
4. Turn the power on

#### **Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 displayed on the operator panel?**

**NO** Reinstall the original FRU.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to "Step 1540-1" on page 105 and follow the instructions for the new symptom.

**YES** Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

### **Step 1540-9**

1. Turn the power off.
2. Reconnect the system console.

**Notes:**

- a. If an ASCII terminal has been defined as the system console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.
  - b. If a display attached to a display adapter has been defined as the system console, install the display adapter and connect the display to it. Plug the keyboard into the keyboard connector on the rear of the system unit.
3. Turn the power on.
  4. If the ASCII terminal or graphics display (including display adapter) are connected differently than before, the Console Selection screen appears and requires that a new console be selected.
  5. When the keyboard indicator is displayed, press the F1 key on the directly attached keyboard or the number 1 key on an ASCII terminal. This triggers the SMS.
  6. Enter the appropriate password if prompted to do so.

**Is the SMS screen displayed?**

**NO** One of the FRUs remaining in the system unit is defective.

In the following order, exchange the FRUs that have not been exchanged:

1. Go to the Problem Determination Procedures (test procedures) for the device attached to the S1 serial port or the display attached to the graphics adapter, and test those devices. If a problem is found, follow the procedures for correcting the problem on that device.
2. Graphics adapter (if installed).
3. Cable (async or graphics).
4. I/O board (See notes on page 70)

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems. If you do not find a problem, return to "Step 1540-1" on page 105 and follow the instructions for the new symptom.

**YES** Go to "Step 1540-10" on page 116.

---

### Step 1540-10

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn the power off and remove the power cable.
3. Plug the internal SCSI connector (port 1) cable into the connector on on the I/O board.
  - A60 Controller connector J12.
4. Plug in the power cable wait for OK on the operator panel display.
5. Turn the power on.
6. After the keyboard indicator is displayed, press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password if prompted to do so.

#### Is the "Please define the System Console" screen displayed?

**NO** One of the FRUs remaining in the system unit is defective.

In the following order, exchange the FRUs that have not been exchanged:

1. SCSI cable
2. CD-ROM drive
3. I/O board (See notes on page 70.)
4. Processor card(s)
5. Power Supply

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem return to "Step 1540-1" on page 105 in this MAP and follow the instructions for the new symptom.

**YES** Go to "Step 1540-11" on page 117.

---

### **Step 1540-11**

The system is working correctly with this configuration. One of the SCSI devices that you disconnected may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn the power off and remove the power cable.
3. Connect the signal and power connectors to one of the SCSI devices (CD-ROM drive, tape drive, disk drive, etc.). Do not connect the signal and power connectors to the hot-swap bay backplanes at this time.
4. Plug in the power cable and wait for OK on the operator panel display.
5. Turn the power on.
6. After the keyboard indicator is displayed, press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password if prompted to do so.

#### **Is the "Please define the System Console" screen displayed?**

**NO** One of the FRUs remaining in the system unit is defective.

In the following order, exchange the FRUs that have not been exchanged:

1. SCSI cable
2. Last SCSI device connected (CD-ROM drive, tape drive, disk drive, etc.)
3. I/O board (See notes on page 70.)
4. Processor card(s)
5. Power Supply

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem return to "Step 1540-1" on page 105 in this MAP and follow the instructions for the new symptom.

**YES** Repeat this step, adding one SCSI device at a time, until all the SCSI devices that were attached to integrated SCSI adapter connector (port 1), except the hot-swap bay backplanes, are connected and tested.

Go to "Step 1540-12".

---

### **Step 1540-12**

The system is working correctly with this configuration. One of the hot-swap bay backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn the power off and remove the power cable.
3. Connect the signal and power connectors to the backplane in hot swap bay C.
4. Plug in the power cable and wait for OK on the operator panel display.
5. Turn the power on.
6. After the keyboard indicator is displayed, press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password if prompted to do so.

#### **Is the "Please define the System Console" screen displayed?**

**NO** One of the FRUs remaining in the system unit is defective.

In the following order, exchange the FRUs that have not been exchanged:

1. SCSI cable
2. Hot-swap bay backplane
3. Power distribution board

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem return to "Step 1540-1" on page 105 in this MAP and follow the instructions for the new symptom.

**YES** If a second hot swap bay backplane is installed in hot swap bay D, go to "Step 1540-13" on page 119.

Go to "Step 1540-14" on page 120.



---

### **Step 1540-13**

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn the power off and remove the power cable.
3. Plug the internal SCSI connector (port 2) cable into the connector on the I/O board.
  - A60 Controller connector J3
4. Connect the signal and power connectors to the backplane in hot-swap bay D.
5. Plug in the power cable and wait for OK on the operator panel display.
6. Turn the power on.
7. After the keyboard indicator is displayed, press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal keyboard.
8. Enter the appropriate password if prompted to do so.

#### **Is the "Please define the System Console" screen displayed?**

##### **NO**

One of the FRUs remaining in the system unit is defective.

In the following order, exchange the FRUs that have not been exchanged:

1. SCSI cable
2. Hot-swap bay backplane
3. Power distribution board

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem return to "Step 1540-1" on page 105 in this MAP and follow the instructions for the new symptom.

##### **YES**

Go to "Step 1540-14" on page 120.

---

### **Step 1540-14**

The system is working correctly with this configuration. One of the disk drives that you removed from the hot-swap bay may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn the power off and remove the power cable.
3. Install a disk drive in the hot-swap bay.
4. Plug in the power cable and wait for OK on the operator panel display.
5. Turn the power on.
6. After the keyboard indicator is displayed, press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password if prompted to do so.

#### **Is the "Please define the System Console" screen displayed?**

**NO** In the following order, exchange the FRUs that have not been exchanged:

1. Last disk drive installed
2. Hot-swap bay backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem return to "Step 1540-1" on page 105 in this MAP and follow the instructions for the new symptom.

**YES** Repeat this step until all the disk drives are installed.

Go to "Step 1540-15" on page 121.

---

### **Step 1540-15**

The system is working correctly with this configuration. The diskette drive may be defective.

1. Make sure the diagnostic CD-ROM disc is inserted into the CD-ROM drive.
2. Turn the power off and remove the power cable.
3. Plug the diskette drive cable into the diskette drive connector (J13) on the I/O board.
4. Plug in the power cable and wait for OK on the operator panel display.
5. Turn the power on.
6. After the keyboard indicator is displayed, press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password if prompted to do so.

#### **Is the "Please define the System Console" screen displayed?**

**NO** One of the FRUs remaining in the system is defective.

In the following order, exchange the FRUs that have not been exchanged.

1. Diskette drive
2. Diskette drive cable
3. I/O board (See notes on page 70)
4. Power supply

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem return to "Step 1540-1" on page 105 in this MAP and follow the instructions for the new symptom.

**YES** Go to "Step 1540-16" on page 122.

---

### Step 1540-16

The system is working correctly with this configuration. One of the devices that you disconnected from the I/O board may be defective.

1. Make sure the diagnostic CD-ROM disc is inserted into the CD-ROM drive.
2. Turn the power off and remove the power cable.
3. Attach an I/O board device (parallel, serial1, serial2, serial3, keyboard, mouse, AUI/RJ45 Ethernet or SCSI) that had been removed.

**Note:** If the device you attached requires supplemental media, use the Process Supplemental Media task to load the supplemental media first.

4. Plug in the power cable and wait for OK on the operator panel display.
5. Turn the power on.
6. If the Console Selection screen is displayed, choose the system console.
7. After the keyboard indicator is displayed, press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal keyboard.
8. Enter the appropriate password if prompted to do so.

#### Is the "Please define the System Console" screen displayed?

**NO** The last device or cable that you attached is defective.

To test each FRU, exchange the FRUs in the following order:

1. Device and cable (last one attached)
2. I/O board (See notes on page 70.)

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem return to "Step 1540-1" on page 105 in this MAP and follow the instructions for the new symptom.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Repeat this step until all of the devices are attached.

Go to "Step 1540-17" on page 123.

---

### **Step 1540-17**

The system is working correctly with this configuration. One of the FRUs (adapters) that you removed is probably defective.

1. Turn the power off and remove the power cable.
2. Install a FRU (adapter) and connect any cables and devices that were attached to it.

**Note:** If the FRU you installed requires supplemental media use the Process Supplemental Media task to load the supplemental media first.

3. Plug in the power cable and wait for OK on the operator panel display.
4. Turn the power on.
5. If the Console Selection screen is displayed, choose the system console.
6. After the keyboard indicator is displayed, press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password if prompted to do so.

#### **Is the "Please define the System Console" screen displayed?**

**NO** Go to "Step 1540-18" on page 124.

**YES** Repeat this step until all of the FRUs (adapters) are installed.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

### **Step 1540-18**

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM disc is inserted into the CD-ROM drive.
2. Turn the power off and remove the power cable.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cable and wait for OK on the operator panel display.
5. Turn the power on.
6. If the Console Selection screen is displayed, choose the system console.
7. After the keyboard indicator displays, press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal keyboard.
8. Enter the appropriate password if prompted to do so.

#### **Is the "Please define the System Console" screen displayed?**

**NO** Repeat this step until the defective device or cable is identified or all the devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (last one installed)
2. I/O board (See notes on page 70.)
3. Power supply

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem return to "Step 1540-1" on page 105 in this MAP and follow the instructions for the new symptom.

**YES** The last device or cable that you disconnected is defective.

Exchange the defective device or cable.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

### Step 1540-19

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select Advanced Diagnostics Routines.
4. If the DEFINE TERMINAL screen is displayed you must define the terminal following the instructions on the screen before you can continue with the diagnostics. This is a separate and different operation than selecting the console display.
5. If the NEW RESOURCE screen displays, select an option from the bottom of the screen.

**Note:** Adapters or devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require a supplemental media, select option 1.

6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select All Resources (if you were sent here from "Step 1540-23" on page 127, select the Adapter/Device you loaded from the supplemental media).

#### Did you get an SRN?

**NO** Go to "Step 1540-21" on page 126.

**YES** Go to "Step 1540-20" on page 126.

---

**Step 1540-20**

Look at the FRU part numbers associated with the SRN.

**Have you exchanged all the FRUs that correspond to the failing function codes?**

**NO** Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged.

If the I/O board or a network adapter is replaced, see notes on page 70.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

---

**Step 1540-21**

**Does the system have adapters or devices that require supplemental media?**

**NO** Go to "Step 1540-22" on page 127.

**YES** Go to "Step 1540-23" on page 127



---

### **Step 1540-22**

Consult the PCI adapter configuration documentation for your operating system to verify that all installed adapters are configured correctly.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance. \_\_\_\_\_

### **Step 1540-23**

Select Task Selection.

1. Select Process Supplemental Media and follow the on-screen instructions to process the media.
2. Supplemental media must be loaded and processed one at a time.

**Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?**

**NO** Go to "Step 1540-24" on page 128.

**YES** Press F3 to return to the FUNCTION SELECTION screen.

Go to "Step 1540-19" on page 125, substep 3.

---

**Step 1540-24**

The Adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. I/O board (See notes on page 70)

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables.
2. The adapter the device is attached to.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to "Step 1540-1" on page 105 in this MAP and follow the instructions for the new symptom.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

---

### Step 1540-25

1. Ensure that the diagnostics and the operating system are shutdown.
2. Turn the power off.
3. If you have not already done so, configure the Service Processor with the instructions in 6 on page 105 and then return here and continue.
4. Exit Service Processor Menus and remove the power cable.
5. Go to "Prepare the A60 Controller for Service" on page 380 and return here when the A60 Controller is **Offline**
6. Press the **White** button on the operator panel to remove power from the Model A60 Controller
7. Remove two chassis housing screws, refer to Figure 90 on page 330, **2**
8. Unplug the two power cords from the power supply connectors (power supply end). Refer to Figure 90 on page 330 **4**
9. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
10. Remove two shelf chassis housing screws. Refer to Figure 90 on page 330, **7**.
11. Grasp handle below diskette drive and lift and rotate upwards until upper housing lock into place, refer to Figure 91 on page 331
12. Record the slot numbers of the ISA and PCI adapters. Label and record the location of any cables attached to the adapters. Disconnect any cables attached to the adapters and remove all the adapters.
13. Plug in the power cable and wait for OK on the operator panel display.
14. Turn the power on.

**Does the system stop with code 26800Dxx, 45800000, 4880090A, 4B2xxx00 or 4B2xxx10 displayed on the operator panel?**

**NO** Go to "Step 1540-27" on page 131.

**YES** Go to "Step 1540-26" on page 130.

---

### **Step 1540-26**

One of the FRUs remaining in the system unit is defective.

Turn the power off, remove the power cable, and exchange the following FRUs in order:

1. System board
2. I/O board (See notes on page 70)

Plug in the power cable and wait for OK on the operator panel display.

Turn the power on.

**Does the system stop with code 26800Dxx, 45800000, 4880090A, 4B2xxx00 or 4B2xxx10 displayed on the operator panel?**

**NO** Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Reinstall the original FRU.

Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, return to "Step 1540-2" on page 107 in this MAP.

---

### **Step 1540-27**

The system is working correctly with this configuration. One of the FRUs (adapters) that you removed is probably defective.

1. Turn the power off and remove the power cable.
2. Install a FRU (adapter) and connect any cables and devices that were attached to it.
3. Plug in the power cable and wait for OK on the operator panel display.
4. Turn the power on.
5. If the Console Selection screen is displayed, choose the system console.
6. Enter the appropriate password if prompted to do so.

**Does the system stop with code 26800Dxx, 45800000, 4880090A, 4B2xxx00 or 4B2xxx10 displayed on the operator panel?**

**NO** Repeat this step until all of the FRUs (adapters) are installed, then go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Go to "Step 1540-28" on page 132

---

### **Step 1540-28**

The last FRU installed or one of its attached devices is probably defective.

1. Turn the power off and remove the power cable.
2. Starting with the last installed adapter, disconnect one attached device and cable.
3. Plug in the power cable and wait for OK on the operator panel display.
4. Turn the power on.
5. If the Console Selection screen is displayed, choose the system console.
6. Enter the appropriate password if prompted to do so.

#### **Does the system stop with code 26800Dxx, 45800000, 4880090A, 4B2xxx00 or 4B2xxx10 displayed on the operator panel?**

**NO** The last device or cable that you disconnected is defective.

Exchange the defective device or cable.

Go to "Map 0410: Repair Checkout" in the Diagnostic Information for Multiple Bus Systems.

**YES** Repeat this step until the defective device or cable is identified or all the devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (last one installed)
2. I/O board (See notes on page 70)

If the symptom did not change and all the FRUs have been exchanged, return to "Step 1540-2" on page 107.

---

## Chapter 3. Power MAPs

MAP none: A60 Controller Power Problems . . . 134

### Contents

---

## MAP none: A60 Controller Power Problems

- This procedure helps you isolate power failures within the Model A14, D14, C10 or 3590 Subsystem in a rack that contains an A60 control unit.
- See the Locations, Removals, and Replacements section for check, adjustment, removal, and replacement procedures.
- See “Power Supply” on page 145 for a description of 3590 power.
- When the repair is complete, perform a power-on of the A60 and of the affected drives to ensure that they all successfully run the POST test. Refer to “End of Call” on page 354. for procedures.
- If the recommended repair actions do not fix the problem, call your next level of support.
- At the completion of a call go to “End of Call” on page 354.

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 installed in a 3494 Library?**

Yes No

**002**

**Is this device a Model A14 or a Model C10 with an A60 installed?**

Yes No

**003**

**Is this device a 3590 Subsystem in a rack with an A60 installed?**

Yes No

**004**

You are working on a device that this MAP cannot handle. Go to the IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0, P/N 05H9018, MAP section to isolate the power problem.

**005**

Continue at Step 028 on page 137.

---

**006**

The Model A14 and C10 power problems are handled in this MAP. Continue at Step 008 on page 135 .

---

**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

You are here to isolate a power problem in a Model A14 or C10 that contains a A60. The Model A14 and C10 have an Operator Panel that has a part in controlling power to the device.

Observe the Operator Panel on Model A14/C10 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 137

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. 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 A60 power problem, go to "MAP 1520: Power" on page 87. For a 3590 drive problem, go to the IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0 MAP section to isolate problem.

When the repair is complete, go to "End of Call" on page 354.

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 on page 136 .

## MAP none (continued)

**014**

Power is OK at the output of the PCC.

**Is the problem...The A60 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, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0 MAP section.

**016**

For the A60, continue isolation of the problem at "MAP 1520: Power" on page 87

**017**

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 145 for power requirements.
2. The power cord 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**

**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 354.

**020**

Replace the following FRUs in the order listed:

1. Operator panel
2. PCC

Go to "End of Call" on page 354.

---

**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 354.

**023**

A power problem still exists; Go to Step 025.

---

**024**

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 354.

---

**025**

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 354.

**027**

Replace the following FRUs in the order listed:

1. Operator panel
2. PCC

Go to “End of Call” on page 354.

---

**028**

You are here to isolate a power problem in a 3590 Subsystem in a rack with a A60 ilnstalled?

**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 138

**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.

## MAP none (continued)

**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:

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 A60 power problem, go to "MAP 1520: Power" on page 87 for isolation and repair. For a 3590 drive problem, go to the IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0 MAP section for isolation.

When the repair is complete, go to "End of Call" on page 354.

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 A60 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, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0 MAP section.

036

For the A60, continue isolation of the problem at "MAP 1520: Power" on page 87.

---

037

The device fails to power off when the device is powered off. Replace the PCC.  
Go to "End of Call" on page 354.

---

038

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

## MAP none (continued)

1. There is correct AC voltage at the source. Refer to "Power Supply" on page 145 for power requirements.
2. The power cord 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 354.

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

Call your next level of support.

---

**MAP none (continued)**

---

## Chapter 4. Introduction

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## 3590 A60 Controller Introduction

---

### Overview of the 3590 Model A60 Controller

The A60 Controller controller is the new 3590 tape subsystem host attachment for the 3590 tape drives.

#### A60 Controller Supported Packaging

- A14 Feature is a stand-alone frame with 4 (four) 3590 drives with ACFs and a model A60 control unit
- D14 feature is in the 3494 DateServer D frame with 4 (four) 3590 drives and a A60 control unit
- C10 is a standalong frame to be used with the Stealth Silo. The C10 can contain up to three (3) A60 Controllers

#### A60 Controller Supported Host Attachments

- ESCON (0 to 4 interfaces)

#### A60 Controller Supported Drives

- 3590 Model B1X (SCSI-2 or Ultra-SCSI)
- 3590 Model E2X

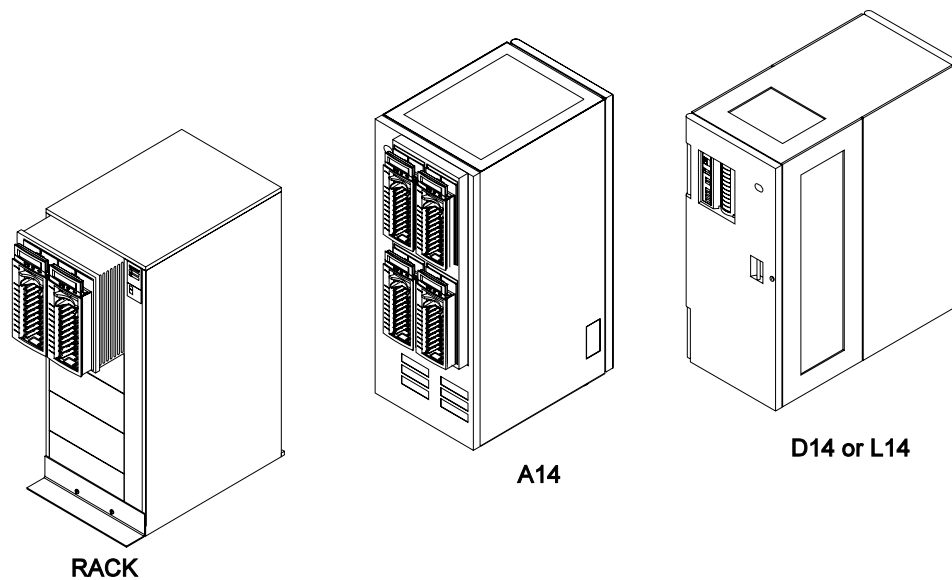


Figure 1. 3590 Model A60 Controller

See Figure 1.



---

## RAS Characteristics

### Availability

- The 3590 model A60 in addition to the SIM/MIM messages, supports Service Request Numbers (SRNs).
- Predictive maintenance (catches hardware and media problems before they are evident) via SIM/MIM.
- The 3590 A60 model has 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 A60 Service Terminal.

**Note:** The service terminal can either be a MoST carried by the Customer Engineer or the Library Manager in the 3494 Dataserver.

- Using the Service Terminal, there will be a combination of RS/6000 SMIT menus and unique A60 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 A60 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 A60 Controller Unit is 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.
- Non-disruptive microcode update from the A60 model control unit for the drives, FICON, ESCON and SCSI adapters.
- Control Unit code will require the entire subsystem down to update.
- The A60 control unit has microcode update via a CD ROM. For AIX code Reload/Upgrade a CD ROM is also used (**refer to AIX Installation Guide SBOF-1803-00 to Reload/Upgrade your operating system**).
- 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 A60 control unit some SRNs will only be available by opening the covers and reading the SRN directly from the RS/6000 operator panel.

---

## 3590 A60 Maintenance Strategy

The 3590 A60 control unit 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 A60 control unit 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 model A60 control unit.

- In all A60 models remote support is available through the RS/6000 based control unit using a stand-alone modem that is purchased by the customer.
- The RAS package for the A60 uses the Service Terminal at the control unit, or the 3494 Library Manager 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

**Note:** For the Model C10 there is a separate maintenance manual that contains some A60 information, but usually refers to the A60 maintenance manual

- The drive diagnostics can be executed using the Service Terminal attached to the control unit or the Library Manager in a 3494 library.

---

## 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.

---

## Power Supply

The A60 controller has its own power supply.

### 3590 Model A14/C10 Power Panel

The 3590 model A14/C10 power panel contains the following functions: Refer to Figure 2 on page 146 for the model A14/C10 Operator Panel.

**Note:** For the other supported packaging, D14, L14, frames, the following information is contained in the respective maintenance manuals

- 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/C10

Refer to Figure 2 on page 146 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.
2. When the LED, refer to **3** is ON, power is active at both the 3590 drives and the A60 control unit

#### Controller Status LED:

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

**Note:** If the self correcting action is not successful, the LED, **4** will turned on solid.

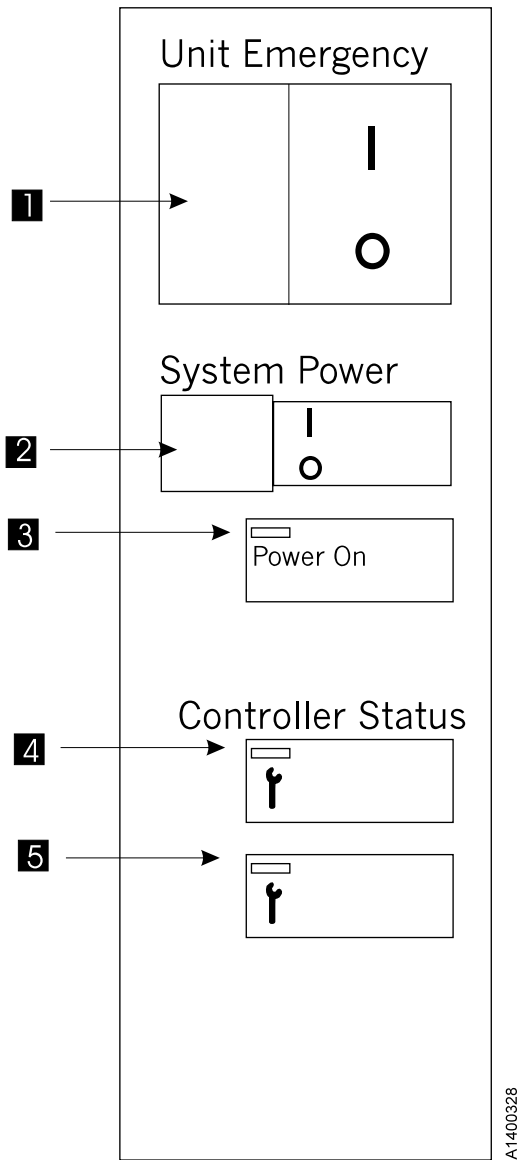


Figure 2. 3590 A14 / C10 Operator Panel

## A60 Control Unit Panel and Controls

The diagrams shown in Figure 3 on page 147 and Figure 4 on page 148 show the connections and locations of the A60 Controller.

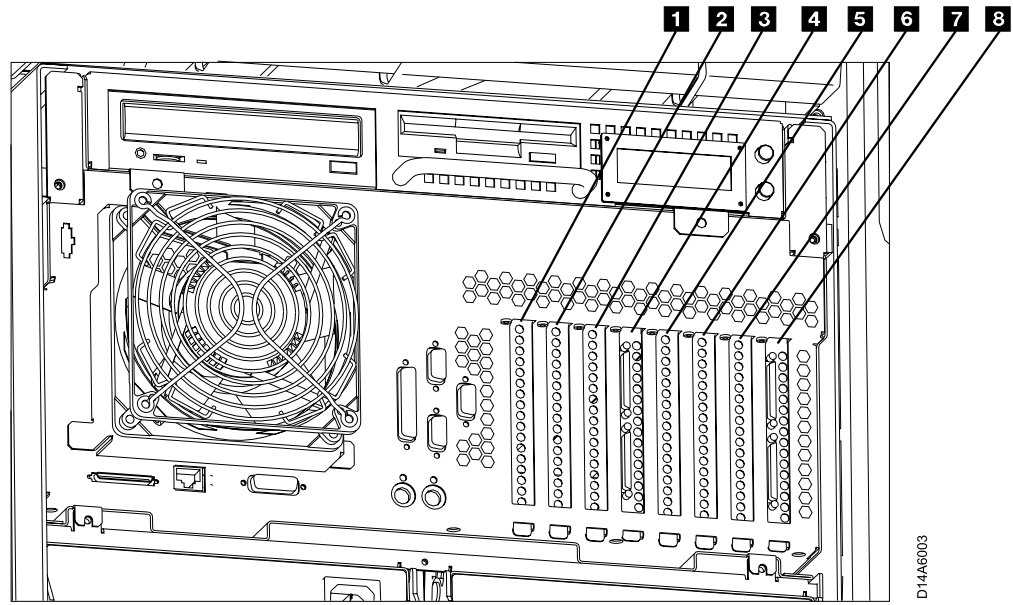
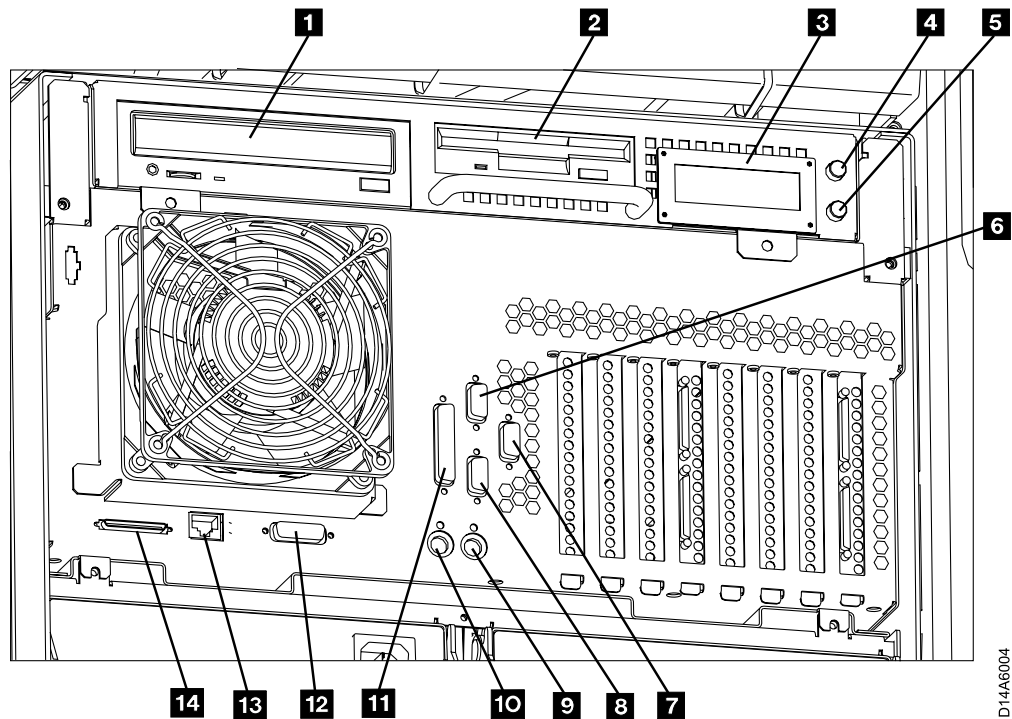


Figure 3. A60 Controller Card Slots

- Slot **1** - ESCON Host Interface
- Slot **2** - Not Used
- Slot **3** - Token Ring
- Slot **4** - SCSI Drive Interface
- Slot **5** - ESCON Host Interface
- Slot **6** - Not Used
- Slot **7** - Not Used
- Slot **8** - SCSI Drive Interface



D14A6004

Figure 4. A60 Controller Connection and Device Locations

- **1** — CD-ROM Drive
- **2** — Floppy Disk Drive
- **3** — LED Display
- **4** — Power ON/OFF Switch
- **5** — Reset Switch
- **6** — Service Terminal(Lap Top) Connection
- **7** — Unused
- **8** — Library Manager Connection
- **9** — Mouse (Not Used)
- **10** — Keyboard (Not Used)
- **11** — Monitor (Not Used)
- **12** — Ethernet (Not Used)
- **13** — LAN Connection
- **14** — SCSI Bus
- 

---

## Field Microcode Support Using the A60 Control Unit

Refer to “3590 A60 Subsystem Microcode Addition or Activation” on page 358 and “Updating 3590 Device Microcode from A60 Using TAPEUTIL” on page 385

---

## Special Tools

Special tools are shipped, purchased, or ordered; they are used to repair or maintain the A60 control unit

A Service Terminal is needed for maintenance with all A60, 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 A60 is expected to come to the account with this tool.





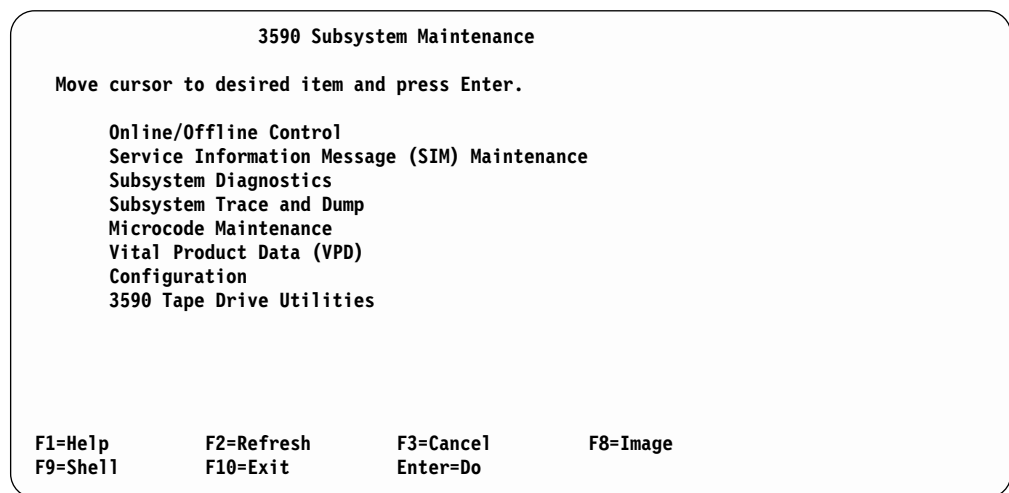
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## Chapter 5. Service Terminal

The Service Terminal for the 3590 A60 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 304.

**Note:** When the 3490 A60 control unit is part of a 3494 DataServer library, the library manager can be used for the service terminal.

The screens shown here are examples only and will be explained as needed through out the MI. See "Getting Started" on page 304



*Figure 5. Main 3590 Subsystem Maintenance Screen*

To select the **Online/Offline Control** Figure 5the cursor is moved to that line and when the enter key is depressed, the next menu shown next will be active on the screen.

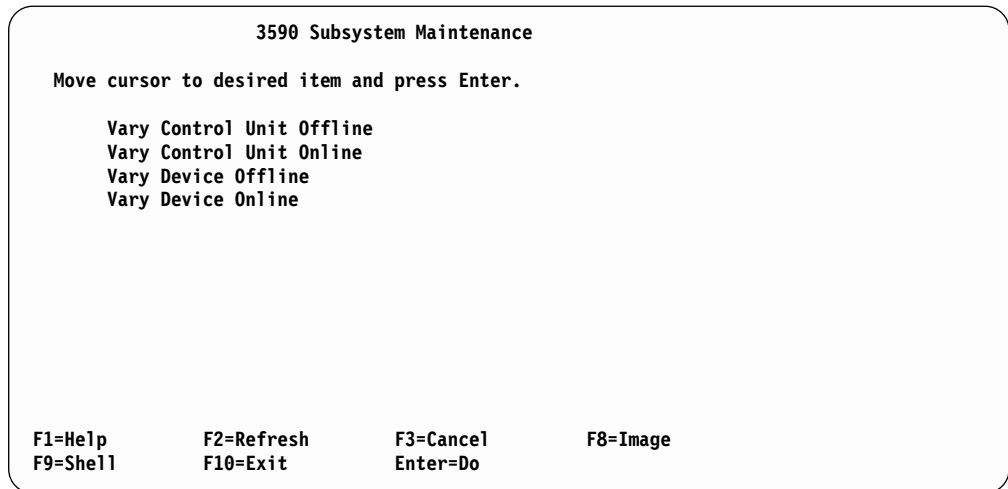


Figure 6. Online/Offline Control Screen

To select the **Service Information Message (SIM) Maintenance**, Figure 5 on page 151 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.

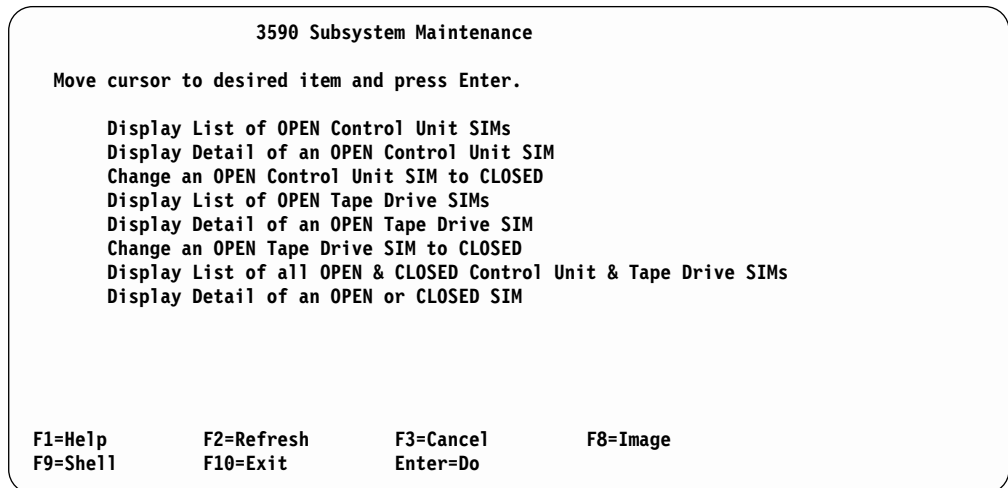


Figure 7. SIM Maintenance Screen

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## Chapter 6. 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 8) is not shipped with the subsystem and must be ordered.**

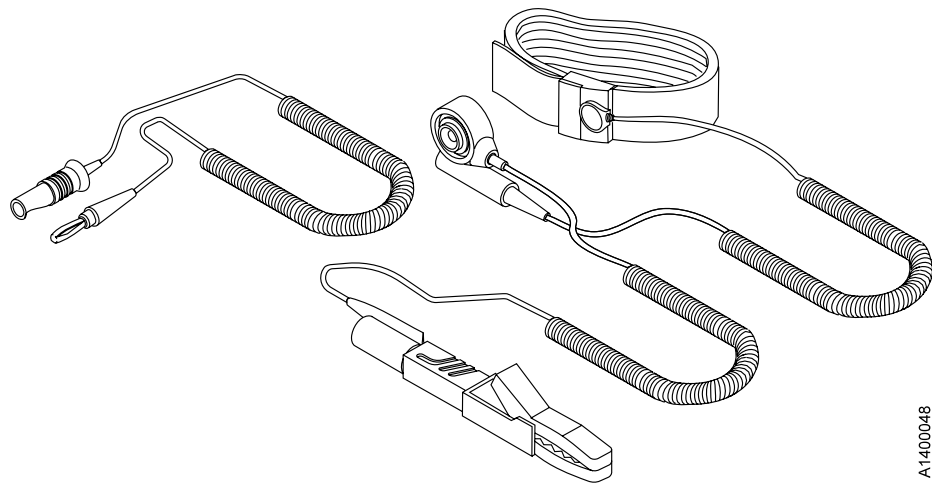


Figure 8. ESD Grounding Strap

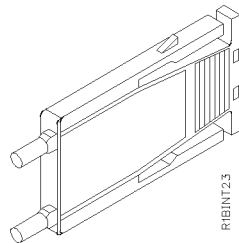


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## Chapter 7. Wrap Tool

The ESCON wrap tool P/N 5605670, is used to verify the ESCON channel in the Model A60 **This tool ( Figure 9) is a unique part and cannot be swapped with other wrap tools.**

**Note:** The A60 Controller comes with two of these tools for the ESCON adapters. When running the ESCON diagnostics, **BOTH** ESCON wrap tools must be connected for the diagnostics to run correctly.



*Figure 9. ESCON Wrap Tool*



---

## Chapter 8. 3590 Model A60 Security Controls

Customer security and data integrity on the 3590 A60 is safeguarded in several ways. The intent is to ensure the customer doesn't need to worry about unauthorized personnel viewing or altering his/her data. The RS/6000 has the following security levels for the service package and support structures.

---

### Local Access Security:

Service is performed on the A60 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 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 function

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 commands 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 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 A60'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 A60 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 400 and "Modem Initialization with Password" on page 401.



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## Chapter 9. Inspection

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### Contents

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## General Instructions

Use this checklist to ensure 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 (ImpedanceTransformer) 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).

C2

## CAUTION

The 3590 Model A60 weighs over 100 pounds; it takes two persons to safely lift this unit after both power s

## Safety Inspection Procedures

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

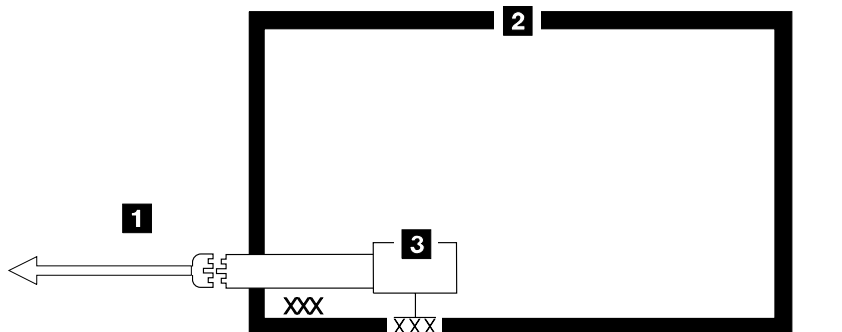
Perform the following steps:

Read all Safety information on the label before starting.

### A60 Controller AC Grounding Inspection

**Attention:** The A60 Controller is grounded in all frames where the A60 is used. Within the CU the electronics are grounded to the A60 chassis. The chassis is mounted in the enclosure frame using screws which completes the grounding circuit.

1. Power off the frame you are checking.
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 .
5. Inspect the power cable for visible cracks, wear, or damage.
6. Check that the resistance between the power cable ground and the frame is less than 0.1 ohm.



Legend:

XXX Redundant ground path to frame through DC common

XXX Ground Screw


A6000031


Figure 10. A60 Controller AC Grounding Diagram (50 Hz and 60 Hz)

### 3590 Drive AC Grounding Inspection

To check the 3590 drive AC Grounding, go to the IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0, Safety section.

## 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.

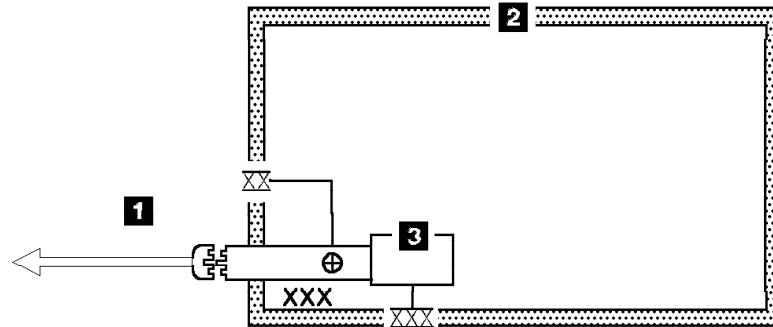
## Inspection de sécurité

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 on page 163. 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

XX 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


XX Rondelle frein dentelée externe

AV4FR040

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

## 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 없든지 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

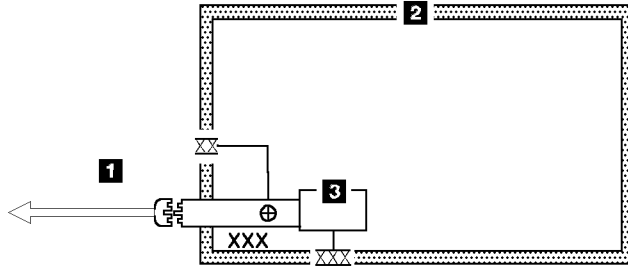
**3590** 모델 **B1A**은 **28.6** 킬로그램입니다 (**63** 파운드). 이 장치를 안전하게 들어 올리려면 두 사람이 들어야 합니다.

## 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 그라운드 다이어그램 (50 Hz 와 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

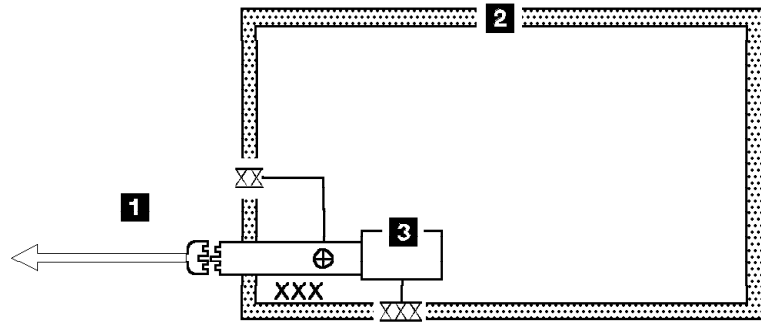
### **Procedimentos Para Inspeção de Segurança**

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 12 on page 167. 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.





Legenda:

⊗ Arruela de traba dentada externa

⊗ Fio de terra verde/amarelo com terminação para o chassi ou terra

⊕ Fio de terra verde/amarelo terminado com terminal slip-on spade


XXX Caminho de terra redundante para a estrutura


⊗ Arruela de traba dentada externa

A1HEP0410

Figure 12. Diagrama de Aterramento AC (50 Hz e 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

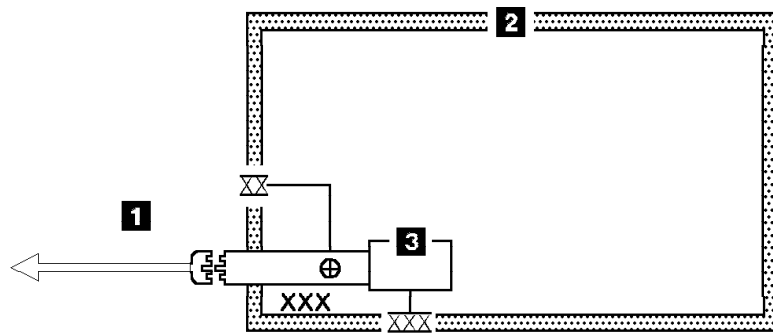
PRECAUCION La 3590 modelo B1A pesa 28.6 kilogramos (63 libras); se necesitan dos personas para levantar esta unidad sin peligro.

### 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 13. 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 estén instalados y firmes.



Explicación:

- ⊗ 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
- ⊗ Arandela de seguridad dentada externa

A14SP040

Figure 13. Diagrama de toma de tierra CA (50 Hz y 60 Hz)





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## Chapter 10. Installation

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## Before Installation

**This Install section covers the Installation of the A60 Controller in all the frames supported for the A60 Controller.**

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

**Note:** If you are installing a 3590 Model A00/A50, go to *IBM 3590 Tape Subsystem Model A00/A50 Controller*, INST section

Perform the following steps for unpacking the subsystem:

- \_\_\_ 1. If not already unpacked, unpack the A60 from the carton. If the A60 Controller is on a pallet you may want to leave it on the pallet until ready to install.

**Note:** If possible, save the packaging material for 3590 A60 Controller for reshipment or relocation.

Check to make sure that you received the following items:

- \_\_\_ 1. Appropriate power cables (2 for each A60 Controller)
- \_\_\_ 2. Appropriate ESCON cables
- \_\_\_ 3. Appropriate CU to Drive 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 A60 Controller. When the power supplies have been removed from the A60 Controller, two CE's can lift the controller.

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 A60 attachment.**

Make sure that the **ESCON** cables and **powercables** were ordered. Check that the correct length ESCON cables were ordered for connection to a host.

You may be referred to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0* for procedures that are required for the 3590 drive models, so be sure to have that book available before you begin.

---

## Tools

The following tools are contained in the ship group. Some tools in the list are in the 3494 ship group.

- One **SCSI wrap block** P/N 6298964 for testing the SCSI hardware.
- Two **ESCON wraps** P/N 5605670..

---

## About Installation of the A60 Controller

The installation section of this maintenance manual covers all of the different frames and conditions that the A60 Controller is used in. **This manual covers only the 3590 A60 Controller installations** If you have 3590 tape drives to install in the same frame at this time, you will need to go the *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0* manual to do those installations. For example: *If you have an A14 frame that you are installing and the drives are installed but they need to have the ACFs installed, this maintenance manual will NOT cover the ACF installation.*

### A60 Configurations

The A60 controller allows the IBM 3590 High Performance Tape Subsystems to be directly attached to a host through an ESCON channel. The A60 provides the interface between the normally SCSI attached drives and the ESCON based host channel.

The A60 can be installed in the following environments:

#### IBM 3590 Model A14

- The A60 Controller can be factory installed
- The A60 Controller can be field upgradable from a A00 Controller
- The A60 Controller can be field upgradable from a A50 Controller

#### IBM 3494 Tape Library Model D14

- The A60 Controller can be factory installed and will only require installation checkout.
- The A60 Controller can be field upgradable from a A00 Controller
- The A60 Controller can be field upgradable from a A50 Controller

#### IBM 3590 RACK Subsystem

- The A60 Controller can be installed in a new RACK

**Note:** If installing a A60 Controller in a new RACK, you will need to go to the *IBM 3590 Tape Subsystem Models B11, B1A, E11, and E1A MI* for drive installation information.

- The A60 Controller can be field upgradable from a A00 Controller
- The A60 Controller can be field upgradable from a A50 Controller

#### IBM 3590 Model C10

- The Model C10 will come with one(1) or two(2) A60 Controllers factory installed
- The Model C10 can be field upgraded from one(1) to two(2) A60 Controllers

## Selecting the Correct A60 Controller Installation Instructions.

Go to Table 9, find the model name of the device you are here to install, and follow the installation procedures listed.

*Table 9. Installation Activity Begins Here*

<b>Feature Code or Model to be installed</b>	<b>Go To This Procedure</b>
3590 model A14 with A60 Controller factory installed	Go to "Installation Instructions for a 3590 A14 Frame" on page 175
3494 model D14 with A60 Controller factory installed	Go to "Installation Instructions for an A60 Controller in a 3494 D14 Frame" on page 184
3590 model C10 with one or two A60 Controllers factory installed	Go to "Installation Instructions for a 3590 C10 Frame" on page 197
Replacing an existing A00 with an A60 Controller in a 3590 model A14	Go to "Replacing an A00 CU with a A60 CU in a 3590 A14 Frame" on page 211
Replacing an existing A50 with an A60 Controller in a 3590 model A14	Go to "Replacing an A50 CU with a A60 CU in a 3590 A14 Frame" on page 220
Replacing an existing A00 with an A60 Controller in a 3494 model D14 or Feature Code 5304	Go to "Replacing an A00 CU with a A60 CU in a 3494 D14 Frame" on page 229
Replacing an existing A50 with an A60 Controller in a 3494 model D14 or Feature Code 5304	Go to "Replacing an A50 CU with a A60 CU in a 3494 D14 Frame" on page 237
Installing an A60 Controller in a 3494 model D14 or Feature Code 5304	Go to "Installation Instructions for Installing a A60 CU in an Existing 3494 D14 Frame" on page 245
Removing an A60 Controller from a 3494 model D14	Go to "Instructions for Removing an A60 CU from a 3494 D14 Frame" on page 250
Installing a A60 Controller in a RACK	Go to "Instructions for Installing an A60 CU in a RACK" on page 255
Replacing an existing A00 with an A60 Controller in a 3590 Rack Model	Go to "Instructions for Replacing an A00 with a A60 CU in a RACK" on page 269
Replacing an existing A50 with an A60 Controller in a 3590 Rack Model	Go to "Instructions for Replacing an A50 with a A60 CU in a RACK" on page 270
Adding a second A60 Controller in a 3590 model C10	Go to "Instructions for Adding a Second A60 CU in a 3590 C10 Frame" on page 253



# Installation Instructions for a 3590 A14 Frame

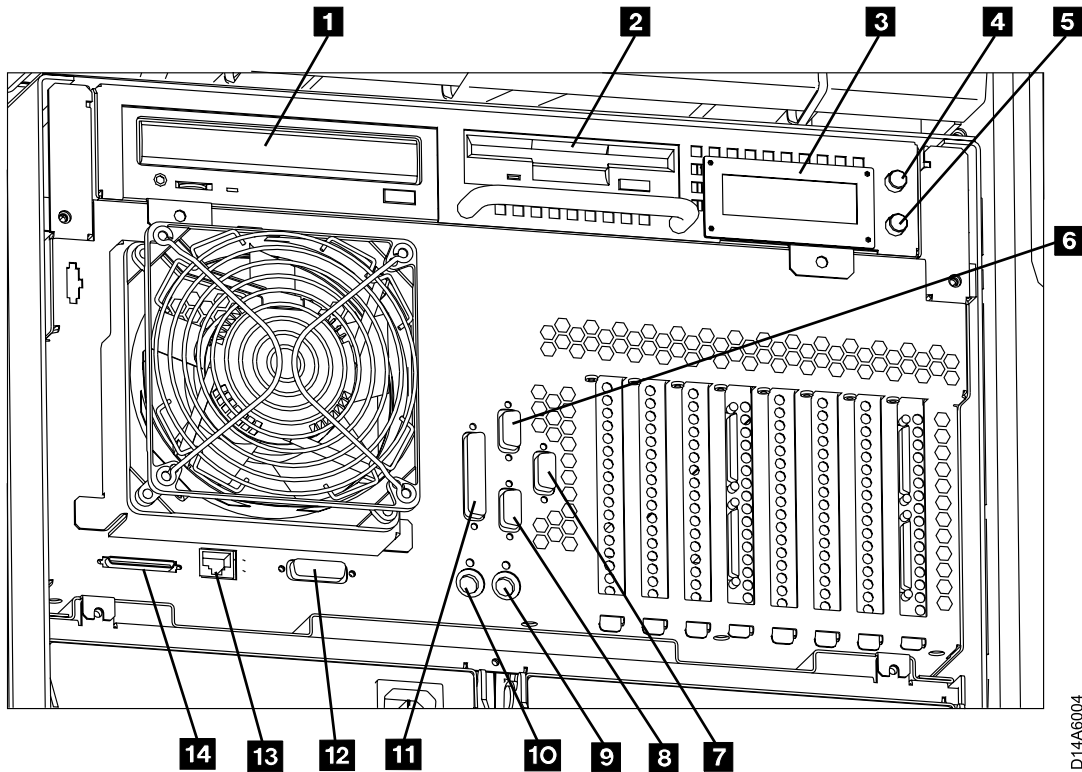
## Checking out an A14 from the Factory

**Note:** Your A14 frame may arrive at your account with a service panel installed. If the A14 you are installing contains the service panel (bulkhead), Do the following:

1. **Disconnect the cable attached to Port S1 on the A60 Controller.**
2. **Do not remove the service panel from the A14 frame, or remove the cable from the cable bundle running to the service panel**
3. **When connecting to Port S1, use the instructions found in this install section.**

Do the following checkout below:

- \_\_\_ Step 1. Power on the A60 Controller with the power on switch, see Figure 14 on page 176 **4**
- \_\_\_ Step 2. The A60 Controller should arrive from the factory with the correct AIX and microcode installed. If this A60 Controller has down level AIX or microcode, go to "Installing AIX in the A60 Control Unit Environment" on page 354 for AIX updates, and "Adding new Code Images to the A60" on page 358 for microcode updates. Return here and continue with 3.
- \_\_\_ Step 3. Continue with installation at "Setting Up EBTERM or Terminal Emulator for Setting Modem Password" on page 400 or "Setting up NetTerm Terminal Emulator (Windows 95/98 Platforms)" on page 364 to connect your Service Terminal. Return here and continue with 4
- \_\_\_ Step 4. Refer to "Running Diagnostics from the A60 Controller" on page 389 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.
  - a. Select the tape utility to access the read/write tests.
  - b. Run the write and read options.
  - c. Load and Unload tape each time.
  - d. Remove the scratch cartridge when complete.



D14A6004

Figure 14. A60 Controller Controls and Connections

- **1** — CD-ROM Drive
- **2** — Floppy Disk Drive
- **3** — LED Display
- **4** — Power ON/OFF Switch
- **5** — Reset Switch
- **6** — Service Terminal or Remote EBTERM connection to WTI switch (S1 Port)
- **7** — Remote Service connection for SLIP to WTI switch (S3 Port)
- **8** — Library Manager Connection for RS422, (FC 9061) attach (S2 Port)
- **9** — Mouse (Not Used)
- **10** — Keyboard (Not Used)
- **11** — Parallel Port
- **12** — Ethernet (Not Used)
- **13** — LAN Connection
- **14** — SCSI Bus
- 

**Diagnostic Checkout of the ESCON Adapters before Host Attach**

**CAUTION:**

The ESCON adapters used in the A60 Controller each have two ESCON ports. When running the ESCON wrap test it is necessary that both ports on the adapter have a ESCON wrap tool attached.

**Note:** These ESCON wrap tools are in the ship group.

Run the ESCON diagnostics by selecting the diagnostics and selecting the **advanced diagnostics routines**, and then **System Verification**, from this list presented select the **escon0 — escon3**.

### Attaching the Host ESCON Cable(s) to the A60 Controller

Connect the ESCON cables to the ESCON Adapters according to the service planning guide. Refer to Figure 15, **1** and **5**.

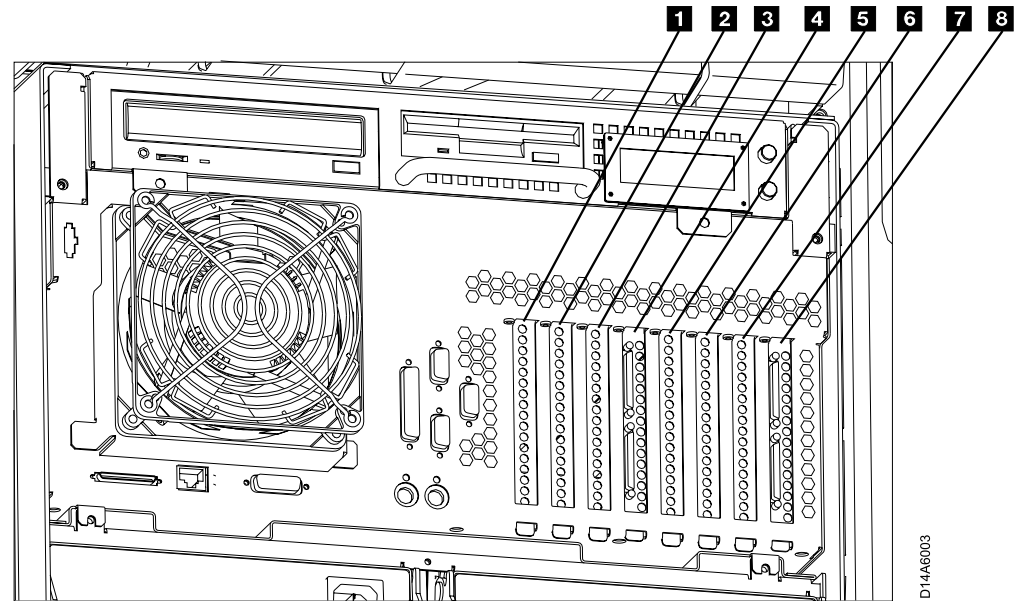


Figure 15. A60 Controller Card Slots

- Slot **1** - ESCON Host Interface
- Slot **2** - Not Used
- Slot **3** - Token Ring
- Slot **4** - SCSI Drive Interface
- Slot **5** - ESCON Host Interface
- Slot **6** - Not Used
- Slot **7** - Not Used
- Slot **8** - SCSI Drive Interface

### Remote Assistance Feature Installation using a WTI Switch

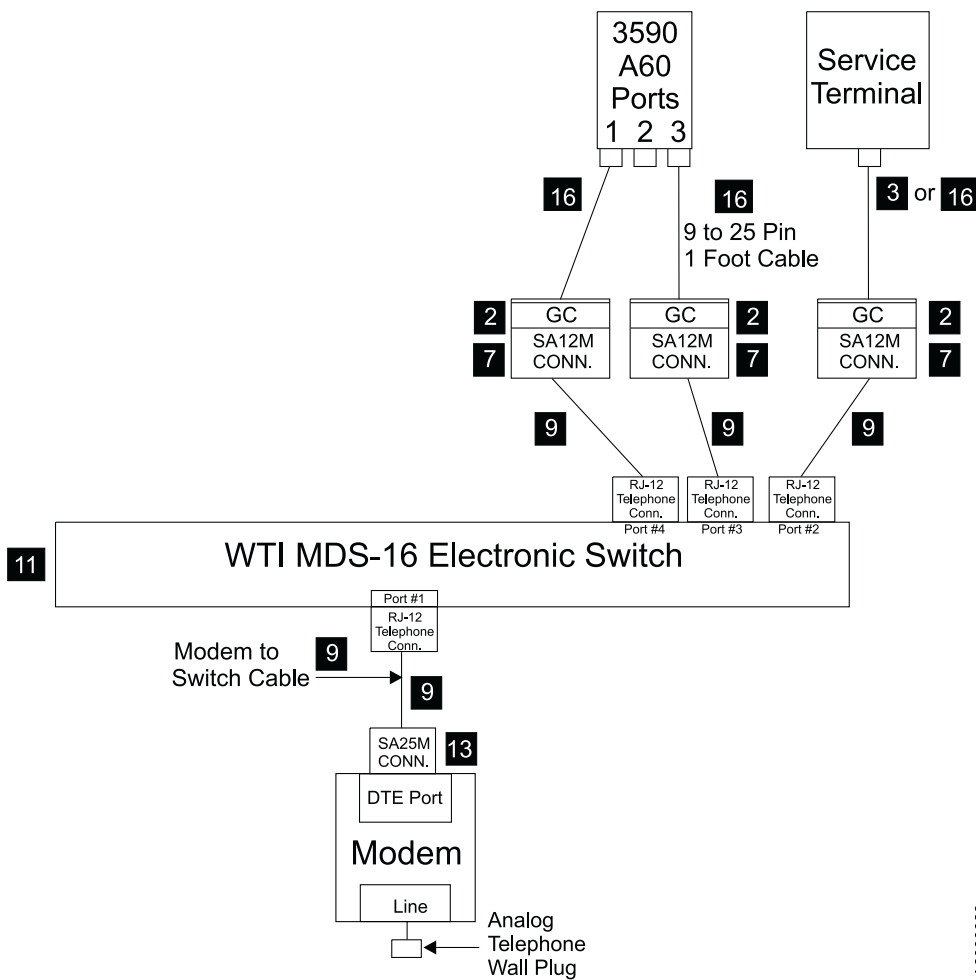
There are two remote WTI switches that can be ordered. The instructions are explained for both shown in the list below:

- If your customer has ordered the WTI — MDS switch, (refer to Figure 16 on page 178) to make the necessary connections.
- If your customer has ordered the WTI — APS switch, (refer to Figure 17 on page 180) to make the necessary connections..

- \_\_\_ 1. Install the modem near an electrical and analog telephone source, and as near to the A14 frame as possible.
- \_\_\_ 2. Install the WTI Electronic Switch in the vicinity of the A14 frame, and near the modem.
- \_\_\_ 3. See Figure 16 or Figure 17 on page 180 depending on the WTI switch installed and make the following connections as shown for the switch you are installing.

For **Remote assistance Feature Using WTI APS-16 Data Switch**, see Figure 17 on page 180

Null Modem P/N 005H7876 will be required when connecting directly from Library Manager (cable P/N 05H3299) to any of the service panel ports **Local Service**.



## Remote Assistance Feature Using WTI MDS-16 Data Switch

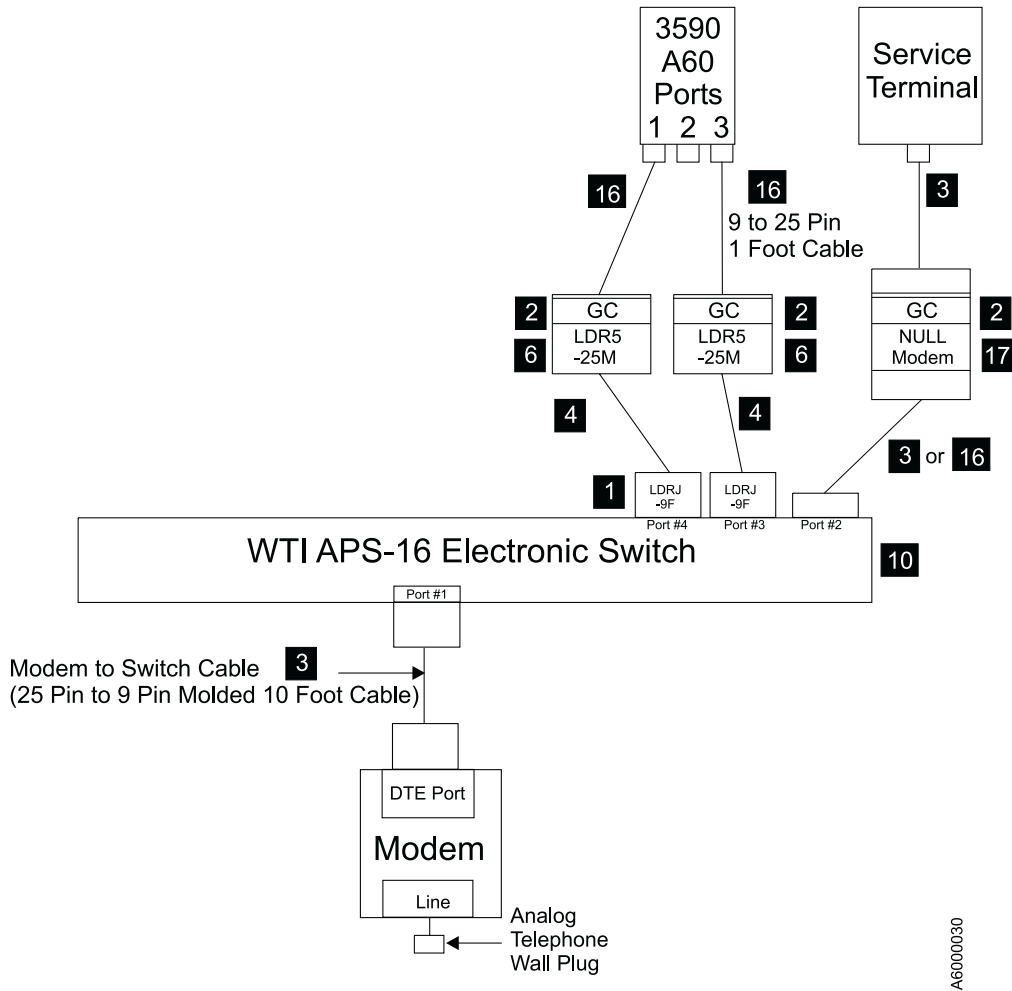
Figure 16. A60 Controller Service Panel Attachment—Remote Feature MDS Switch

### WTI MDS-16 Electronic Switch

The following list identifies the highlighted keys and the associated part number for Figure 16

- **2** Gender Changer (25 pin F-F) P/N 05H7939
- **3** Gender Changer (9 to 25 pin) P/N 05H3299

- **7** Adapter SA-12M (25 pin to RJ12) P/N 05H3357
- **9** Cable (6 conductor RJ12) P/N 05H3352
- **11** WTI Data Switch Model MDS-16 P/N 05H3350
- **13** Adapter SA-25M (25 pin to RJ12) P/N 05H3358
- **16** Cable (9 pin to 25 pin) 1 foot P/N 40H6328



A6000030

## Remote Assistance Feature Using WTI APS-16 Data Switch

Figure 17. A60 Controller Service Panel Attachment—Remote Feature APS Switch

## WTI APS-16 Electronic Switch

The following list identifies the highlighted keys and the associated part number for Figure 17 on page 180

- **1** Adapter LDRJ-9F (9 pin to RJ45) P/N 05H9745
  - **2** Gender Changer (25 pin F-F) P/N 05H7939
  - **3** Cable (9 pin to 25 pin ) P/N 05H3299
  - **4** Cable (8 conductor RJ45) 150 foot P/N 05H9744
  - **6** Adapter LDRJ-25M (25 pin to RJ45) P/N 05H9746
  - **10** WTI Data Switch Model APS-16 P/N 05H9742
  - **16** Cable (9 pin to 25 pin) 1 foot P/N 40H6328
- a. Modem analog connector to telephone plug provided by the customer.
  - b. Power cord from the modem to the customer power source. Leave the power to the modem turned off for now.
  - c. Remove any Null Modems that may be attached to the cables.
  - d. 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 MDS-16 data switch:** Refer to Table 10 on page 183

- \_\_\_ 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-12 (telephone type plug) attaches into Port #1 of the WTI electronic switch.
- \_\_\_ 2. locate the "Setup" switches on the back of the WTI Electronic Switch and set according chart .
- \_\_\_ 3. Continue at "Common Procedures for both Models of data switch".

**If installing WTI Model APS-16 data switch:** Refer to Table 10 on page 183

- \_\_\_ 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. Locate the "Setup" switches on the back of the WTI Electronic Switch and set according to chart, see Table 10 on page 183.
- \_\_\_ 3. Continue at "Common Procedures for both Models of data switch".

**Common Procedures for both Models of data switch:** Refer to Table 10 on page 183

- \_\_\_ 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 366 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 366, 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 A60 Controller to ensure that the switch and modem is working properly.
- \_\_\_ 7. Return to the step that sent you here.



Table 10. Matrix for WTI Switch Settings for 3590–Axx and 3494–Bxx Controllers

	<b>One A60 Controller directly attached to modem, with no WTI Switch</b>	<b>Only Axx's on WTI Switch</b>	<b>Only Bxx's on WTI Switch</b>	<b>Mixed Axx's and Bxx's on WTI Switch</b>
Modem Settings	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-Bxx set up string (38400 baud).  LCD display on modem will show 28.8.	Use 3494-Bxx 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 181	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 181	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 Port 1 (S10 connection to a baud rate of 9600 and handshake to xon.	None required	Use WTI /p command to change ONLY the Axx Port 1 (S10 connection to a baud rate of 9600 and handshake to xon.

This completes the Installation checkout. Return to the process that sent you to the 3590 Model A60 Controller MI.

# Installation Instructions for an A60 Controller in a 3494 D14 Frame

## Checking out of the D14 from the Factory

Do the following checkout below:

- \_\_\_ Step 1. Make sure that the breakers on the PCC are on and that you have power to the D14 frame. If power is not present, go to *IBM 3494 Tape Library Dataserver Maintenance Information, Form number SA37-0407-00*.
- \_\_\_ Step 2. Display must read "OK" before powering on.
- \_\_\_ Step 3. Power on the A60 Controller with the power on switch, refer to Figure 18 on page 185 **4**
- \_\_\_ Step 4. The A60 Controller should arrive from the factory with the correct AIX and microcode installed. If this A60 Controller has down level AIX or microcode, go to "Installing AIX in the A60 Control Unit Environment" on page 354 for AIX updates, and "Adding new Code Images to the A60" on page 358 for microcode updates. Return here and continue with 5.
- \_\_\_ Step 5. Continue with installation at "Setting Up EBTERM or Terminal Emulator for Setting Modem Password" on page 400 or "Setting up NetTerm Terminal Emulator (Windows 95/98 Platforms)" on page 364 to connect your Service Terminal. Return here when complete and continue with 6
- \_\_\_ Step 6. Refer to "Running Diagnostics from the A60 Controller" on page 389 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.
  - a. Select the tape utility to access the read/write tests.
  - b. Run the write and read options.
  - c. Load and Unload tape each time.
  - d. Remove the scratch cartridge when complete.

## Attaching the 3494 Library Manager Cable(s) to the A60 Controller

The cables from the Lxx frame should have been installed and routed to the D14 frame using the *IBM 3494 Tape Library Dataserver Maintenance Information, Form number SA37-0407-00*. If the RS422 and or LAN cables are not at the D14 frame, return to the Library Dataserver MI for the connections and routing from the LM to the D14. Return here to continue when complete.

- \_\_\_ Step 1. Run the LM cables (RS-422/LAN) to the lower rear of the D14 frame on the right side.
- \_\_\_ Step 2. Install the cables in SCSI service loop and up the left side and across top of fan support.

**Note:** Make sure the LM cables are long enough to allow the A60 Controller to slide out for service.

- \_\_\_ Step 3. Refer to Figure 18 on page 185, **8** and attach the RS-422 in the connector shown
- \_\_\_ Step 4. If this subsystem is using a LAN connection, refer to Figure 18 on page 185, **13** and attach the LAN in the connector shown
- \_\_\_ Step 5. Go to "Configuring the LAN for the A60 Controller" on page 411 to set up the A60 Controller, and return here when complete.

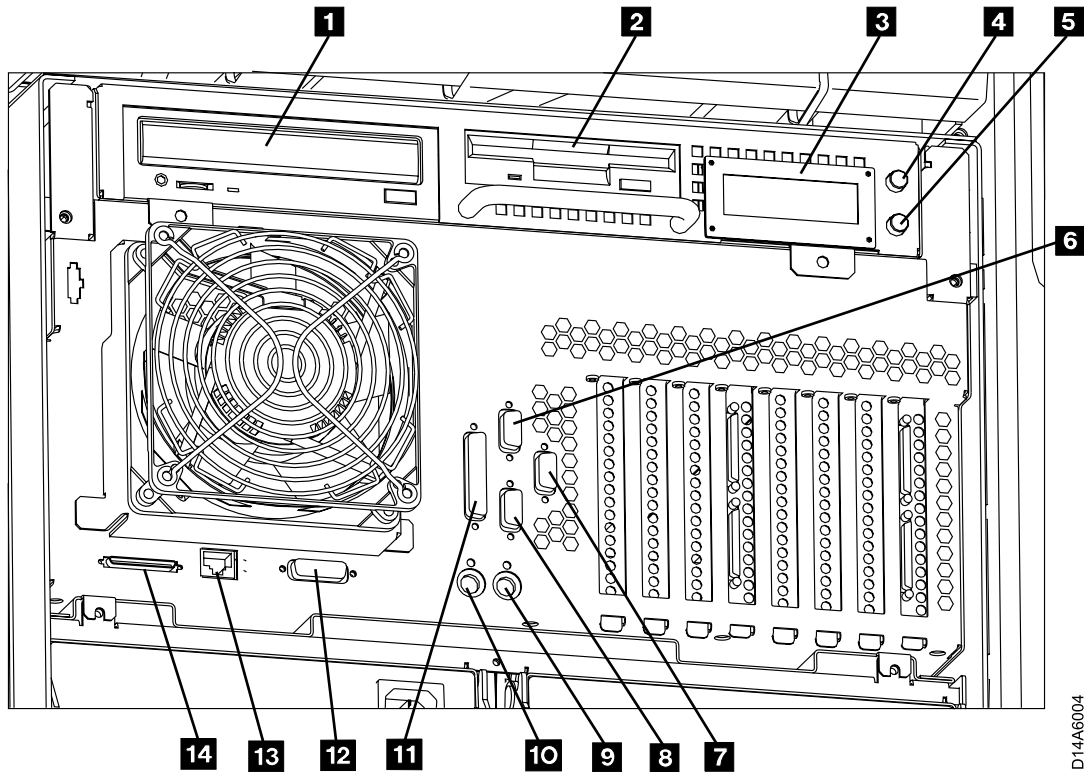


Figure 18. A60 Controller Controls and Connections

- **1** — CD-ROM Drive
- **2** — Floppy Disk Drive
- **3** — LED Display
- **4** — Power ON/OFF Switch
- **5** — Reset Switch
- **6** — Service Terminal or Remote EBTERM connection to WTI switch (S1 Port)
- **7** — Remote Service connection for SLIP to WTI switch (S3 Port)
- **8** — Library Manager Connection for RS422 FC 9061 attach (S2 Port)
- **9** — Mouse (Not Used)
- **10** — Keyboard (Not Used)
- **11** — Parallel Port
- **12** — Ethernet (Not Used)
- **13** — LAN Connection
- **14** — SCSI Bus

### Diagnostic Checkout of the ESCON Adapters before Host Attach

#### CAUTION:

The ESCON adapters used in the A60 Controller each have two ESCON ports. When running the ESCON wrap test it is necessary that both ports on the adapter have a ESCON wrap tool attached.

**Note:** These ESCON wrap tools are in the ship group.

Run the ESCON diagnostics by selecting the diagnostics and selecting the **advanced diagnostics routines**, and then **System Verification**, from this list presented select the **escon0 — escon3**.

## Attaching the Host ESCON Cable(s) to the A60 Controller

Connect the ESCON cables to the ESCON Adapters according to the service planning guide. Refer to Figure 19. The ESCON Adapters are in slots **1** and **5**.

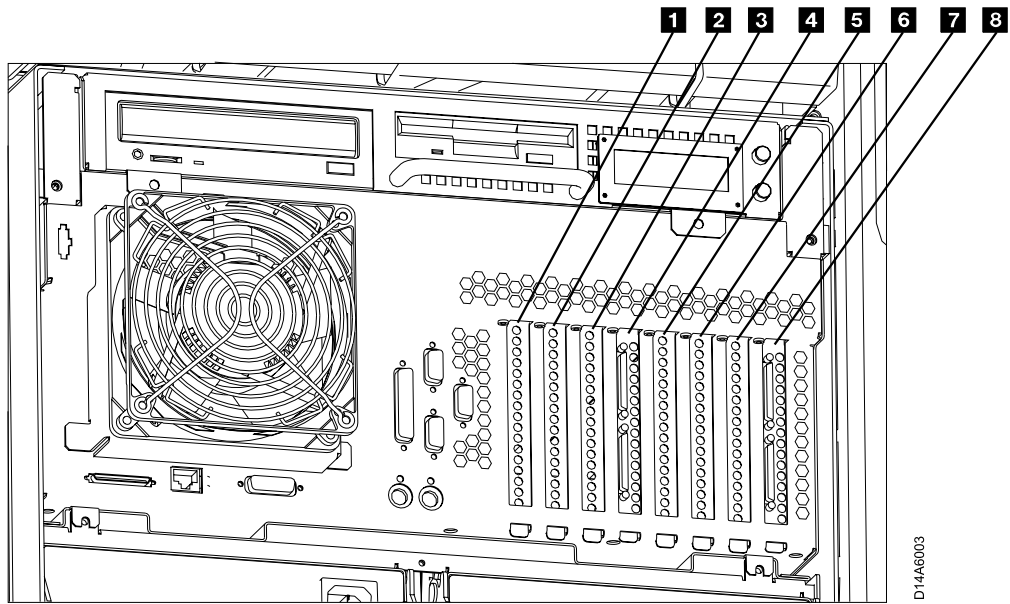


Figure 19. A60 Controller Card Slots

- Slot **1** - ESCON Host Interface
- Slot **2** - Not Used
- Slot **3** - Token Ring
- Slot **4** - SCSI Drive Interface
- Slot **5** - ESCON Host Interface
- Slot **6** - Not Used
- Slot **7** - Not Used
- Slot **8** - SCSI Drive Interface

## Setting up the Library with the new A60 Controller

**Attention:** 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 SLIP Connection 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 A60 Installation Checkout Procedure", go to "Installation Checkout" on page 196.

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

### **Service Bulkhead 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 A60 Controller is installed in D14 frames that are attached to a L10 or L12 frame (without an additional Model A60 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 20 on page 188)
2. Remote Assistance Feature (see Figure 21 on page 191)

The service panel provides a single point in the Lxx frame where all A60 Controllers installed in D14 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 A60 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 A60 Controller attached to that particular position may be checked out remotely. The Remote Assistance feature allows the A60 Controller 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 A60 Controller 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.

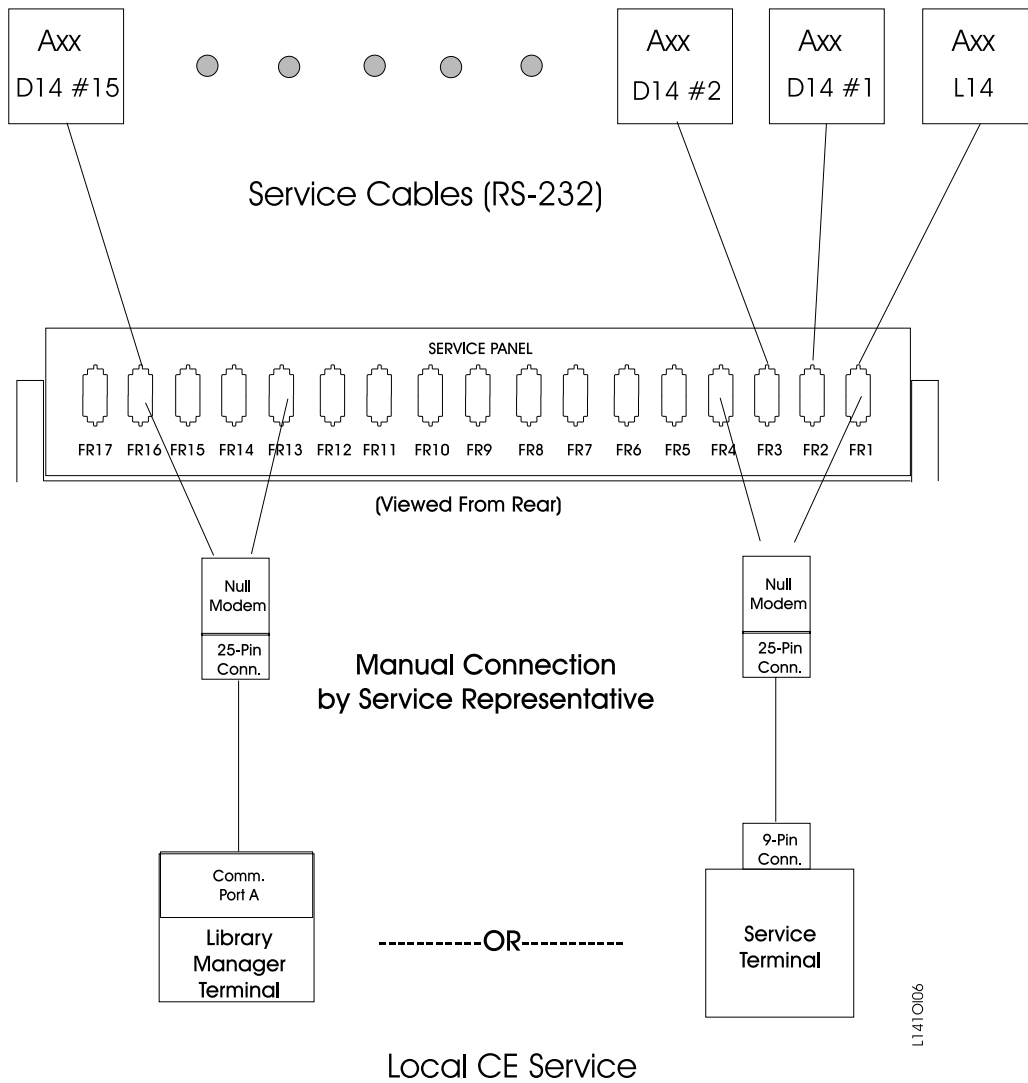


Figure 20. A60 Controller Service Panel Attachment—Local CE Service(new style)

### 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 22 on page 192 for attachment of the service terminal or library manager terminal, and Figure 21 on page 191 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 400 or "Modem Initialization with Password" on page 401 and ensure that the next level of support can access the device through the modem.

## Remote Assistance Feature Installation

**Note:** The service panel hardware was installed and RS-232, or RS-422 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 figures explain how the connections are made for both feature codes shown in the list below:

- If your customer has ordered the Remote Assistance feature, code 2710, (refer to Figure 21 on page 191) and perform the following:
  - \_\_\_ 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 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.



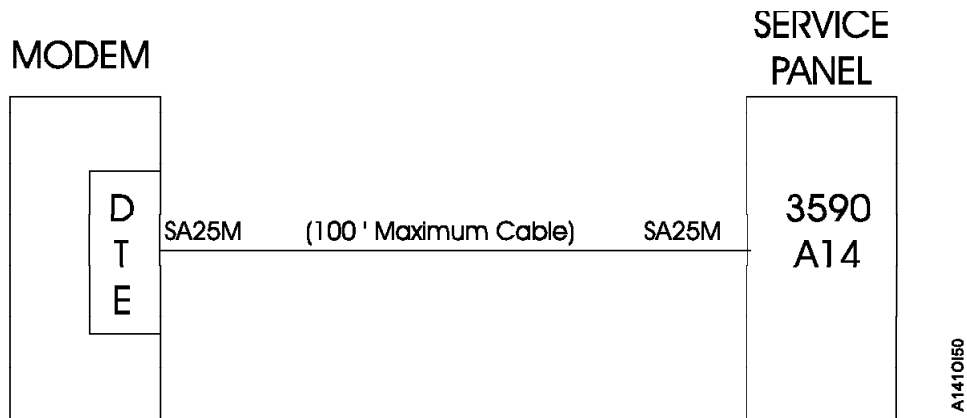


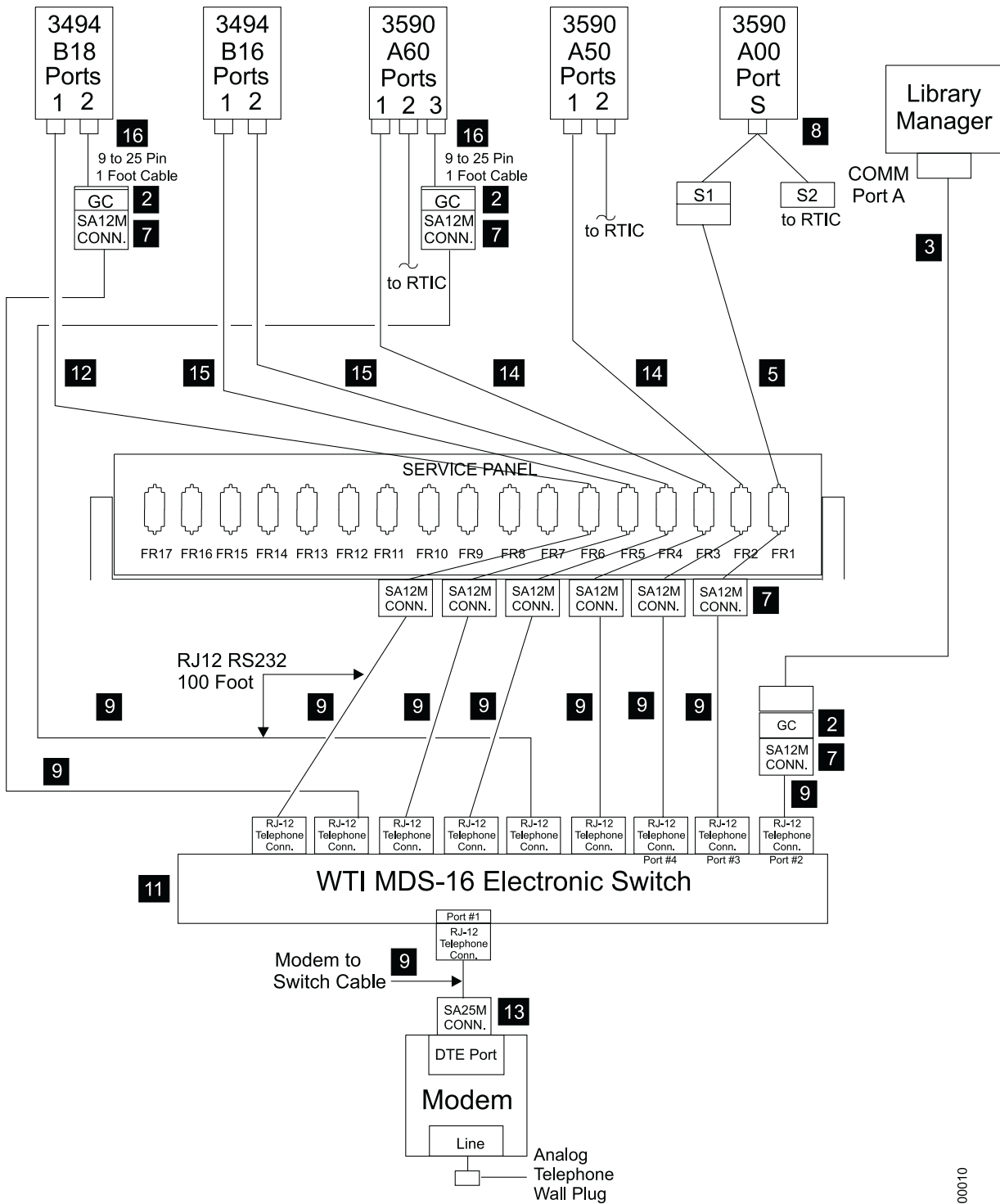
Figure 21. A60 Controller Remote Service Panel Attachment using feature code 2710.

- \_\_\_ 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 22 on page 192 and attach the following cables as shown in the drawing.

#### WTI MDS-16 Electronic Switch

The following list identifies the highlighted keys and the associated part number for Figure 22 on page 192

- **2** Gender Changer P/N 05H7939
- **3** Cable P/N 05H3299
- **5** Cable RS232 P/N 05H7878
- **7** Snap Adapter SA12M P/N 05H3357
- **8** Special 'Y' Cable P/N 31F4590
- **9** Cable RJ12 P/N 05H3352
- **11** MDS-16 Data Switcher P/N 05H3350
- **12** Cable P/N 05H8743
- **13** Snap Adapter SA-25M P/N 05H3358
- **14** Cable P/N 05H2943
- **15** Cable P/N 05H7878
- **16** Cable P/N 40H6328



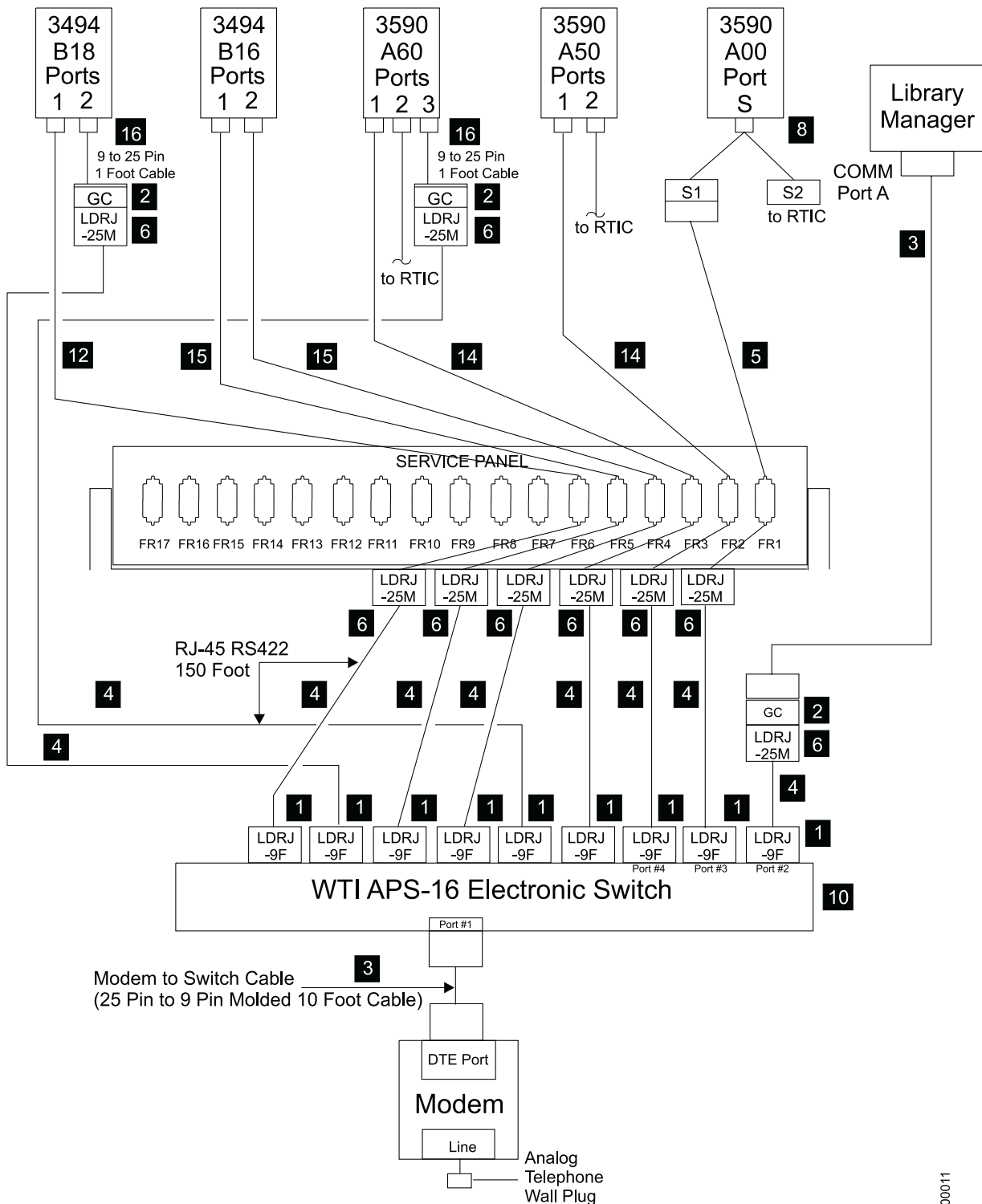
### Remote Assistance Feature Using WTI MDS-16 Data Switch

Figure 22. A60 Controller Service Panel Attachment—Remote Feature MDS Switch

For "Optional Configuration Settings" for **Remote assistance Feature Using WTI APS-16 Data Switch**, see Figure 23 on page 193

Null Modem P/N 005H7876 will be required when connecting directly from Library Manager (cable P/N 05H3299) to any of the service panel ports.

A6000010



### Remote Assistance Feature Using WTI APS-16 Data Switch

Figure 23. A60 Controller Service Panel Attachment—Remote Feature WTI Switch

A6000011

## WTI APS-16 Electronic Switch

The following list identifies the highlighted keys and the associated part number for Figure 23 on page 193

- **1** Snap Adapter LDRJ-9F P/N 05H9745
- **2** Gender Changer P/N 05H7939
- **3** Cable P/N 05H3299
- **4** Cable P/N 05H9744
- **5** Cable RS232 P/N 05H7878
- **6** Snap Adapter LDRJ-25M P/N 05H9746
- **8** Special "y" Cable P/N 31F4590
- **10** APS-16 Data Switcher P/N 05H9742
- **12** Cable P/N 05H8743
- **14** Cable P/N 05H2943
- **15** Cable P/N 05H7878
- **16** Cable P/N 40H6328

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).

- a. Attach modem analog connector to telephone plug provided by the customer.
- b. Plug power cord from the modem to the customer power source. Leave the power to the modem turned off for now.
- c. Remove any Null Modems that may be attached to the cables.
- d. 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 MDS-16 data switch:** Refer to Figure 22 on page 192

- \_\_\_ 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-12 (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 23 on page 193.
- \_\_\_ 3. locate the "Setup" switches on the back of the WTI Electronic Switch and set according chart Table 11 on page 196.
- \_\_\_ 4. Continue at "Common Procedures for both Models of data switch" on page 195.

**If installing WTI Model APS-16 data switch:** Refer to Figure 23 on page 193

- \_\_\_ 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 23 on page 193.
- \_\_\_ 3. Locate the "Setup" switches on the back of the WTI Electronic Switch and set according to chart, see Table 11 on page 196.
- \_\_\_ 4. Continue at "Common Procedures for both Models of data switch".

**Common Procedures for both Models of data switch:** Refer to Figure 23 on page 193

- \_\_\_ 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 366 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 366.
- \_\_\_ 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) A60 Controller to ensure that the switch and modem is working properly.

Table 11. Matrix for WTI Switch Settings for 3590–Axx and 3494–Bxx Controllers

	One A60 Controller directly attached to modem, with no WTI Switch	Only Axx's on WTI Switch	Only Bxx's on WTI Switch	Mixed Axx's and Bxx's on WTI Switch
Modem Settings	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-Bxx set up string (38400 baud).  LCD display on modem will show 28.8.	Use 3494-Bxx 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 195	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 195	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 Port 1 (S10 connection to a baud rate of 9600 and handshake to xon.	None required	Use WTI /p command to change ONLY the Axx Port 1 (S10 connection to a baud rate of 9600 and handshake to xon.

### Installation Checkout

You are now ready to check the connection to the SCSI drive and the ESCON interfaces. To do this, run the diagnostics programs from the Library Manager in the 3494 Dataserver.

This completes the Installation checkout. Return to the process that sent you to the IBM 3590 Tape Subsystem Model A00/A50 Controller 3590 Model A60 Controller MI.

# Installation Instructions for a 3590 C10 Frame

## Checking out a C10 Frame from the Factory

**Connecting the SCSI cables from the C10 to the C12/C14 Frames.:** In this section refer to Figure 24 on page 199 for the A60 Controller to C12/C14 drive SCSI connections.

This C10 frame was shipped from the factory with either ONE or TWO A60 Controllers installed. When doing the checkout below, if you have TWO A60 Controllers you will need to do the individual steps for each of the A60 Controller control unit.

**Note:** Your C10 frame may arrive at your account with a service panel installed. If the C10 you are installing contains the service panel (bulkhead), Do the following

1. Disconnect the cable attached to Port S1 on the A60 Controller.
2. Do not remove the service panel from the C10 frame, or remove the cable from the cable bundle running to the service panel
3. When connecting to Port S1, use the instructions found in this install section.

Before starting the actual check out of the C10 frame, the C12 or C14 must be prepared for the correct SCSI cabling and connected to an A60 Controller. In the following steps, you will connect the C12 or C14 to the A60 Controller.

### Notes:

1. Notice that the new SCSI cable has a different type of connector on each end, the small connector attaches to the A60 Controller and the large connector attaches to the drive. If your C12/C14 contains 1 or 2 drives, you will receive a pair of 18 meter control unit to drive cables, P/N 09L5110. Label one of these cables 0 and the other cable 1 (place the Labels on both ends of the cable).
2. If your C12/C14 contains 3 or 4 drives, you will receive a second pair of new controller unit to drive cables. Label the cables, P/N 05H4650, 2 and 3 (place the Labels on both ends of the cable).

Table 12. C12/C14 3590 Drive SCSI Termination

Number of 3590 Drives	Drive Termination
One Drive	(2) terminators piggy backed on drive 3 SCSI cables
Two Drives	(2) terminators piggy backed on drive 2 SCSI cables
Three Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 2 SCSI cables
Four Drives	(2) terminators piggy backed on drive 0 SCSI cables and (2) terminators piggy backed on drive 2 SCSI cables

- \_\_\_ Step 1. If you have new C12 or C14 shipped from the factory it will already have the correct internal SCSI cabling, skip to 7 on page 198
- \_\_\_ Step 2. Your C12 must be set up with the SCSI cabling to have the lower two drives separated from the upper two drives. Refer to Figure 24 on page 199 to see how the drives are to be for connection with the A60 Controller.
- \_\_\_ Step 3. Connect the A60 Controller to either the C12 or the C14 as shown in Figure 24 on page 199. Connecting the CU SCSI cable Labeled 1 to the lower SCSI adapter in slot 8, refer to Figure 28 on page 203.

- \_\_\_ Step 4. Connect the A60 Controller to either the C12 or the C14 as shown in Figure 24 on page 199. Connecting the CU SCSI cable Labeled 3 to the upper SCSI adapter in slot 8, refer to Figure 28 on page 203.
- \_\_\_ Step 5. Connect the A60 Controller to either the C12 or the C14 as shown in Figure 24 on page 199. Connecting the CU SCSI cable Labeled 0 to the lower SCSI adapter in slot 4, refer to Figure 28 on page 203.
- \_\_\_ Step 6. Connect the A60 Controller to either the C12 or the C14 as shown in Figure 24 on page 199. Connecting the CU SCSI cable Labeled 2 to the upper SCSI adapter in slot 4, refer to Figure 28 on page 203.
- \_\_\_ Step 7. Run the 4 SCSI cables from the C10 frame to the C12 or C14 frame under the floor if your installation is in a raised floor. Figure 26 on page 201
- \_\_\_ Step 8. Connect the SCSI cable Labeled 1 on drive 1 to port 1, refer to Figure 24 on page 199.
- \_\_\_ Step 9. Connect the SCSI cable Labeled 3 to port 1 on drive 3, refer to Figure 24 on page 199.
- \_\_\_ Step 10. Connect the SCSI cable Labeled 0 to port 0 on drive 1, refer to Figure 24 on page 199.
- \_\_\_ Step 11. Connect the SCSI cable Labeled 2 to port 0 on drive 3, refer to Figure 24 on page 199.
- \_\_\_ Step 12. 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. Address the 3590 drives according to the table shown in Table 13.

Table 13. 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

- \_\_\_ Step 13. If you have a second A60 Controller, refer to Figure 25 on page 200 showing the 2nd CU and repeat steps 2 on page 197 to 11 for the second C12 or C14 frame.
- \_\_\_ Step 14. Using the cable ties, bundle the cables in the C12 and or C14



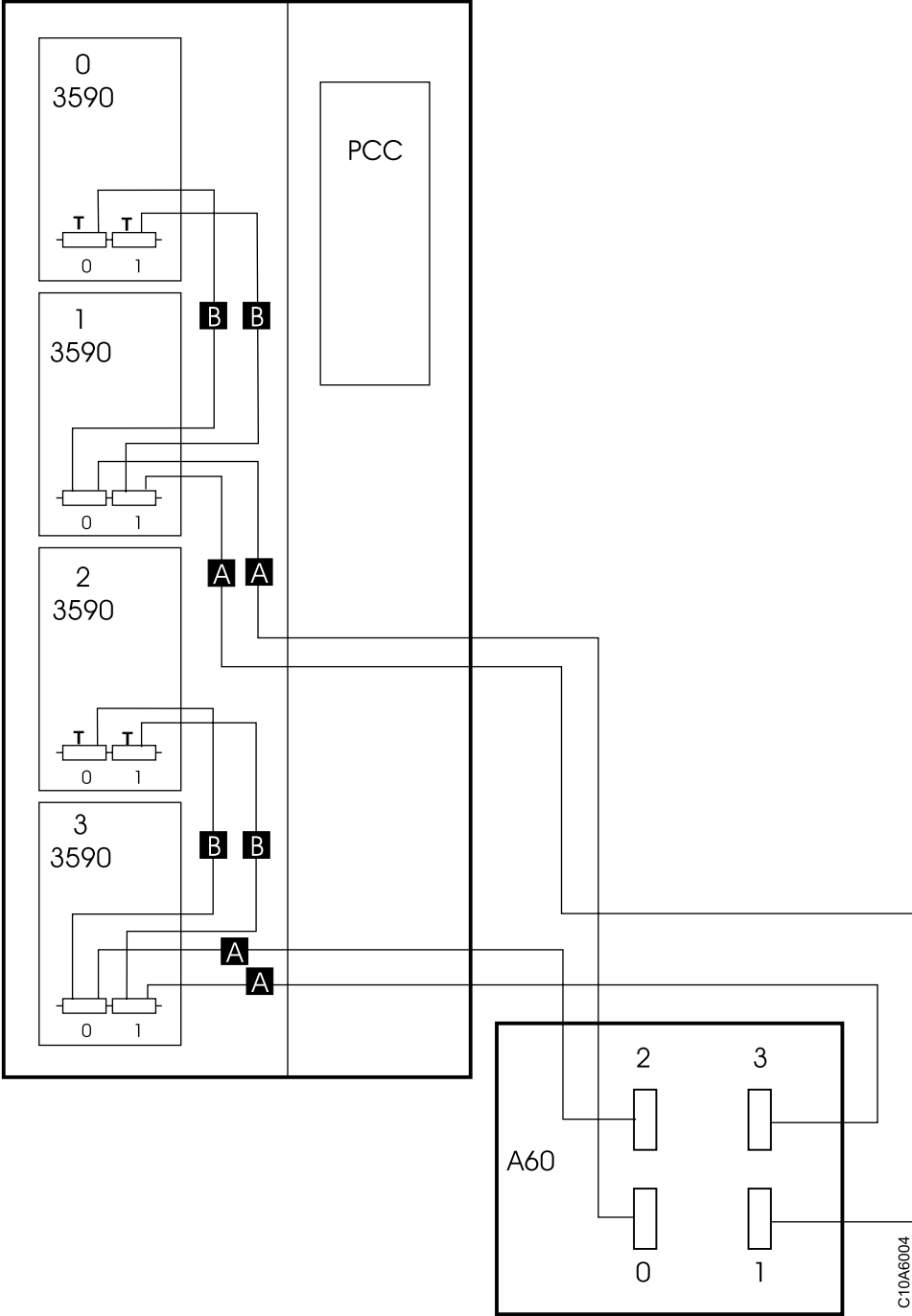
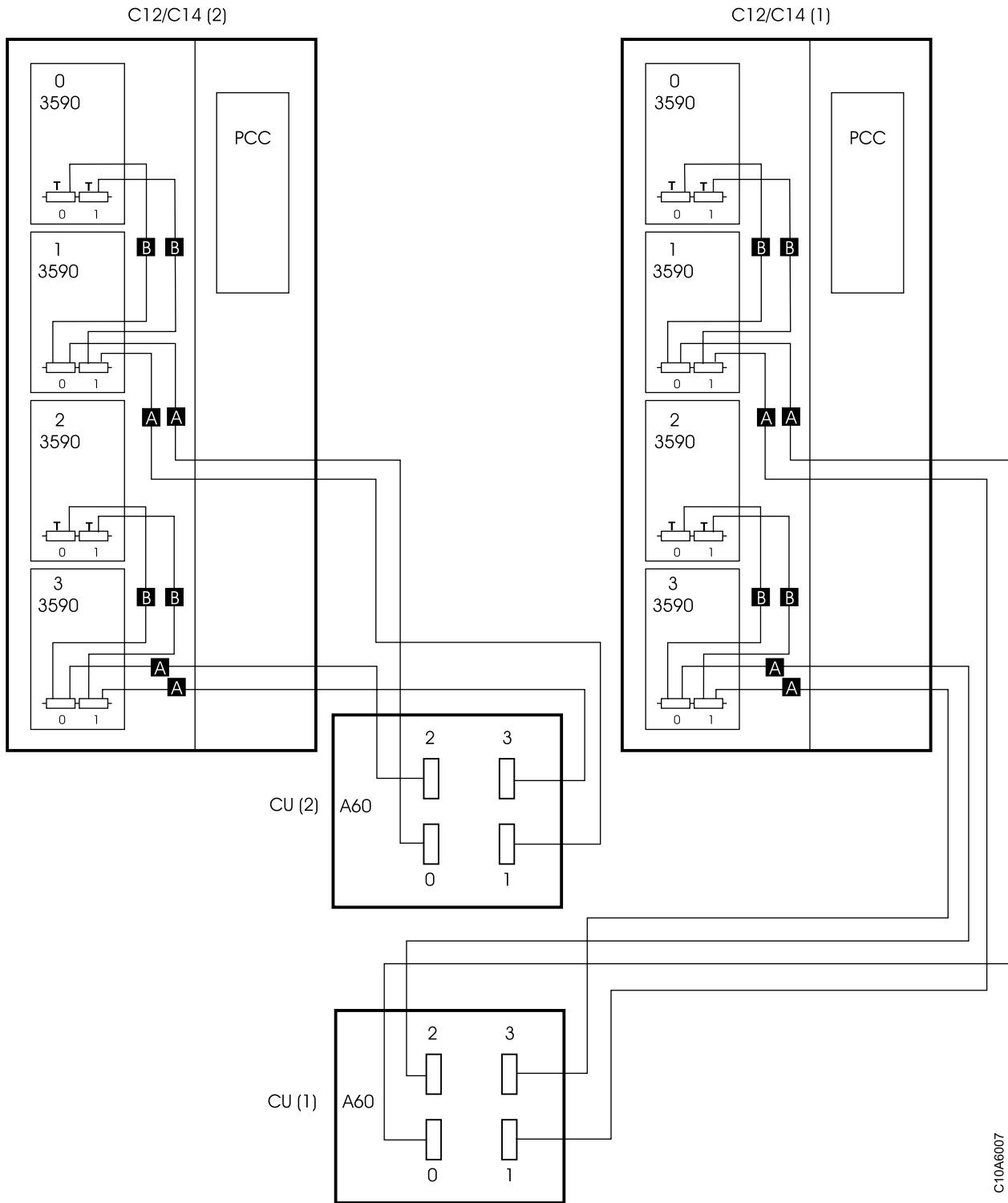
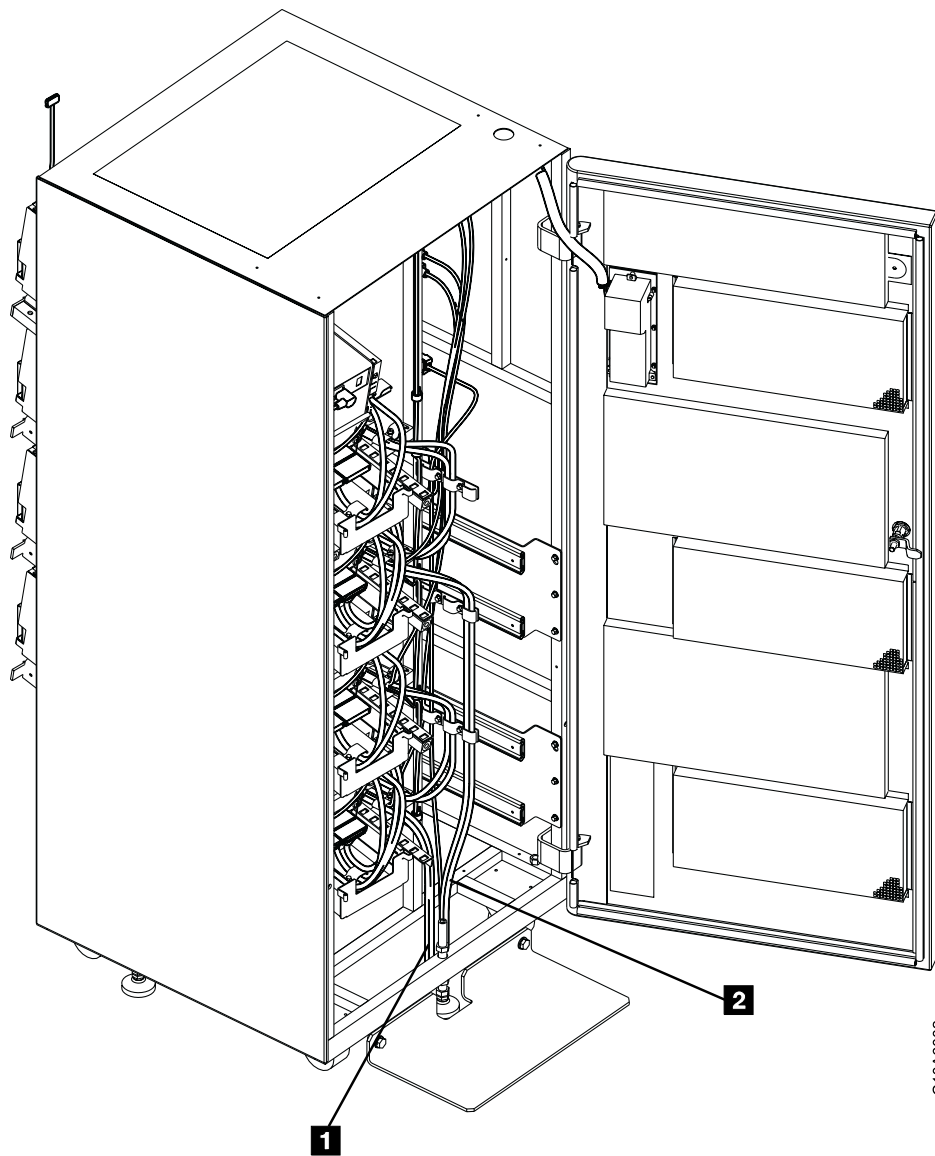


Figure 24. C12/C14 Single CU Cabling



C10A6007

Figure 25. C12/C14 Second CU Cabling



C10A6002

Figure 26. SCSI Cable Routing to C12/C14

**Checking the SCSI Connections from the A60 Controller:** You are now ready to check out the C10 frame and connections to the C12/C14.

Do the following checkout below:

- \_\_\_ Step 1. Power on the A60 Controller with the power on switch, see Figure 27 on page 202 **4**
- \_\_\_ Step 2. The A60 Controller should arrive from the factory with the correct AIX and microcode installed. If this A60 Controller has down level AIX or microcode, go to “Installing AIX in the A60 Control Unit Environment” on page 354 for AIX updates, and “Adding new Code Images to the A60” on page 358 for microcode updates. Return here when done.
- \_\_\_ Step 3. If the A60 Controller has the correct AIX code loaded, on a new installation you must do an Activate Microcode on the controller. Go to “Microcode Activation in the A60 Controller” on page 358, and return here when done.

- \_\_\_ Step 4. Continue with installation at “Setting Up EBTERM or Terminal Emulator for Setting Modem Password” on page 400 or “Setting up NetTerm Terminal Emulator (Windows 95/98 Platforms)” on page 364 to connect your Service Terminal.
- \_\_\_ Step 5. Refer to “Running Diagnostics from the A60 Controller” on page 389 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.
  - a. Select the tape utility to access the read/write tests.
  - b. Run the write and read options.
  - c. Load and Unload tape each time.
  - d. Remove the scratch cartridge when complete.

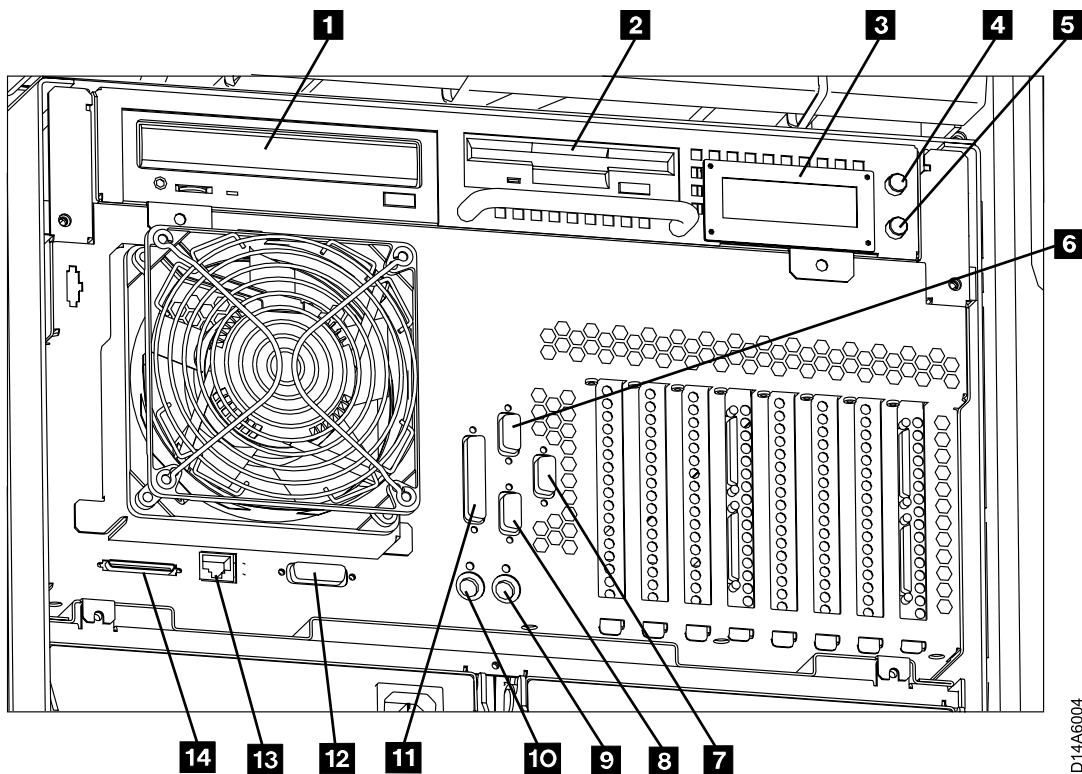


Figure 27. A60 Controller Controls and Connections

- **1** — CD-ROM Drive
- **2** — Floppy Disk Drive
- **3** — LED Display
- **4** — Power ON/OFF Switch
- **5** — Reset Switch
- **6** — Service Terminal or Remote EBTERM connection to WTI switch (S1 Port)
- **7** — Remote Service connection for SLIP to WTI switch (S3 Port)
- **8** — Library Manager Connection for RS422, (FC 9061) attach (S2 Port)
- **9** — Mouse (Not Used)
- **10** — Keyboard (Not Used)
- **11** — Parallel Port

- **12** — Ethernet (Not Used)
- **13** — LAN Connection
- **14** — SCSI Bus
- 

**Diagnostic Checkout of the ESCON Adapters before Host Attach: CAUTION:** The ESCON adapters used in the A60 Controller each have two ESCON ports. When running the ESCON wrap test it is necessary that both ports on the adapter have a ESCON wrap tool attached.

**Note:** These ESCON wrap tools are in the ship group.

Run the ESCON diagnostics by selecting the diagnostics and selecting the **advanced diagnostics routines**, and then **System Verification**, from this list presented select the **escon0 — escon3**.

**Attaching the Host ESCON Cable(s) to the A60 Controller:** Connect the ESCON cables to the ESCON Adapters according to the service planning guide. Refer to Figure 28, **1** and **5**.

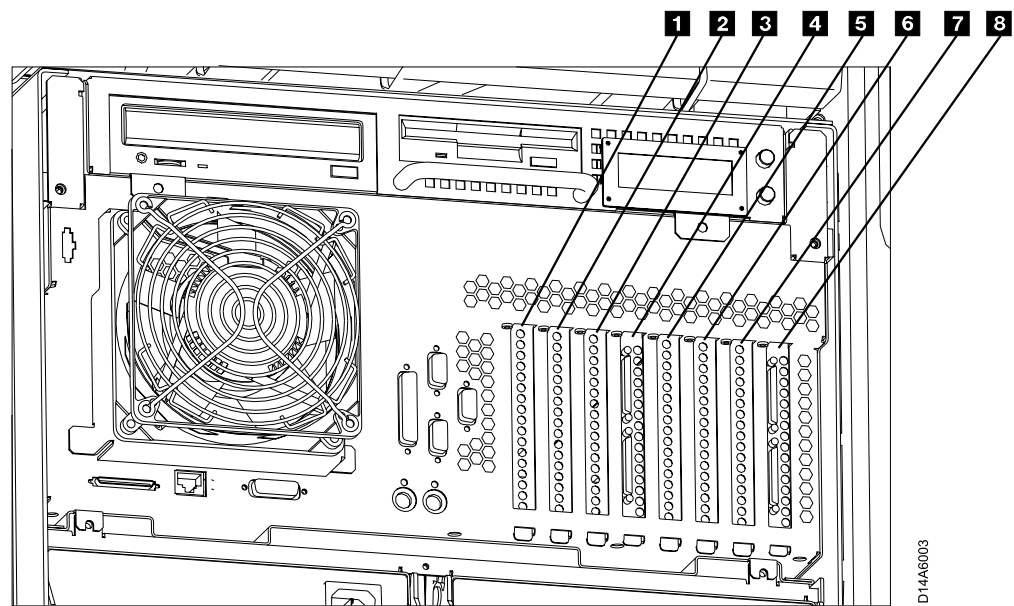


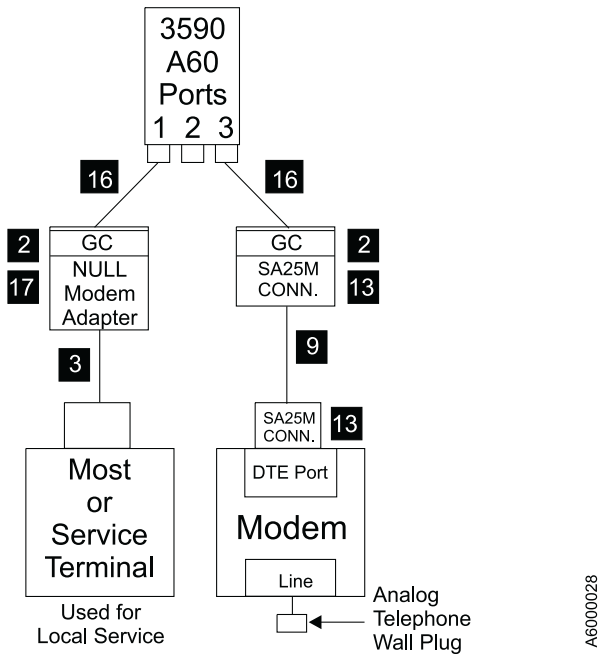
Figure 28. A60 Controller Card Slots

- Slot **1** - ESCON Host Interface
- Slot **2** - Not Used
- Slot **3** - Token Ring
- Slot **4** - SCSI Drive Interface
- Slot **5** - ESCON Host Interface
- Slot **6** - Not Used
- Slot **7** - Not Used
- Slot **8** - SCSI Drive Interface

**Service Terminal Installation and Remote Assistance Installation without a Switch:** To connect the Service Terminal to the C10 frame, you connect directly to the A60 Controller in Port 1 (S1) (see Figure 27 on page 202 **6**) using the null

modem adapter. The local Service Terminal connection is made using **16**, **2**, **17**, and **3**. Refer to Figure 29 for necessary parts.

To connect for remote assistance, without using a switch, the modem is attached directly to the A60 Controller in Port 2 (S2), see Figure 27 on page 202 **7**. The remote connection is made using **16**, **2**, **13** twice, and **9**. Refer to Figure 29 for necessary parts.



### Remote Assistance Feature Direct to Modem (No WTI Data Switch)

Figure 29. Direct Attach to Service Terminal at the A60 Controller

The following are the referenced parts for Figure 29.

- **2** Gender Changer (25 pin F-F) P/N 05H7939
- **3** Cable (9 pin to 25 pin) P/N 05H3299
- **9** Cable (6 conductor RJ12) 100 foot P/N 05H3352
- **13** Adapter SA-25M (25 pin to RJ12) P/N 05H3358
- **16** Cable (9 pin to 25 pin) 1 foot P/N/40H6328
- **17** Null Modem Adapter (25 pin) P/N 05H7876

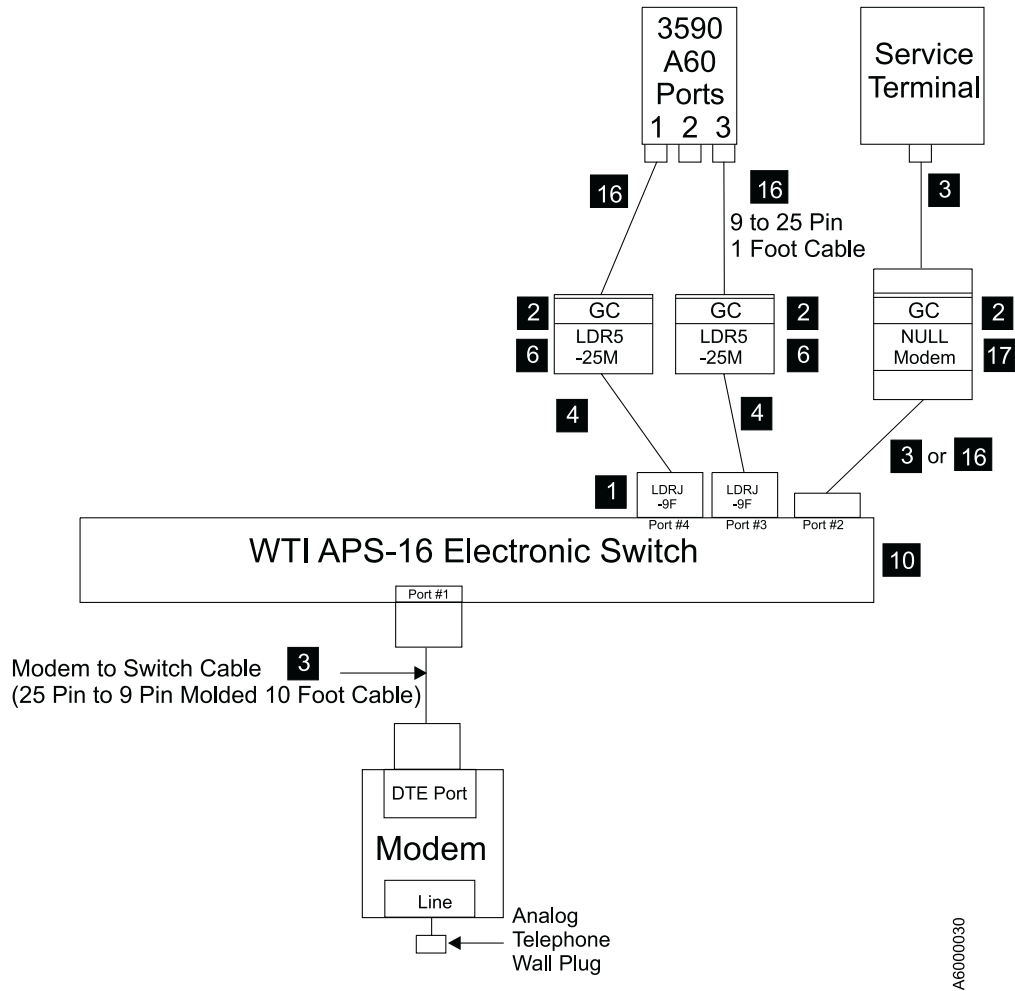
**Remote Assistance Feature Installation using a WTI Switch:** There are two remote WTI switches that can be ordered. The instructions are explained for both shown in the list below:

- If your customer has ordered the WTI — MDS switch, (refer to Figure 30 on page 205) to make the necessary connections.
- If your customer has ordered the WTI — APS switch, (refer to Figure 31 on page 207) to make the necessary connections..



- **2** Gender Changer (25 pin F-F) P/N 05H7939
- **3** Gender Changer (9 to 25 pin) P/N 05H3299
- **7** Adapter SA-12M (25 pin to RJ12) P/N 05H3357
- **9** Cable (6 conductor RJ12) P/N 05H3352
- **11** WTI Data Switch Model MDS-16 P/N 05H3350
- **13** Adapter SA-25M (25 pin to RJ12) P/N 05H3358
- **16** Cable (9 pin to 25 pin) 1 foot P/N 40H6328





## Remote Assistance Feature Using WTI APS-16 Data Switch

Figure 31. A60 Controller Service Panel Attachment—Remote Feature APS Switch

## WTI APS-16 Electronic Switch

The following list identifies the highlighted keys and the associated part number for Figure 31 on page 207

- **1** Adapter LDRJ-9F (9 pin to RJ45) P/N 05H9745
  - **2** Gender Changer (25 pin F-F) P/N 05H7939
  - **3** Cable (9 pin to 25 pin ) P/N 05H3299
  - **4** Cable (8 conductor RJ45) 150 foot P/N 05H9744
  - **6** Adapter LDRJ-25M (25 pin to RJ45) P/N 05H9746
  - **10** WTI Data Switch Model APS-16 P/N 05H9742
  - **16** Cable (9 pin to 25 pin) 1 foot P/N 40H6328
- a. Modem analog connector to telephone plug provided by the customer.
  - b. Power cord from the modem to the customer power source. Leave the power to the modem turned off for now.
  - c. Remove any Null Modems that may be attached to the cables.
  - d. 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 MDS-16 data switch:* Refer to Table 14 on page 210

- \_\_\_ 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-12 (telephone type plug) attaches into Port #1 of the WTI electronic switch.
- \_\_\_ 2. locate the "Setup" switches on the back of the WTI Electronic Switch and set according to chart Table 14 on page 210.
- \_\_\_ 3. Continue at "Common Procedures for both Models of data switch".

*If installing WTI Model APS-16 data switch:* Refer to Table 14 on page 210

- \_\_\_ 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. Locate the "Setup" switches on the back of the WTI Electronic Switch and set according to chart, see Table 14 on page 210.
- \_\_\_ 3. Continue at "Common Procedures for both Models of data switch".

*Common Procedures for both Models of data switch:* Refer to Table 14 on page 210

- \_\_\_ 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 366 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 366 or "Modem Initialization" on page 368, 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 A60 Controller to ensure that the switch and modem is working properly.
- \_\_\_ 7. Return to the step that sent you here.

Table 14. Matrix for WTI Switch Settings for 3590–Axx and 3494–Bxx Controllers

	<b>One A60 Controller directly attached to modem, with no WTI Switch</b>	<b>Only Axx's on WTI Switch</b>	<b>Only Bxx's on WTI Switch</b>	<b>Mixed Axx's and Bxx's on WTI Switch</b>
Modem Settings	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-Bxx set up string (38400 baud).  LCD display on modem will show 28.8.	Use 3494-Bxx 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 208	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 208	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 port 1 connection to a baud rate of 9600 and handshake to xon.	None required	Use WTI /p command to change ONLY the Axx port 1 connection to a baud rate of 9600 and handshake to xon.

This completes the Installation checkout. Return to the process that sent you to the 3590 Model A60 Controller MI.

# Replacing an A00 CU with a A60 CU in a 3590 A14 Frame

## 3590 A14 Frame

**Unpack the A60 Controller:** Determine the frame where you will be installing the A60 Controller and follow the checkoff list below:

- \_\_\_ Step 1. You were sent here from MES instructions that should have made the A14 frame ready for service. If there is still power on the A14 frame that you are working on, return to the MES instructions and make sure that power is removed before proceeding to step 2

In the following steps, refer to Figure 32 on page 212 and Figure 33 on page 213.

- \_\_\_ Step 2. If not already unpacked, unpack the A60 Controller, from the carton. If the A60 Controller is on a pallet, you may want to leave it on the pallet to make it easier to install.

The A14 frame may contain any where from 1 to 4 drives. These instructions have been structured to handle the 4 drive configuration. If your A14 contains less than 4 drives, skip the steps not applicable to your configuration. See Figure 34 on page 214 for the drive numbering convention in a A14.

- \_\_\_ Step 3. Unplug all SCSI cables from drive 0 (lower right).
- \_\_\_ Step 4. Unplug all drive to drive SCSI cables from drive 1 (lower left).
- \_\_\_ Step 5. Loosen cable clamps, on the service loop and frame.
- \_\_\_ Step 6. Remove lower frame cable clamp bracket. Save this bracket for later use.

**Note:** If you want to see a diagram of the drive service loop, go to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0, INST section, under "Cable Routing for Model B1A/E1A"*.

- \_\_\_ Step 7. Remove and discard the CU to drive 0, (lower right) SCSI cables from the service loop.
- \_\_\_ Step 8. Separate drive power cables and retain in service loop
- \_\_\_ Step 9. If more than 2 drives are installed, remove and discard the SCSI cables from drive 1 (lower left) to drive 2 (Upper right).
- \_\_\_ Step 10. Any remaining SCSI cables are drive to drive cables. If required, re-label these cables to match the number assignment shown in Figure 34 on page 214.
- \_\_\_ Step 11. Remove any additional cables that may be attached to the control unit.
- \_\_\_ Step 12. Remove the Service Panel from the A14 frame.
- \_\_\_ Step 13. Remove **ALL** existing hardware and the existing **CU(s)** from the frame

**Note:** If the A14 frame contains two A00's or a combination of one A00 and one A50, both CU's must be uncabled and removed. Proceed to step 14 when removal of second CU and cables are complete.

- \_\_\_ Step 14. Determine the Feature Code, or the frame that you are installing the A60 Controller controller into.
- \_\_\_ Step 15. Install the support spacer on the right side of the frame P/N 09L4876, see Figure 32 on page 212, **1** in holes 3 and 19 from the bottom.

- \_\_\_ Step 16. Install 4 nut clips (2 on each side), **1** through **4** counting from bottom of the A14 frame in holes 6, and 25 on each side. Refer to Figure 33 on page 213.

**Note:** The A60 Controller sets on the bottom of the A14 frame.

- \_\_\_ Step 17. **CAUTION:**  
Remove the two power supplies from the A60 Controller, see “Removal and Replace of the Power Supply or Power Supply Fan Assembly” on page 312. With the power supplies removed, the A60 Controller requires a minimum of two CE’s to lift the control unit into the frame.

Install the A60 Controller **5** from the rear of the A14 frame with the front of the controller (side not enclosed in the case **6**) facing you, using 4 screws, P/N 1624779 **7**. Refer to Figure 33 on page 213.

- \_\_\_ Step 18. Re-install two power supplies previously removed.

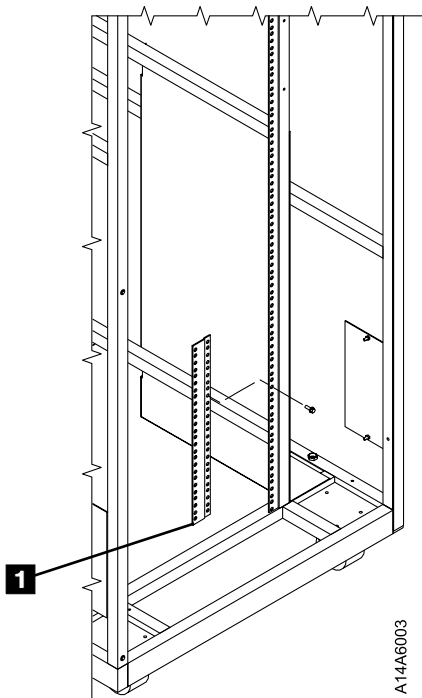


Figure 32. A14 Frame A60 Controller Support Spacer

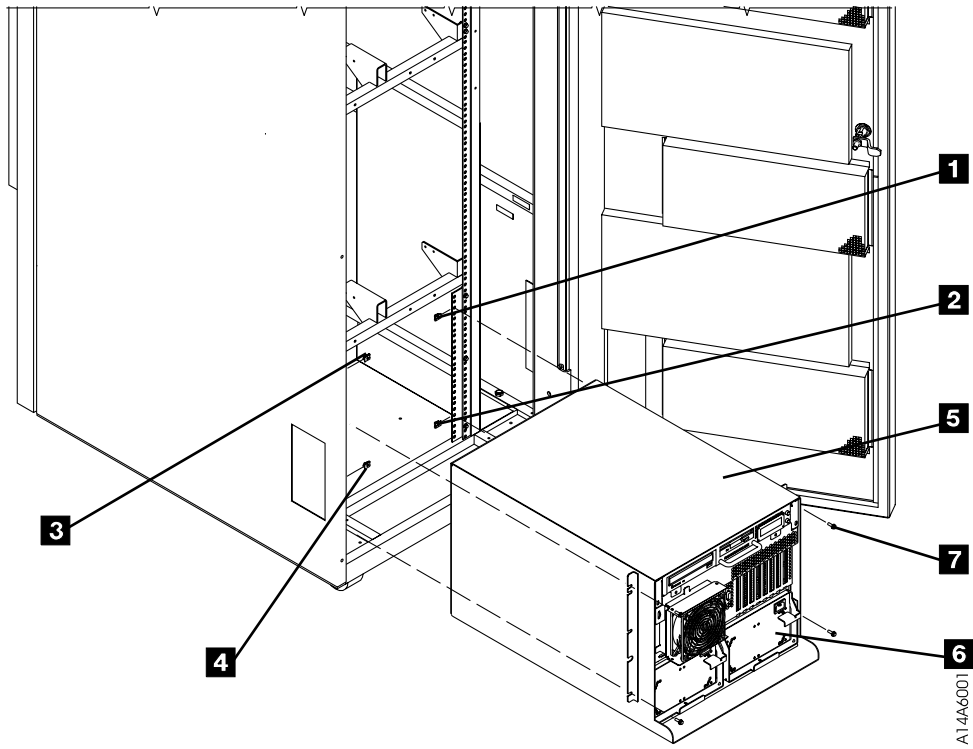
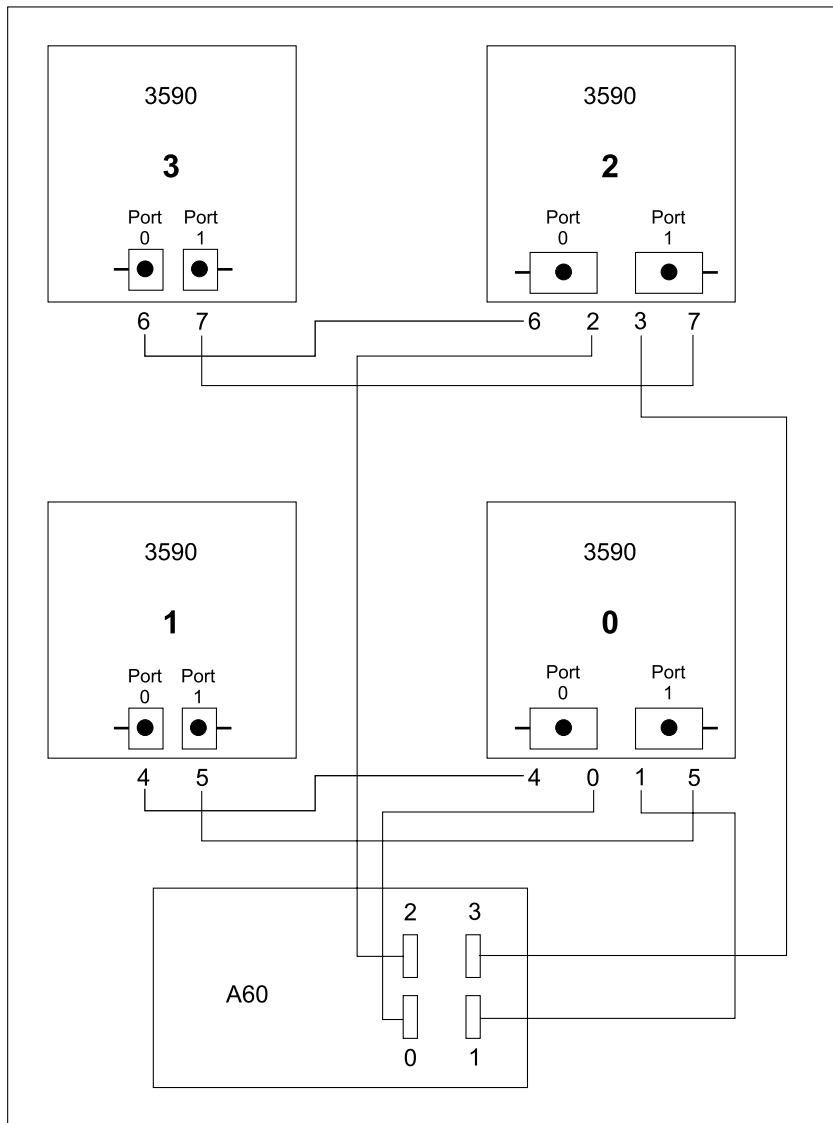


Figure 33. A14 Hardware Installation



D14A6005

Figure 34. A14 Frame Drive Numbering Convention

**Notes:**

1. Notice that the new SCSI cable has a different type of connector on each end, the small connector attaches to the A60 Controller and the large connector attaches to the drive. If your A14 frame contains 1 or 2 drives, you will receive a pair of 3.5 meter control unit to drive cables, P/N 09L5107. Label one of these cables 0 and the other cable 1 (place the labels on both ends of the cable). Refer to Figure 34.
2. If you A14 frame contains 3 or 4 drives, you will receive a second pair of new controller unit to drive cables. Label the cables, P/N 05H4650, 2 and 3 (place the labels on both ends of the cable). Refer to Figure 34.

At the completion of this installation, SCSI terminators (2) should be installed as shown in Table 15.

Table 15. A14 3590 Drive SCSI Termination

Number of 3590 Drives	Drive Termination
One Drive	(2) terminators piggy backed on drive 0 SCSI cables



Table 15. A14 3590 Drive SCSI Termination (continued)

Number of 3590 Drives	Drive Termination
Two Drives	(2) terminators piggy backed on drive 1 SCSI cables
Three Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 2 SCSI cables
Four Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 3 SCSI cables

\_\_\_ Step 1. Install the new SCSI cable Labeled #0 . Refer to Figure 35 on page 217 **3A** , plugging on the drive end on port 0 (left port) on the lower right drive.

\_\_\_ Step 2. Install the new SCSI cable Labeled#1. Refer to Figure 35 on page 217 **4A** plugging on the drive end on port 1 (right port) on the lower right drive.

**Note: Do Not** attach the SCSI cables to the A60 Controller until instructed to do so.

\_\_\_ Step 3. Re-install drive power cables.

\_\_\_ Step 4. Re-plug existing SCSI cables from drive 0 (lower right) to drive 1 (lower left).

\_\_\_ Step 5. Install on the back a set of SCSI terminators (P/N 05H4793) on the cables plugged into drive 1 (lower left).

*If you have more than 2 drives, repeat 1 through 5 for drives 3 and 4, using new control unit to drive SCSI cables Labeled 2 and 3*

\_\_\_ Step 6. Starting at the drive end, place the new SCSI cables in the service loop shown in Figure 35 on page 217, **13** .

**Notes:**

a. If you want to see a diagram of the drive service loop, go to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0*, INST section under "Cable Routing for Model B1A/E1A".

b. Make sure that the service loop allows the drives to fully extend out for service.

\_\_\_ Step 7. Re-install the lower cable clamp bracket removed in 6 on page 211.

\_\_\_ Step 8. When the service loop is correct, tighten the three sets of service loop cable clamps.

\_\_\_ Step 9. Using the cable ties supplied with the MES, rebuild a neat and secure service loop.

*Repeat 6 through 9 for all drives installed in this A14 frame.*

\_\_\_ Step 10. Counting from left to right, the SCSI Adapters should only be in A60 Controller slots 4 and 8, refer to Figure 36 on page 218.

\_\_\_ Step 11. Ensure the SCSI adapter(s) are in the correct locations on the A60 Controller

\_\_\_ Step 12. Route the SCSI cables from the drives down the right side of the A14 frame and through the cable clamp, refer to Figure 35 on page 217 **5** , tighten clamp.

**Note:** You will be forming a service loop with the cables. The following steps tell you where to route them. After routing use cable ties to complete service loop. Use holes in fan bracket to hold cables across or under fan bracket with the ties.

- \_\_\_ Step 13. Route the SCSI cables Labeled 0 and 1, **3B** and **4B** across the bottom of the front fan, see Figure 35 on page 217.
- \_\_\_ Step 14. Route the SCSI cables Labeled 2 and 3, **1B** and **2B** across the top of the front fan, see Figure 35 on page 217.
- \_\_\_ Step 15. Check that all of the cable clamps are tight to ensure minimum stress on the SCSI adapter connectors when the cables are attached.
- \_\_\_ Step 16. Connect SCSI cable Labeled 0 to the lower SCSI connector in slot 4 and SCSI cable Labeled 1 to the lower SCSI connector in slot 8, see Figure 36 on page 218.
- \_\_\_ Step 17. If more than 2 drives are installed, connect SCSI cable Labeled 2 to the upper SCSI connector in slot 4 and SCSI cable Labeled 3 to the upper SCSI connector in slot 8, see Figure 36 on page 218.
- \_\_\_ Step 18. Plug both A60 Controller controller power cables into the PCC (located on the right side of the A14). Route cable under of fan and follow along SCSI service loop.

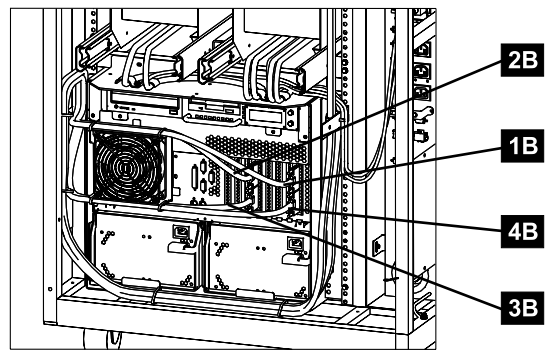
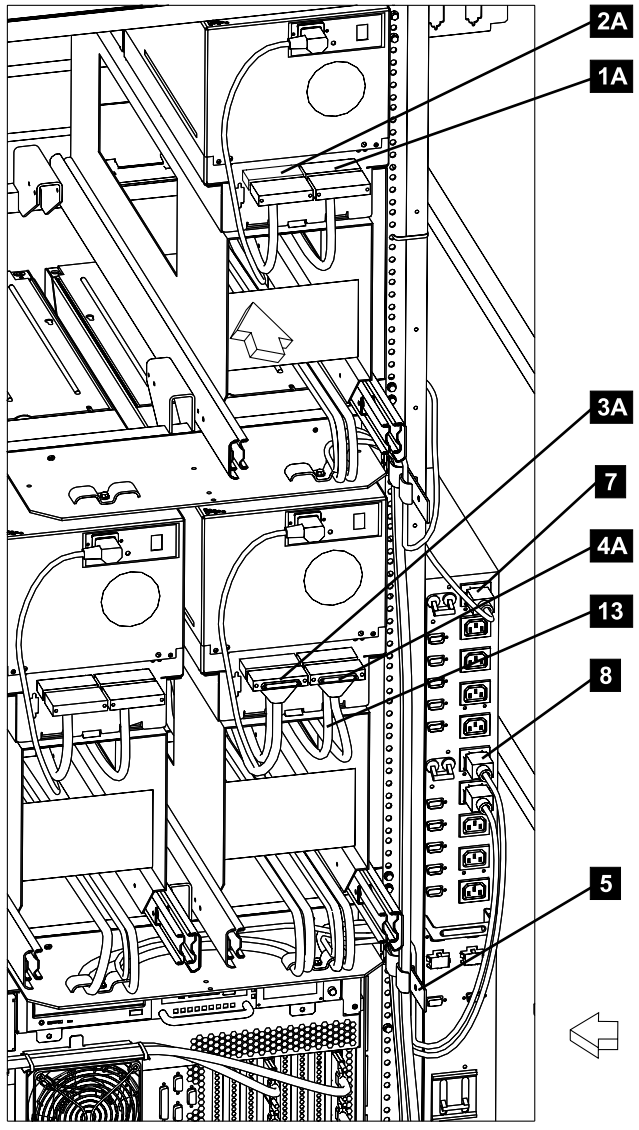
**Note:** The PCC is electrically divided in two separate banks with five outlets on each section, refer to Figure 35 on page 217 **7** and **8**. **Make sure that the two power cords coming from the A60 Controller are not plugged into the same bank.**

- \_\_\_ Step 19. Re-connect the Operator panel (panel on the door). Refer to Figure 37 on page 219, **11**. Route across top of fan and follow along SCSI service loop.
- \_\_\_ Step 20. Replug all cables unplugged in 11 on page 211.
- \_\_\_ Step 21. 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. Address the 3590 drives according to the table shown in Table 16.

Table 16. 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

- \_\_\_ Step 22. You are now ready to do the installation check out, Go to "Installation Instructions for a 3590 A14 Frame" on page 175 to complete the installation.



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Figure 35. A60 Controller SCSI Cabling

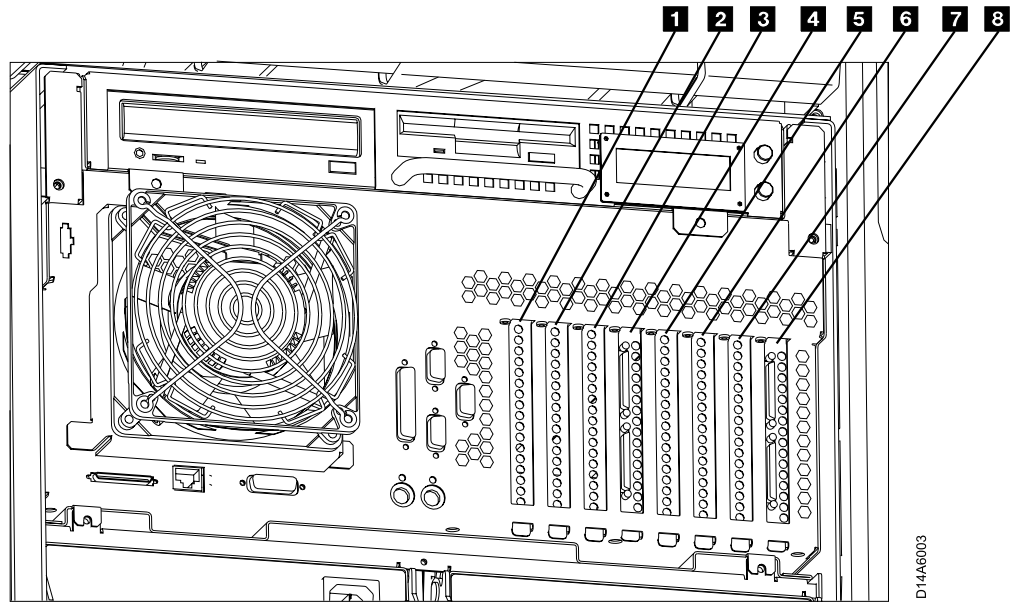
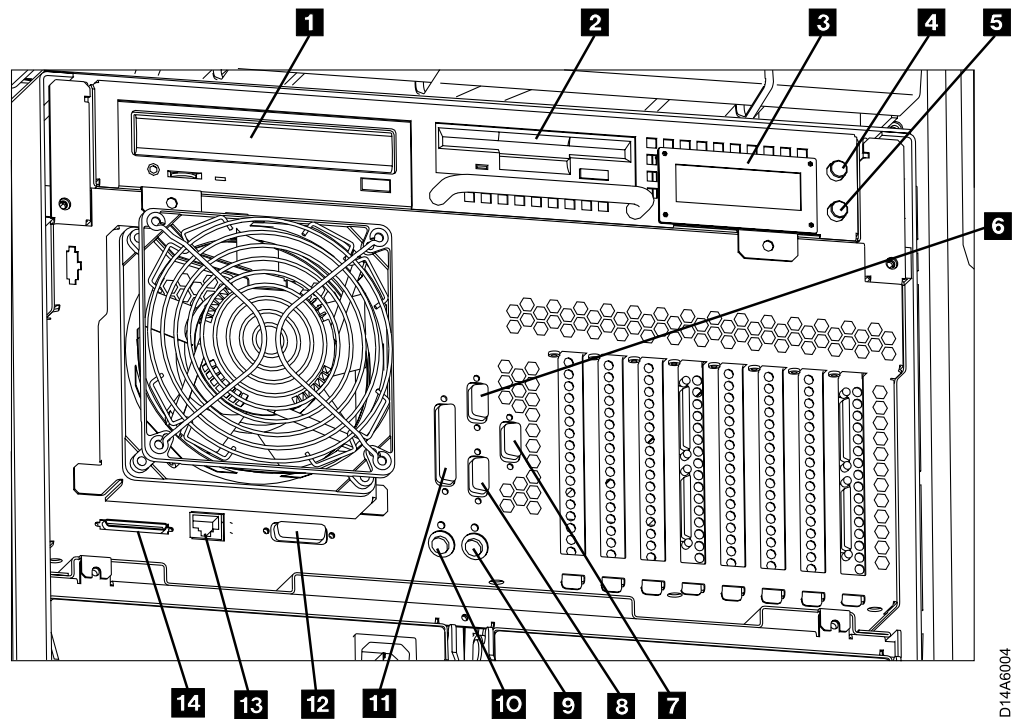


Figure 36. A60 Controller Card Slots

- Slot **1** - ESCON Host Interface
- Slot **2** - Not Used
- Slot **3** - Token Ring
- Slot **4** - SCSI Drive Interface
- Slot **5** - ESCON Host Interface
- Slot **6** - Not Used
- Slot **7** - Not Used
- Slot **8** - SCSI Drive Interface



D14A6004

Figure 37. A60 Controller Connection and Device Locations

- **1** — CD-ROM Drive
- **2** — Floppy Disk Drive
- **3** — LED Display
- **4** — Power ON/OFF Switch
- **5** — Reset Switch
- **6** — Service Terminal or Remote EBTERM connection to WTI switch (S1 Port)
- **7** — Remote Service connection for SLIP to WTI switch (S3 Port)
- **8** — Library Manager Connection for RS422, (FC 9061) attach (S2 Port)
- **9** — Mouse (Not Used)
- **10** — Keyboard (Not Used)
- **11** — Parallel Port
- **12** — Ethernet (Not Used)
- **13** — LAN Connection
- **14** — SCSI Bus

# Replacing an A50 CU with a A60 CU in a 3590 A14 Frame

## Unpack the A60 Controller

### 3590 A14 Frame:

*Unpack the A60 Controller:* Determine the frame where you will be installing the A60 Controller and follow the checkoff list below:

- \_\_\_ Step 1. You were sent here from MES instructions that should have made the A14 frame ready for service. If there is still power on the A14 frame that you are working on, return to the MES instructions and make sure that power is removed before proceeding to step 2

In the following steps, refer to Figure 38 on page 221 and Figure 39 on page 222

- \_\_\_ Step 2. If not already unpacked, unpack the A60 Controller, from the carton, lay in on the floor. If the A60 Controller is on a pallet, you may want to leave it on the pallet to make installation into the A14 frame easier.

The A14 frame may contain any where from 1 to 4 drives. These instructions have been structured to handle the 4 drive configuration. If your A14 contains less than 4 drives, skip the steps not applicable to your configuration. See Figure 40 on page 223 for the drive numbering convention in a A14.

- \_\_\_ Step 3. Unplug all SCSI cables from drive 0 (lower right).
- \_\_\_ Step 4. Unplug all drive to drive SCSI cables from drive 1 (lower left).
- \_\_\_ Step 5. Loosen cable clamps, on the service loop and frame.
- \_\_\_ Step 6. Remove lower frame cable clamp bracket. Save this bracket for later use.

**Note:** If you want to see a diagram of the drive service loop, go to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0*, INST section, under "Cable Routing for Model B1A/E1A".

- \_\_\_ Step 7. Remove and discard the CU to drive 0 SCSI cables from the service loop.
- \_\_\_ Step 8. Separate drive power cables and retain in service loop
- \_\_\_ Step 9. If more than 2 drives are installed, remove and discard the SCSI cables from drive 1 to drive 2.
- \_\_\_ Step 10. Any remaining SCSI cables are drive to drive cables. If required, re-label these cables to match the number assignment shown in Figure 40 on page 223.
- \_\_\_ Step 11. Remove any additional cables that may be attached to the control unit.
- \_\_\_ Step 12. Remove the Service Panel from the A14 frame and all cables connecting to it.
- \_\_\_ Step 13. Remove **ALL** existing hardware and the existing **CU(s)** from the frame

**Note:** If the A14 frame contains one A50 or a combination of one A00 and one A50, both CU's must be uncabled and removed. Proceed to step 14 when removal of second CU and cables are complete.

- \_\_\_ Step 14. Determine the Feature Code, or the frame that you are installing the A60 Controller controller into.

- \_\_\_ Step 15. Install the support spacer on the right side of the frame P/N 09L4876, see Figure 38, **1** in holes 3 and 19 from the bottom.
- \_\_\_ Step 16. Install **4 nut clips** (2 on each side), **1** through **4** (see Figure 39 on page 222) counting from bottom of the A14 frame in holes 6, and 25 on each side..

**Note:** The A60 Controller sets on the bottom of the A14 frame.

- \_\_\_ Step 17. **CAUTION:**  
**Remove the two power supplies from the A60 Controller, see “Removal and Replace of the Power Supply or Power Supply Fan Assembly” on page 312. With the power supplies removed, the A60 Controller requires a minimum of two CE’s to lift the control unit into the frame.**  
 Install the A60 Controller **5** from the rear of the A14 frame with the front of the controller (side not enclosed in the case **6**) facing you, using 4 screws, P/N 1624779 **7** (see Figure 39 on page 222).
- \_\_\_ Step 18. Re-install Power Supplies previously removed.

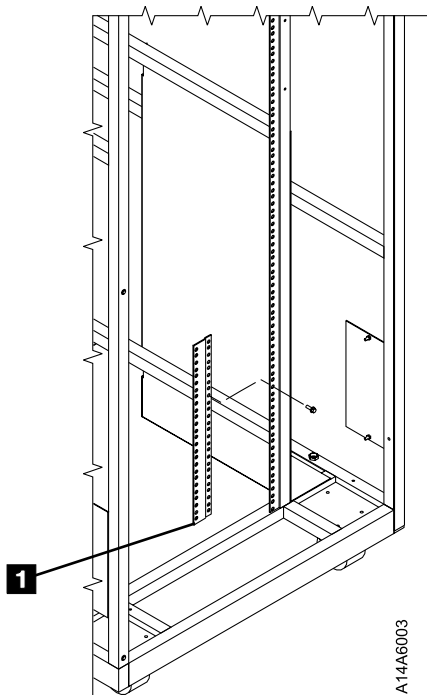


Figure 38. A14 Frame A60 Controller Support Spacer

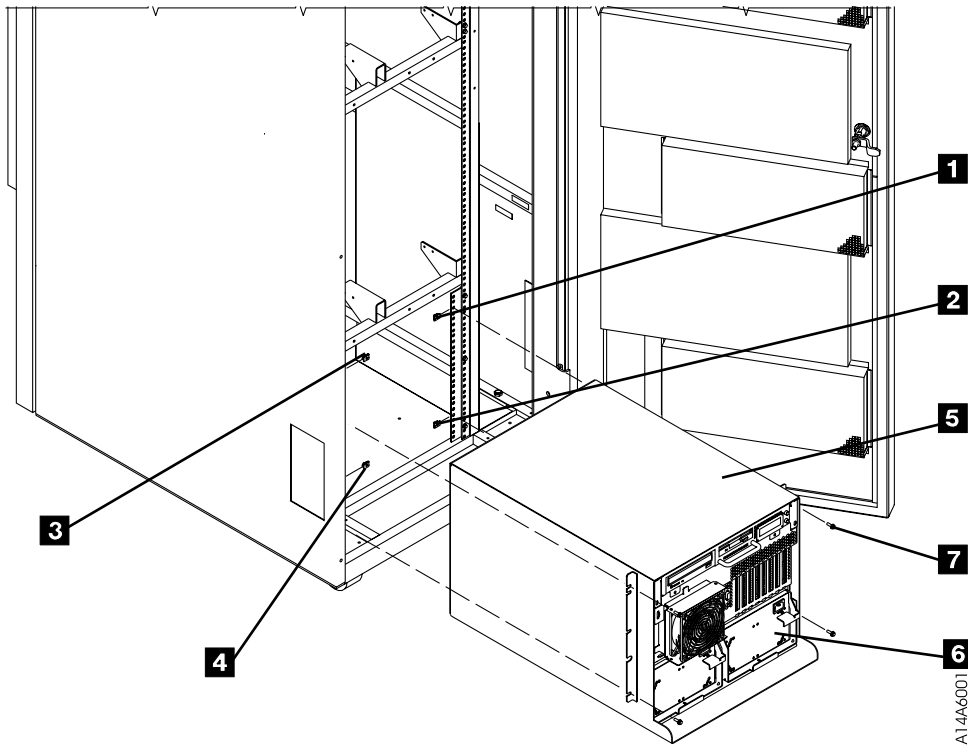


Figure 39. A14 Hardware Installation



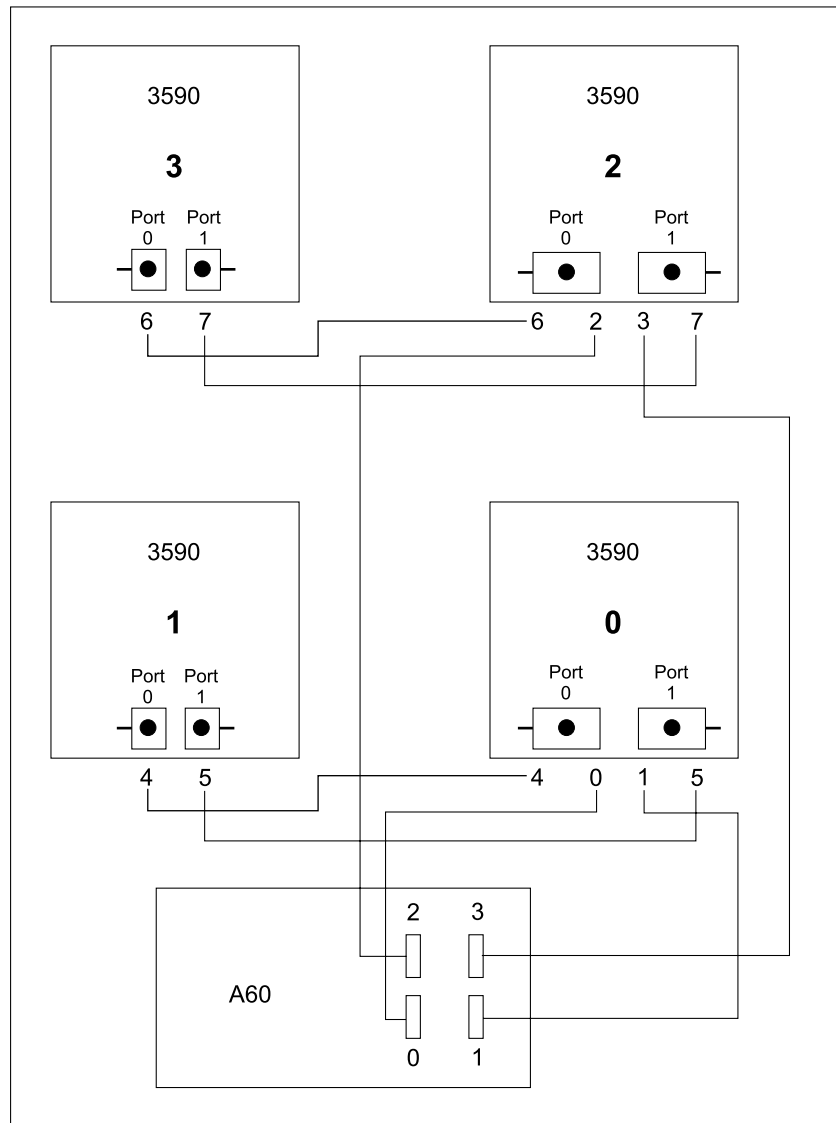


Figure 40. A14 Frame Drive Numbering Convention

**Notes:**

1. Notice that the new SCSI cable has a different type of connector on each end, the small connector attaches to the A60 Controller and the large connector attaches to the drive. If your A14 frame contains 1 or 2 drives, you will receive a pair of 3.5 meter control unit to drive cables, P/N 09L5107. Label one of these cables 0 and the other cable 1 (place the labels on both ends of the cable). Refer to Figure 40.
2. If you A14 frame contains 3 or 4 drives, you will receive a second pair of new controller unit to drive cables. Label the cables, P/N 05H4650, 2 and 3 (place the labels on both ends of the cable). Refer to Figure 40.

At the completion of this installation, SCSI terminators (2) should be installed as shown in Table 17.

Table 17. A14 3590 Drive SCSI Termination

Number of 3590 Drives	Drive Termination
One Drive	(2) terminators piggy backed on drive 0 SCSI cables

Table 17. A14 3590 Drive SCSI Termination (continued)

Number of 3590 Drives	Drive Termination
Two Drives	(2) terminators piggy backed on drive 1 SCSI cables
Three Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 2 SCSI cables
Four Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 3 SCSI cables

- \_\_\_ Step 1. Install the new SCSI cable Labeled #0 . Refer to Figure 41 on page 226 **3A** , plugging on the drive end on port 0 (left port) on the lower right drive.
- \_\_\_ Step 2. Install the new SCSI cable Labeled#1. Refer to Figure 41 on page 226 **4A** plugging on the drive end on port 1 (right port) on the lower right drive.

**Note: Do Not** attach the SCSI cables to the A60 Controller until instructed to do so.

- \_\_\_ Step 3. Re-install drive power cables.
- \_\_\_ Step 4. Re-plug existing SCSI cables from drive 0 (lower right) to drive 1 (lower left).
- \_\_\_ Step 5. Install on the back a set of SCSI terminators (P/N 05H4793) on the cables plugged into drive 1

*If you have more than 2 drives, repeat 1 through 5 for drives 3 and 4, using new control unit to drive SCSI cables Labeled 2 and 3*

- \_\_\_ Step 6. Starting at the drive end, place the new SCSI cables in the service loop shown in Figure 41 on page 226, view 2 **13** .

**Notes:**

- a. If you want to see a diagram of the drive service loop, go to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0, INST section under "Cable Routing for Model B1A/E1A"*.
- b. Make sure that the service loop allows the drives to fully extend out for service.

- \_\_\_ Step 7. Re-install the lower cable clamp bracket removed in 6 on page 220.
- \_\_\_ Step 8. When the service loop is correct, tighten the three sets of cable clamps.
- \_\_\_ Step 9. Using the cable ties supplied with the MES, rebuild a neat and secure service loop.

*Repeat 6 through 9 for all drives installed in this A14 frame.*

- \_\_\_ Step 10. Counting from left to right, the SCSI Adapters should only be in A60 Controller slots 4 and 8, refer to Figure 42 on page 227. Ensure the SCSI adapter(s) are in the correct locations on the A60 Controller
- \_\_\_ Step 11. Route the SCSI cables from the drives down the right side of the A14 frame and through the cable clamp, refer to Figure 41 on page 226 **5** , tighten clamp.

**Note:** You will be forming a service loop with the cables. The following steps tell you where to route them. After routing use cable ties to complete service loop. Use holes in fan bracket to hold cables across or under fan bracket with the ties.

- \_\_\_ Step 12. Route the SCSI cables, Labeled 2 and 3 **1B** and **2B** across the top of the front fan, see Figure 41 on page 226.

- \_\_\_ Step 13. Route the SCSI cables, Labeled 0 and 1 **3B** and **4B** across the bottom of the front fan, see Figure 41 on page 226.
- \_\_\_ Step 14. Check that all of the cable clamps are tight to ensure minimum stress on the SCSI adapter connectors when the cables are attached.
- \_\_\_ Step 15. Connect SCSI cable Labeled 0 to the lower SCSI connector in slot 4 and SCSI cable Labeled 1 to the lower SCSI connector in slot 8, see Figure 42 on page 227.
- \_\_\_ Step 16. If more than 2 drives are installed, connect SCSI cable Labeled 2 to the upper SCSI connector in slot 4 and SCSI cable Labeled 3 to the upper SCSI connector in slot 8, see Figure 42 on page 227.
- \_\_\_ Step 17. Plug both A60 Controller controller power cables into the PCC (located on the right side of the A14). Route cable under fan and follow along SCSI service loop.

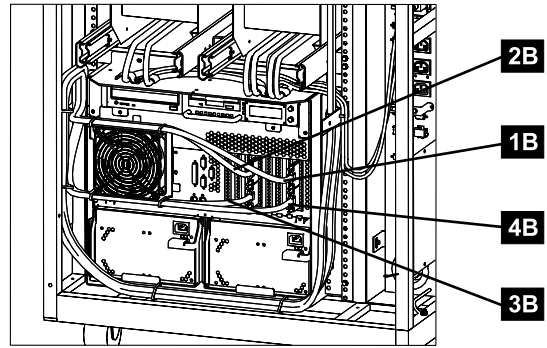
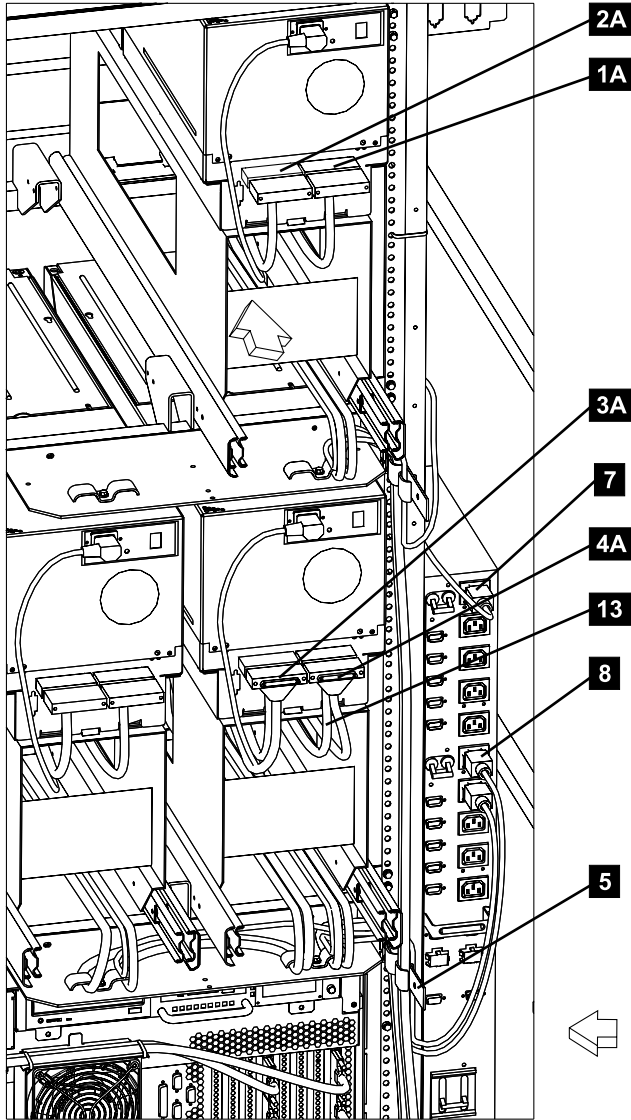
**Note:** The PCC is electrically divided in two separate banks with five outlets on each section, refer to Figure 41 on page 226 **7** and **8**. **Make sure that the two power cords coming from the A60 Controller are not plugged into the same bank.**

- \_\_\_ Step 18. Re-connect the Operator panel (panel on the door). Refer to Figure 43 on page 228, **11**. Route across top of fan and follow along SCSI service loop.
- \_\_\_ Step 19. Replug all cables unplugged in 11 on page 220.
- \_\_\_ Step 20. 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. Address the 3590 drives according to the table shown in Table 18.

Table 18. Controller to Drive SCSI Cable Connections

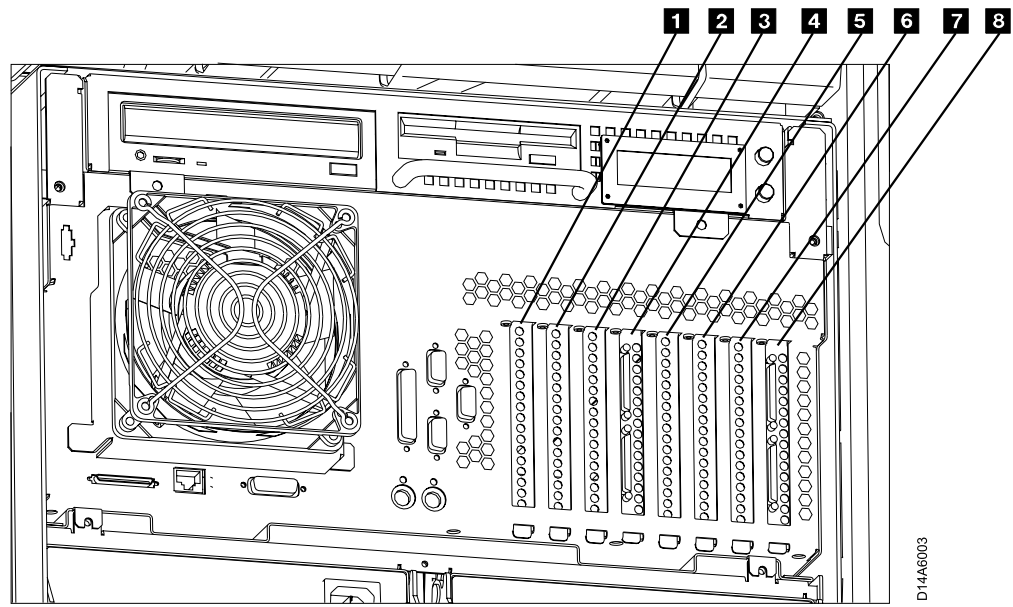
SCSI Adapter Slot 1 / Drive Port 0	SCSI Adapter Slot 2 / Drive Port 1
Drive 0 -> Address = 0	Drive 0 -> Address = 6
Drive 1 -> Address = 1	Drive 1 -> Address = 5
Drive 2 -> Address = 2	Drive 2 -> Address = 4
Drive 3 -> Address = 3	Drive 3 -> Address = 3

- \_\_\_ Step 21. You are now ready to do the installation check out, Go to “Installation Instructions for a 3590 A14 Frame” on page 175 to complete the installation.



A14A6002

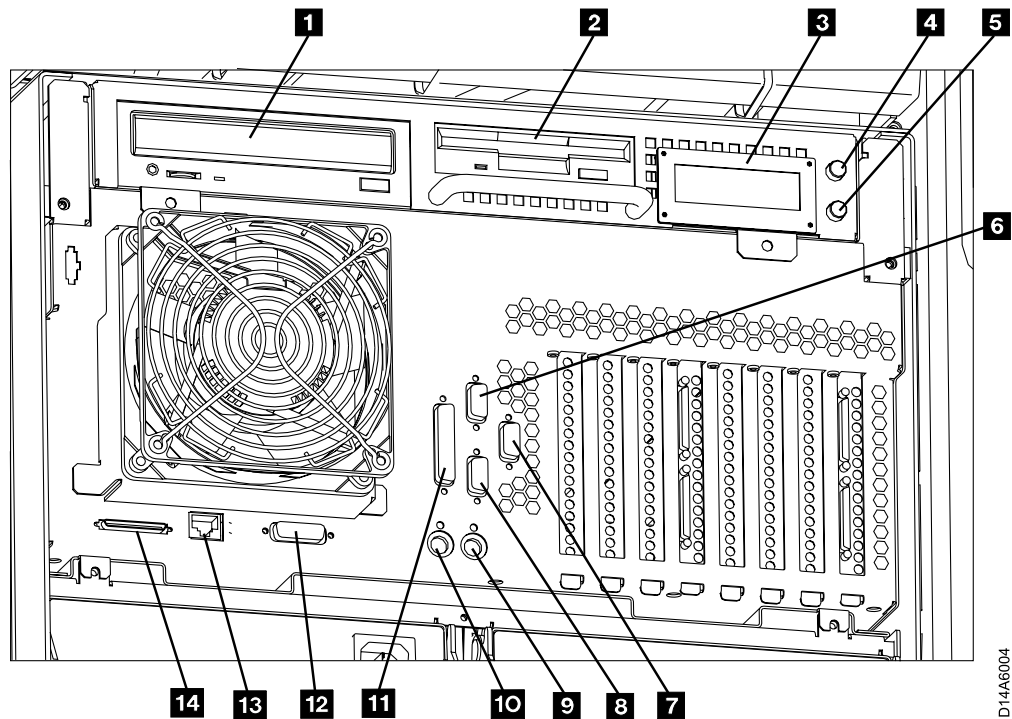
Figure 41. A60 Controller SCSI Cabling



D14A6003

Figure 42. A60 Controller Card Slots

- Slot **1** - ESCON Host Interface
- Slot **2** - Not Used
- Slot **3** - Token Ring
- Slot **4** - SCSI Drive Interface
- Slot **5** - ESCON Host Interface
- Slot **6** - Not Used
- Slot **7** - Not Used
- Slot **8** - SCSI Drive Interface



D14A6004

Figure 43. A60 Controller Connection and Device Locations

- **1** — CD-ROM Drive
- **2** — Floppy Disk Drive
- **3** — LED Display
- **4** — Power ON/OFF Switch
- **5** — Reset Switch
- **6** — Service Terminal or Remote EBTERM connection to WTI switch (S1 Port)
- **7** — Remote Service connection for SLIP to WTI switch (S3 Port)
- **8** — Library Manager Connection for RS422, (FC 9061) attach (S2 Port)
- **9** — Mouse (Not Used)
- **10** — Keyboard (Not Used)
- **11** — Parallel Port
- **12** — Ethernet (Not Used)
- **13** — LAN Connection
- **14** — SCSI Bus

# Replacing an A00 CU with a A60 CU in a 3494 D14 Frame

## 3494 D14 Frame

**Unpack the A60 Controller:** Determine the frame where you will be installing the A60 Controller and follow the checkoff list below:

\_\_\_ Step 1. You were sent here from MES instructions that should have made the 3494 Dataserver ready for service. If there is still power on the D14 frame that you are working on, return to the MES instructions and make sure that power is removed before preceding to step2

In the following steps, refer to Figure 44 on page 230 and Figure 46 on page 235.

\_\_\_ Step 2. If not already unpacked, unpack the A60 Controller, from the carton. If the A60 Controller is on a pallet you may want to leave it on the pallet until you are ready to install in the D14 frame.

The D14 frame may contain any where from 1 to 4 drives. These instructions have been structured to handle the 4 drive configuration. If your D14 contains less than 4 drives, skip the steps not applicable to your configuration. See Figure 45 on page 232 for the drive numbering convention in a D14.

If your D14 frame has the 3590 control unit and hardware removed, go to step 15 on page 230 to continue installation.

\_\_\_ Step 3. Unplug all SCSI cables from drive 0 (lower right).

\_\_\_ Step 4. Unplug all drive to drive SCSI cables from drive 1 (lower left).

\_\_\_ Step 5. Loosen cable clamps, on the service loop and frame.

**Note:** If you want to see a diagram of the drive service loop, go to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0, form number SA37-0301-00, INST section, under "Cable Routing for Model B1A/E1A"*.

\_\_\_ Step 6. Remove and discard both CU to drive 0 SCSI cables from the service loop.

\_\_\_ Step 7. Separate drive power cables and retain in service loop

\_\_\_ Step 8. If more than 2 drives are installed, remove and discard the SCSI cables from drive 1 (lower left) to drive 2 (upper right).

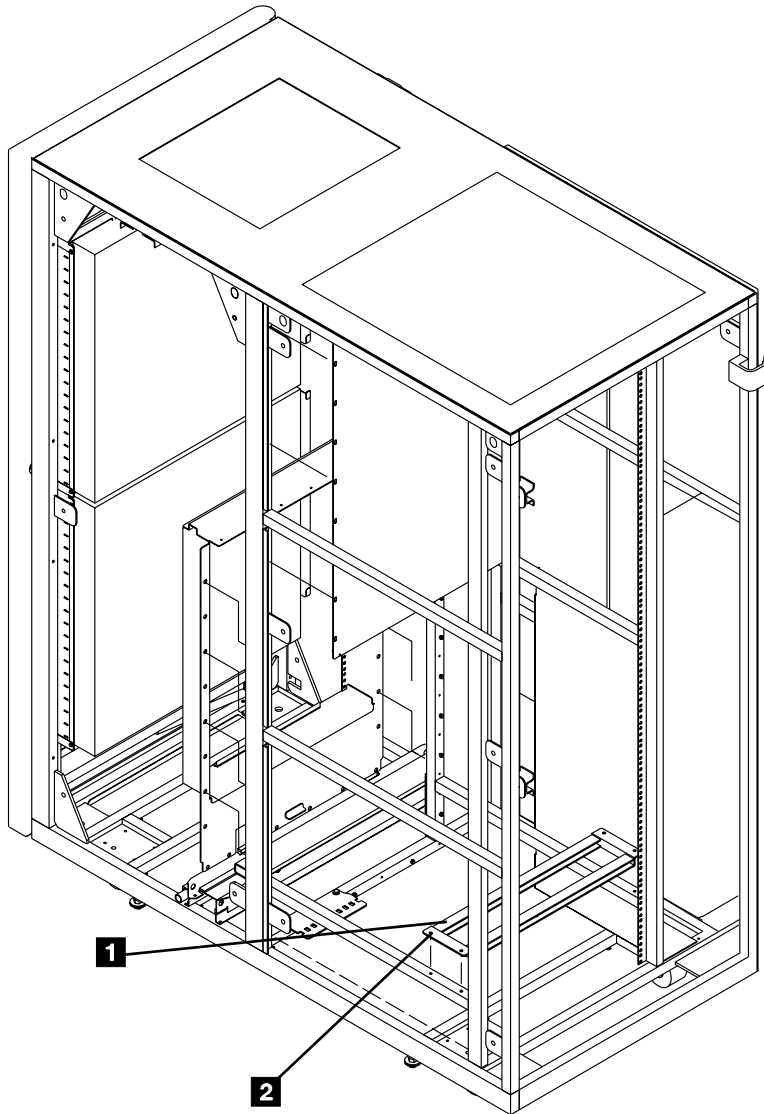
\_\_\_ Step 9. Any remaining SCSI cables are drive to drive cables. If required, re-label these cables to match the number assignment shown in Figure 45 on page 232.

\_\_\_ Step 10. Remove any additional cables that may be attached to the A00 Control Unit.

\_\_\_ Step 11. Remove the A00 Control Unit from the D14 frame.

\_\_\_ Step 12. Remove all mounting hardware for the A00 Control Unit from the D14 frame.

\_\_\_ Step 13. Check to see if the D14 frame you are working on has a rectangular bracket near the rear of the frame where you will be working. Refer to Figure 44 on page 230, **1**.



D14A6006

Figure 44. Possible D14 Frame Parts

- \_\_\_ Step 14. If this D14 frame contains this bracket, remove it by removing the 4 screws, refer to Figure 44, **2**. If not continue with step 15.
- \_\_\_ Step 15. Determine the Feature Code, or the frame that you are installing the A60 Controller controller into.  
Refer to Figure 46 on page 235 for the hardware installation of the A60 Controller in the D14 frame.
- \_\_\_ Step 16. Install **8 nut clips** (4 on each side), counting from bottom of the D14 frame in holes 7 10, 28, and 36. Refer to Figure 46 on page 235.
- \_\_\_ Step 17. Install the **shelf adapter bracket 1** using the 4 screws P/N 1624765 **2**. Mount in holes 1 and 2 counting up from the frame member on both sides. Refer to Figure 46 on page 235.
- \_\_\_ Step 18. Install the **A60 Controller shelf 3** with the flange side down, using 4 screws, P/N 1624779 **4**. Refer to Figure 46 on page 235.



\_\_\_ Step 19. **CAUTION:**

**Remove the two power supplies from the A60 Controller, see “Removal and Replace of the Power Supply or Power Supply Fan Assembly” on page 312. With the power supplies removed, the A60 Controller requires a minimum of two CE’s to lift the control unit into the frame.**

Install the A60 Controller **5** from the rear of the D14 frame with the front of the controller (side not enclosed in the case **6**) facing you, using 4 screws, P/N 1624779 **7** see Figure 46 on page 235.

\_\_\_ Step 20. Re-install Power Supplies previously removed.

**Notes:**

1. Notice that the new SCSI cable has a different type of connector on each end, the small connector attaches to the A60 Controller and the large connector attaches to the drive. If your D14 frame contains 1 or 2 drives, you will receive a pair of 3.5 meter control unit to drive cables, P/N 09L5107. Label one of these cables 0 and the other cable 1 (place the labels on both ends of the cable). Refer to Figure 45 on page 232.
2. If your D14 frame contains 3 or 4 drives, you will receive a second pair of new controller unit to drive cables. Label the cables, P/N 05H4650, 2 and 3 (place the labels on both ends of the cable). Refer to Figure 45 on page 232.

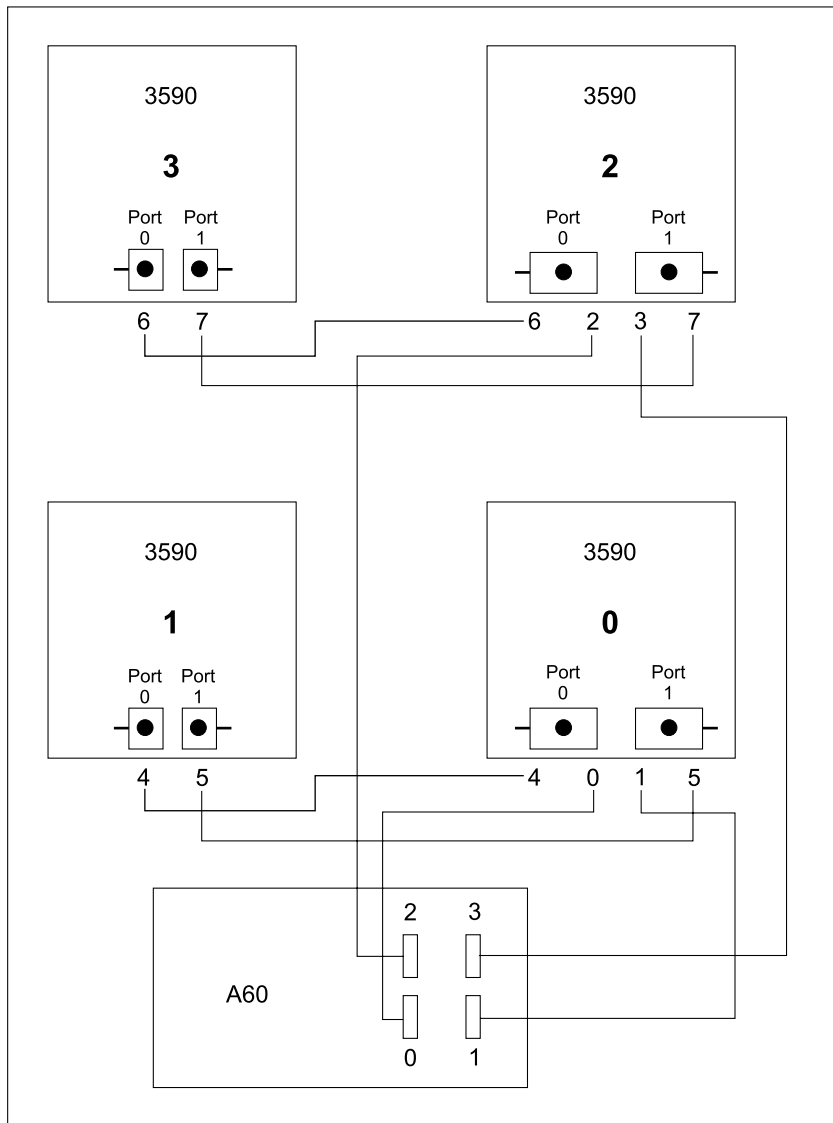


Figure 45. D14 Frame Drive Numbering Convention

At the completion of this installation, SCSI terminators (2) should be installed as shown in Table 19.

Table 19. D14 3590 Drive SCSI Termination

Number of 3590 Drives	Drive Termination
One Drive	(2) terminators piggy backed on drive 0 SCSI cables
Two Drives	(2) terminators piggy backed on drive 1 SCSI cables
Three Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 2 SCSI cables
Four Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 3 SCSI cables

- \_\_\_ Step 1. Install the new SCSI cable Labeled #0 . Refer to Figure 45 and Figure 48 on page 236 view 1 **3A** , plugging on the drive end on port 0 (left port) on the lower right drive.

- \_\_\_ Step 2. Install the new SCSI cable Labeled #1. Refer to Figure 45 on page 232 and Figure 48 on page 236 view 1 **4A** plugging on the drive end on port 1 (right port) on the lower right drive.

**Note:** Do Not attach the SCSI cables to the A60 Controller until instructed to do so.

- \_\_\_ Step 3. Re-install drive power cables.
- \_\_\_ Step 4. Re-plug existing SCSI cables from drive 0 (lower right) to drive 1 (lower left).
- \_\_\_ Step 5. Install on the back a set of SCSI terminators (P/N 05H4793) on the cables plugged into drive 1

*If you have more than 2 drives, repeat 1 on page 232 through 5 for drives 3 and 4, using new control unit to drive SCSI cables Labeled 2 and 3*

- \_\_\_ Step 6. Starting at the drive end, place the new SCSI cables in the service loop shown in Figure 48 on page 236, view 2 **13** .

**Notes:**

- a. If you want to see a diagram of the drive service loop, go to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0*, INST section under "Cable Routing for Model B1A/E1A".
  - b. Make sure that the service loop allows the drives to fully extend out for service.
- \_\_\_ Step 7. When the service loop is correct, tighten the three sets of service loop cable clamps. Refer to Figure 48 on page 236, view 2 **4** .
  - \_\_\_ Step 8. Using the cable ties supplied with the MES, rebuild a neat and secure service loop.
- Repeat 6 through 8 for all drives installed in this D14 frame.*
- \_\_\_ Step 9. Counting from left to right, the SCSI Adapters should only be in A60 Controller slots 4 and 8, refer to Figure 47 on page 235.
  - \_\_\_ Step 10. Ensure the SCSI adapter(s) are in the correct locations on the A60 Controller
  - \_\_\_ Step 11. Route the SCSI cables from the drives down the right side of the D14 frame and through the cable clamp, refer to Figure 48 on page 236 **5** , tighten clamp.

**Note:** You will be forming a service loop with the cables. The following steps tell you where to route them. After routing use cable ties to complete service loop. Use holes in fan bracket to hold cables across or under fan bracket with the ties.

- \_\_\_ Step 12. Route the SCSI cables, Labeled 2 and 3 **1B** and **2B** across the top of the front fan, see Figure 48 on page 236.
- \_\_\_ Step 13. Route the SCSI cables, Labeled 0 and 1 **3B** and **4B** across the bottom of the front fan, see Figure 48 on page 236.
- \_\_\_ Step 14. Check that all of the cable clamps are tight to ensure minimum stress on the SCSI adapter connectors when the cables are attached.
- \_\_\_ Step 15. Connect SCSI cable Labeled 0 to the lower SCSI connector in slot 4 and SCSI cable Labeled 1 to the lower SCSI connector in slot 8, see Figure 47 on page 235.
- \_\_\_ Step 16. If more than 2 drives are installed, connect SCSI cable Labeled 2 to the upper SCSI connector in slot 4 and SCSI cable Labeled 3 to the upper SCSI connector in slot 8, see Figure 47 on page 235.

- \_\_\_ Step 17. Plug both A60 Controller controller power cables into the PCC (located on the right side of the D14). Route cable under fan and follow along SCSI service loop.

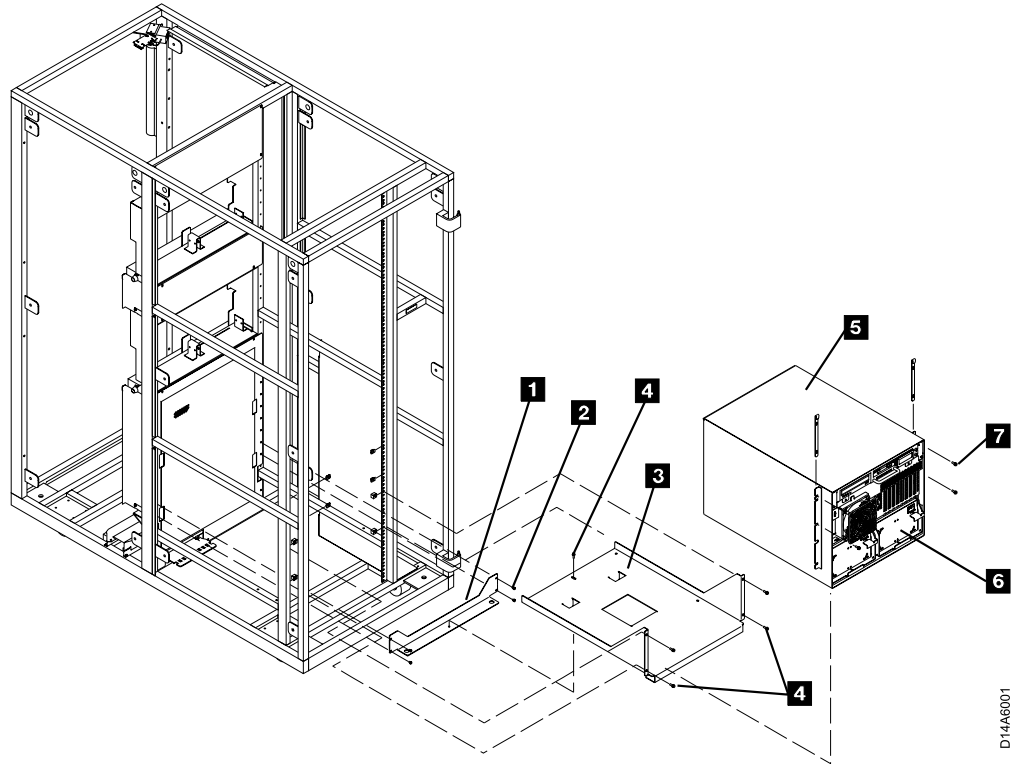
**Note:** The PCC is electrically divided in two separate banks with five outlets on each section, refer to Figure 48 on page 236 **7** and **8**. **Make sure that the two power cords coming from the A60 Controller are not plugged into the same bank.**

- \_\_\_ Step 18. Replug all cables unplugged in 10 on page 229.
- \_\_\_ Step 19. 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. Address the 3590 drives according to the table shown in Table 13 on page 198.
- \_\_\_ Step 20. You are now ready to do the installation check out, Go to “Installation Instructions for an A60 Controller in a 3494 D14 Frame” on page 184 to complete the installation.
- \_\_\_ Step 21. The table show the maximum number of four (4) drives, however your subsystem any not have the maximum number. Cable according to the table up to the number of 3590 drives that your subsystem contains. Addr3ess the 3590 drives according to the table shown in Table 20

Table 20. Controller to Drive SCSI Cable Connections

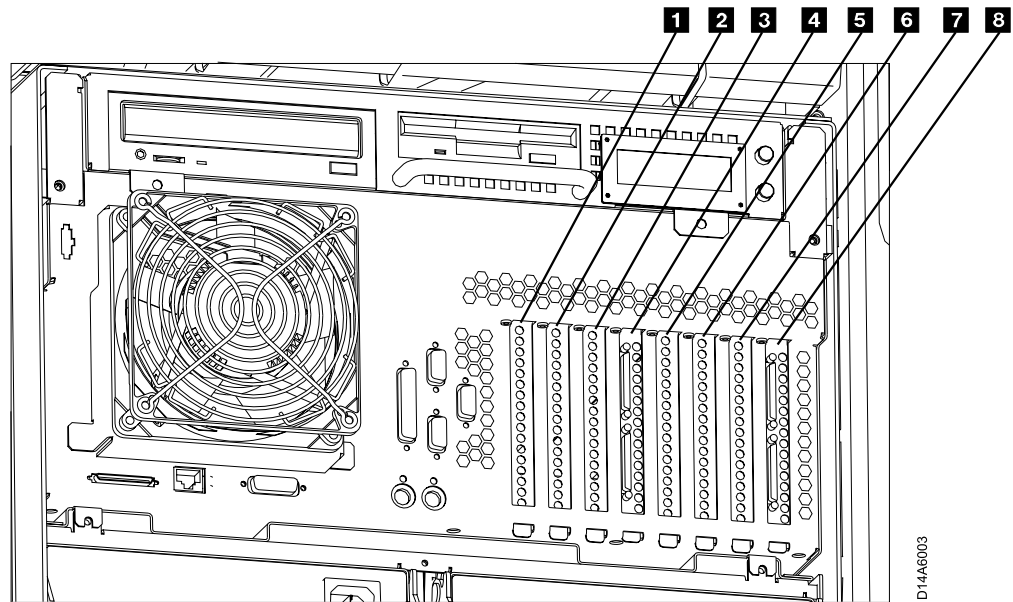
SCSI Adapter Slot 1 / Drive Port 0	SCSI Adapter Slot 2 / Drive Port 1
Drive 0 -> Address = 0	Drive 0 -> Address = 6
Drive 1 -> Address = 1	Drive 1 -> Address = 5
Drive 2 -> Address = 2	Drive 2 -> Address = 4
Drive 3 -> Address = 3	Drive 3 -> Address = 3

- \_\_\_ Step 22. You are now ready to do the installation check out, Go to “Installation Instructions for a 3590 A14 Frame” on page 175 to complete the installation.



D14A6001

Figure 46. A60 Controller Hardware installation



D14A6003

Figure 47. A60 Controller Card Slots

- Slot **1** - ESCON Host Interface
- Slot **2** - Not Used
- Slot **3** - Token Ring
- Slot **4** - SCSI Drive Interface
- Slot **5** - ESCON Host Interface

- Slot **6** - Not Used
- Slot **7** - Not Used
- Slot **8** - SCSI Drive Interface

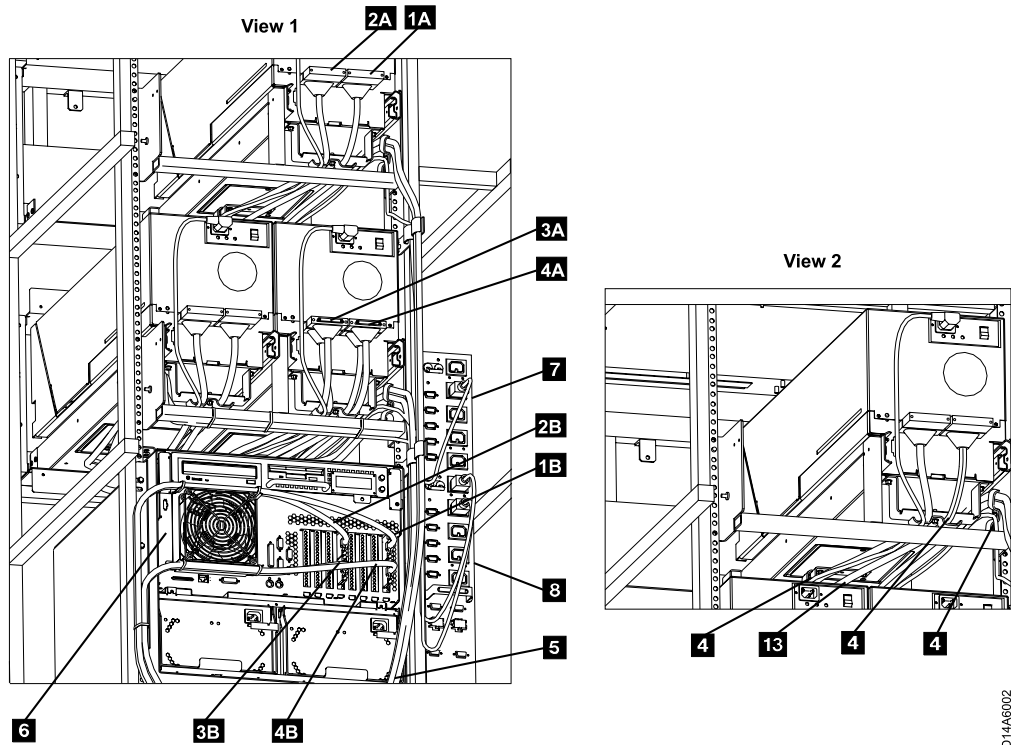


Figure 48. A60 Controller SCSI Cabling

D14A6002

# Replacing an A50 CU with a A60 CU in a 3494 D14 Frame

## 3494 D14 Frame

**Unpack the A60 Controller:** Determine the frame where you will be installing the A60 Controller and follow the checkoff list below:

\_\_\_ Step 1. You were sent here from MES instructions that should have made the 3494 Dataserver ready for service. If there is still power on the D14 frame that you are working on, return to the MES instructions and make sure that power is removed before proceeding to step 2.

In the following steps, refer to Figure 49 on page 238 and Figure 51 on page 242.

\_\_\_ Step 2. If not already unpacked, unpack the A60 Controller, from the carton. If the A60 Controller is on a pallet, you may want to leave it on the pallet to make it easier to install

The D14 frame may contain any where from 1 to 4 drives. These instructions have been structured to handle the 4 drive configuration. If your D14 contains less than 4 drives, skip the steps not applicable to your configuration. See Figure 50 on page 240 for the drive numbering convention in a D14. If your D14 frame has the 3590 control unit and hardware removed, go to step 15 on page 238 to continue installation.

\_\_\_ Step 3. Unplug all SCSI cables from drive 0 (lower right).

\_\_\_ Step 4. Unplug all drive to drive SCSI cables from drive 1 (lower left).

\_\_\_ Step 5. Loosen cable clamps, on the service loop and frame.

**Note:** If you want to see a diagram of the drive service loop, go to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0, form number SA37-0301-00, INST section, under "Cable Routing for Model B1A/E1A"*.

\_\_\_ Step 6. Remove and discard both CU to drive 0 SCSI cables from the service loop.

\_\_\_ Step 7. Separate drive power cables and retain in service loop

\_\_\_ Step 8. If more than 2 drives are installed, remove and discard the SCSI cables from drive 1 (lower left) to drive 2 (upper right).

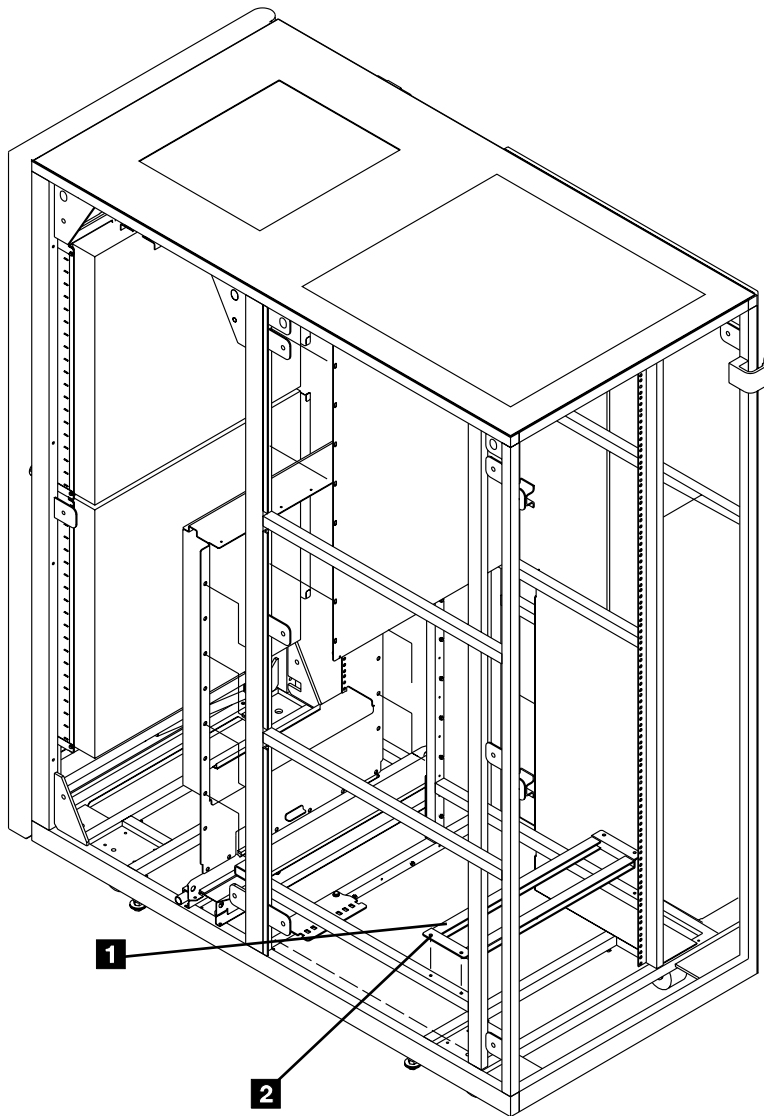
\_\_\_ Step 9. Any remaining SCSI cables are drive to drive cables. If required, re-label these cables to match the number assignment shown in Figure 50 on page 240

\_\_\_ Step 10. Remove any additional cables that may be attached to the A50 Control Unit.

\_\_\_ Step 11. Remove the A50 Control Unit from the D14 frame.

\_\_\_ Step 12. Remove all mounting hardware for the A50 Control Unit from the D14 frame.

\_\_\_ Step 13. Check to see if the D14 frame you are working on has a rectangular bracket near the rear of the frame where you will be working. Refer to Figure 49 on page 238, **1**.



D14A6006

Figure 49. Possible D14 Frame Parts

- \_\_\_ Step 14. If this D14 frame contains this bracket, remove it by removing the 4 screws, refer to Figure 49, **2**. If not continue with step 15  
Refer to Figure 51 on page 242 for the hardware installation of the A60 Controller in the D14 frame.
- \_\_\_ Step 15. Determine the Feature Code, or the frame that you are installing the A60 Controller controller into.
- \_\_\_ Step 16. Install **8 nut clips** (4 on each side), counting from bottom of the D14 frame in holes 7 10, 28, and 36. Refer toFigure 51 on page 242.
- \_\_\_ Step 17. Install the **shelf adapter bracket 1** using the 4 screws P/N 1624765 **2**. Mount in holes 1 and 2 counting up from the frame member on both sides. Refer toFigure 51 on page 242.
- \_\_\_ Step 18. Install the **A60 Controller shelf 3** with the flange side down, using 4 screws, P/N 1624779 **4**. Refer toFigure 51 on page 242.



\_\_\_ Step 19. **CAUTION:**

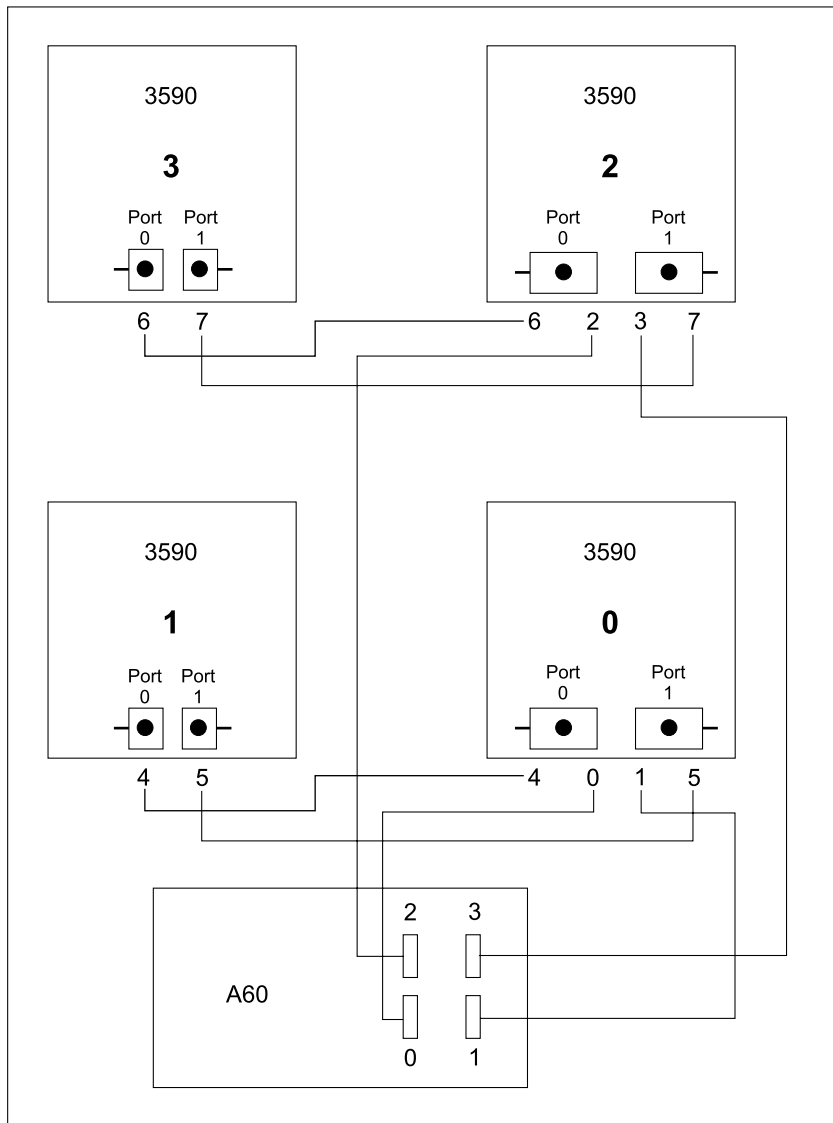
**Remove the two power supplies from the A60 Controller, see “Removal and Replace of the Power Supply or Power Supply Fan Assembly” on page 312. With the power supplies removed, the A60 Controller requires a minimum of two CE’s to lift the control unit into the frame.**

Install the A60 Controller **5** from the rear of the D14 frame with the front of the controller (side not enclosed in the case **6**) facing you, using 4 screws, P/N 1624779 **7** see Figure 51 on page 242.

\_\_\_ Step 20. Re-install previously removed power supplies.

**Notes:**

1. Notice that the new SCSI cable has a different type of connector on each end, the small connector attaches to the A60 Controller and the large connector attaches to the drive. If your D14 frame contains 1 or 2 drives, you will receive a pair of 3.5 meter control unit to drive cables, P/N 09L5107. Label one of these cables 0 and the other cable 1 (place the labels on both ends of the cable). Refer to Figure 50 on page 240.
2. If your D14 frame contains 3 or 4 drives, you will receive a second pair of new controller unit to drive cables. Label the cables, P/N 05H4650, 2 and 3 (place the labels on both ends of the cable). Refer to Figure 50 on page 240.



D14A6005

Figure 50. D14 Frame Drive Numbering Convention

At the completion of this installation, SCSI terminators (2) should be installed as shown in Table 21.

Table 21. D14 3590 Drive SCSI Termination

Number of 3590 Drives	Drive Termination
One Drive	(2) terminators piggy backed on drive 0 SCSI cables
Two Drives	(2) terminators piggy backed on drive 1 SCSI cables
Three Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 2 SCSI cables
Four Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 3 SCSI cables

- \_\_\_ Step 1. Install the new SCSI cable Labeled #0 . Refer to Figure 50 and Figure 52 on page 243 view 1 **3A** , plugging on the drive end on port 0 (left port) on the lower right drive.

- \_\_\_ Step 2. Install the new SCSI cable Labeled #1. Refer to Figure 50 on page 240 and Figure 52 on page 243 view 1 **4A** plugging on the drive end on port 1 (right port) on the lower right drive.

**Note:** Do Not attach the SCSI cables to the A60 Controller until instructed to do so.

- \_\_\_ Step 3. Re-install drive power cables.
- \_\_\_ Step 4. Re-plug existing SCSI cables from drive 0 (lower right) to drive 1 (lower left).
- \_\_\_ Step 5. Install on the back a set of SCSI terminators (P/N 05H4793) on the cables plugged into drive 1

*If you have more than 2 drives, repeat 1 on page 240 through 5 for drives 3 and 4, using new control unit to drive SCSI cables Labeled 2 and 3*

- \_\_\_ Step 6. Starting at the drive end, place the new SCSI cables in the service loop shown in Figure 52 on page 243, view 2 **13** .

**Notes:**

- a. If you want to see a diagram of the drive service loop, go to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0*, INST section under "Cable Routing for Model B1A/E1A".
  - b. Make sure that the service loop allows the drives to fully extend out for service.
- \_\_\_ Step 7. When the service loop is correct, tighten the three sets of cable clamps, shown in Figure 52 on page 243, view 2 **4** .
  - \_\_\_ Step 8. Using the cable ties supplied with the MES, rebuild a neat and secure service loop.
- Repeat 6 through 8 for all drives installed in this D14 frame.*
- \_\_\_ Step 9. Counting from left to right, the SCSI Adapters should only be in A60 Controller slots 4 and 8, refer to Figure 53 on page 243. Ensure the SCSI adapter(s) are in the correct locations on the A60 Controller
  - \_\_\_ Step 10. Route the SCSI cables from the drives down the right side of the D14 frame and through the cable clamp, refer to Figure 52 on page 243 **5** , tighten clamp.

**Note:** You will be forming a service loop with the cables. The following steps tell you where to route them. After routing use cable ties to complete service loop. Use holes in fan bracket to hold cables across or under fan bracket with the ties.

- \_\_\_ Step 11. Route the SCSI cables, Labeled 2 and 3 **1B** and **2B** across the top of the front fan, see Figure 52 on page 243.
- \_\_\_ Step 12. Route the SCSI cables, Labeled 0 and 1 **3B** and **4B** across the bottom of the front fan, see Figure 52 on page 243.
- \_\_\_ Step 13. Check that all of the cable clamps are tight to ensure minimum stress on the SCSI adapter connectors when the cables are attached.
- \_\_\_ Step 14. Connect SCSI cable Labeled 0 to the lower SCSI connector in slot 4 and SCSI cable Labeled 1 to the lower SCSI connector in slot 8, see Figure 53 on page 243.
- \_\_\_ Step 15. If more than 2 drives are installed, connect SCSI cable Labeled 2 to the upper SCSI connector in slot 4 and SCSI cable Labeled 3 to the upper SCSI connector in slot 8, see Figure 53 on page 243.

- \_\_ Step 16. Plug both A60 Controller controller power cables into the PCC (located on the right side of the D14). Route cable under fan and follow along SCSI service loop.

**Note:** The PCC is electrically divided in two separate banks with five outlets on each section, refer to Table 21 on page 240 **7** and **8**. **Make sure that the two power cords coming from the A60 Controller are not plugged into the same bank.**

- \_\_ Step 17. Replug all cables unplugged in 10 on page 237.
- \_\_ Step 18. 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. Address the 3590 drives according to the table shown in Table 22.

Table 22. 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

- \_\_ Step 19. You are now ready to do the installation check out, Go to "Installation Instructions for an A60 Controller in a 3494 D14 Frame" on page 184 to complete the installation.

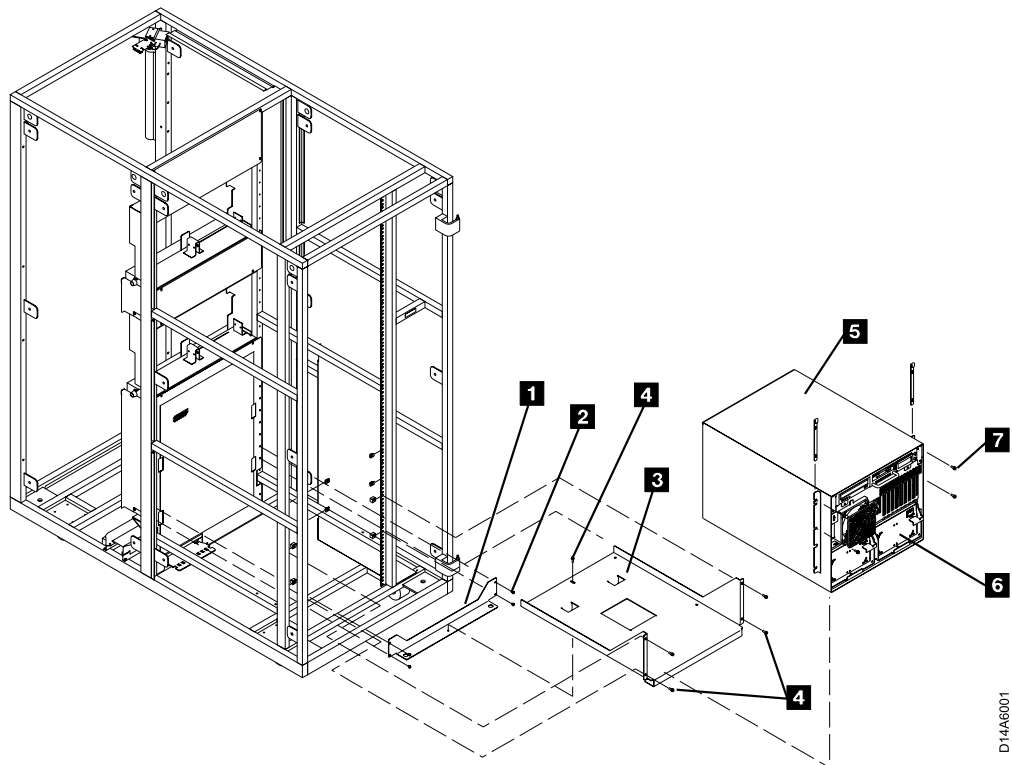
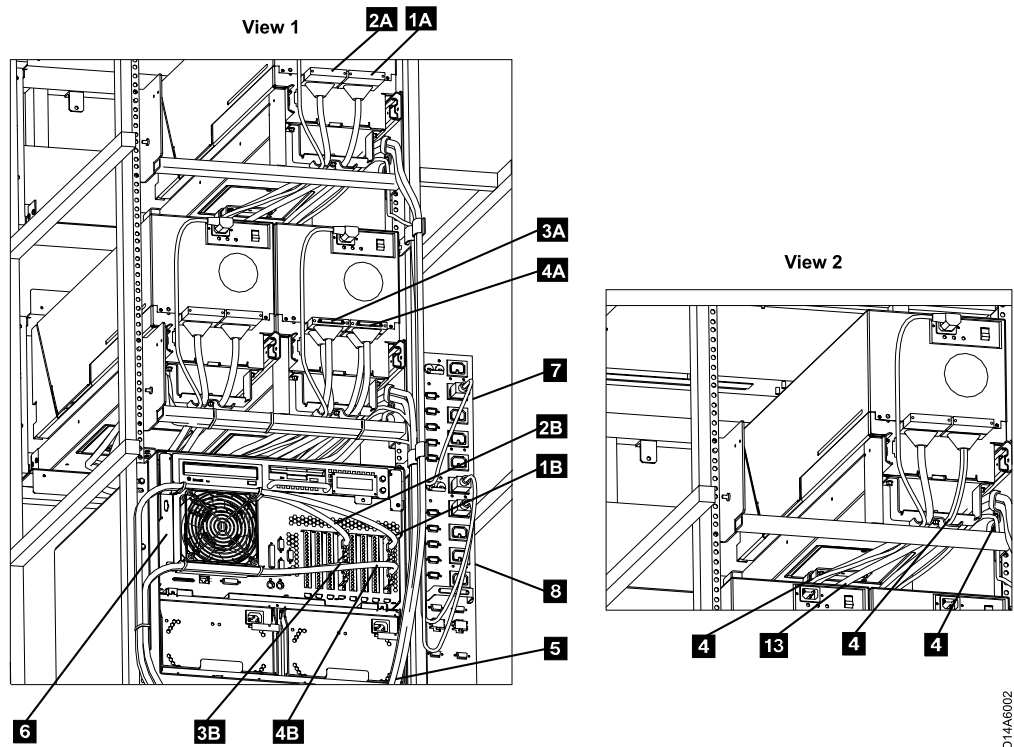
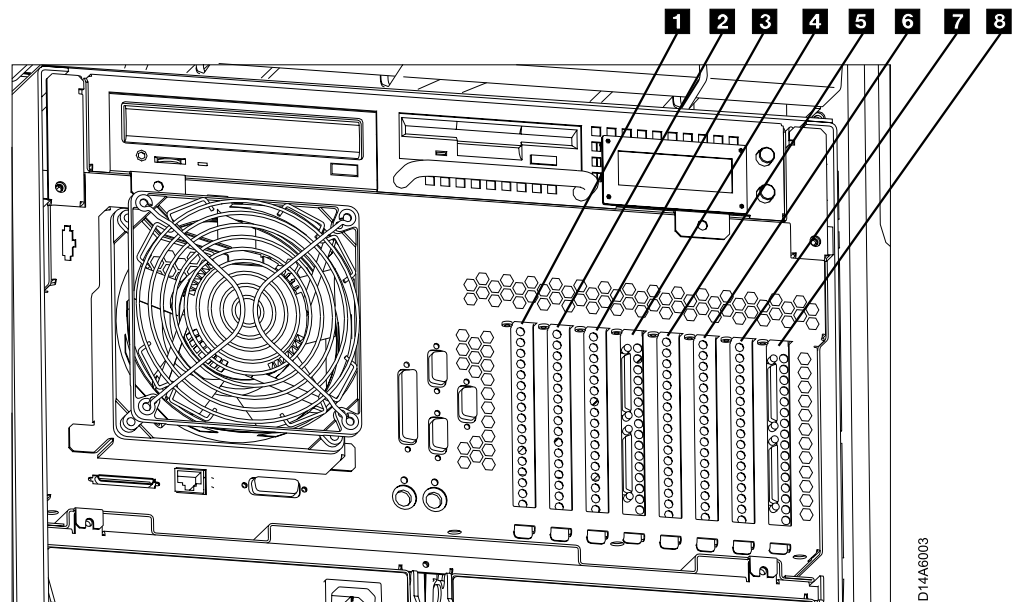


Figure 51. A60 Controller Hardware installation



D14A6002

Figure 52. A60 Controller SCSI Cabling



D14A6003

Figure 53. A60 Controller Card Slots

- Slot **1** - ESCON Host Interface
- Slot **2** - Not Used
- Slot **3** - Token Ring
- Slot **4** - SCSI Drive Interface
- Slot **5** - ESCON Host Interface

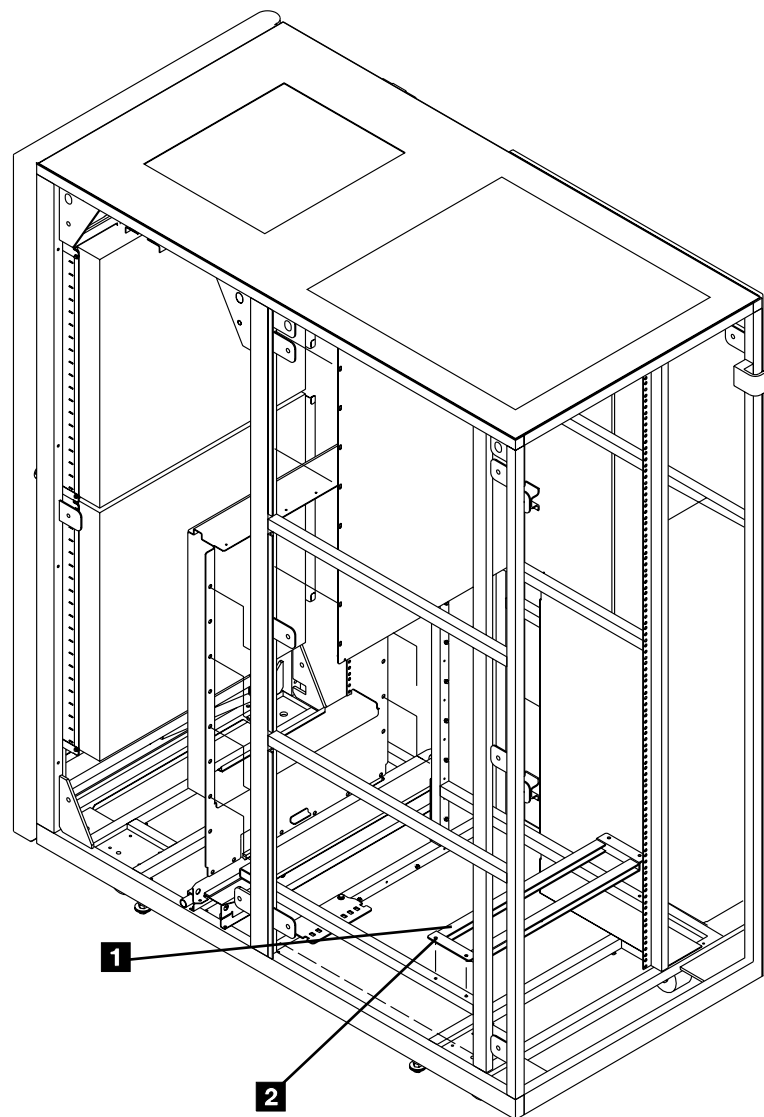
- Slot **6** - Not Used
- Slot **7** - Not Used
- Slot **8** - SCSI Drive Interface

# Installation Instructions for Installing a A60 CU in an Existing 3494 D14 Frame

## 3494 D14 Frame

**Unpack the A60 Controller:** Determine the frame where you will be installing the A60 Controller and follow the checkoff list below:

- \_\_\_ Step 1. You were sent here from MES instructions that should have made the 3494 Dataserver ready for service. If there is still power on the D14 frame that you are working on, return to the MES instructions and make sure that power is removed before proceeding to step 2.
- \_\_\_ Step 2. Check to see if the D14 frame you are working on has a rectangular bracket near the rear of the frame where you will be working. Refer to Figure 54, **1**.



D14A6006

Figure 54. 'Possible D14 Frame Parts

- \_\_\_ Step 3. If this D14 frame contains this bracket, remove it by removing the 4 screws, refer to Figure 54 on page 245, **2**.

In the following steps, refer to Figure 56 on page 249.

- \_\_\_ Step 4. If not already unpacked, unpack the A60 Controller, from the carton, lay in on the floor.

Refer to Figure 56 on page 249 for the hardware installation of the A60 Controller in the D14 frame.

- \_\_\_ Step 5. Determine the Feature Code, or the frame that you are installing the A60 Controller controller into.
- \_\_\_ Step 6. Install **8 nut clips** (4 on each side), counting from bottom of the D14 frame in holes 7 10, 28, and 36. Refer to Figure 56 on page 249.
- \_\_\_ Step 7. Install the **shelf adapter bracket 1** using the 4 screws P/N 1624765 **2** see Figure 56 on page 249. Mount in holes 1 and 2 counting up from the frame member on both sides. Refer to Figure 56 on page 249.
- \_\_\_ Step 8. Install the **A60 Controller shelf 3** with the flange side down, using 4 screws, P/N 1624779 **4**. Refer to Figure 56 on page 249.
- \_\_\_ Step 9. **CAUTION:**  
**Remove the two power supplies from the A60 Controller, see “Removal and Replace of the Power Supply or Power Supply Fan Assembly” on page 312. With the power supplies removed, the A60 Controller requires a minimum of two CE’s to lift the control unit into the frame.**  
Install the A60 Controller **5** from the rear of the D14 frame with the front of the controller (side not enclosed in the case **6**) facing you, using 4 screws, P/N 1624779 **7**. Refer to Figure 56 on page 249.
- \_\_\_ Step 10. Re—install the two power supplies previously removed.

**Notes:**

1. Notice that the new SCSI cable has a different type of connector on each end, the small connector attaches to the A60 Controller and the large connector attaches to the drive. If your D14 frame contains 1 or 2 drives, you will receive a pair of 3.5 meter control unit to drive cables, P/N 09L5107. Lable one of these cables 0 and the other cable 1 (place the lables on both ends of the cable). Refer to Figure 55 on page 247.
2. If your D14 frame contains 3 or 4 drives, you will receive a second pair of control unit to drive cables. Lable the cables, P/N 05H4650, 2 and 3 (place the lables on both ends of the cable). Refer to Figure 55 on page 247.



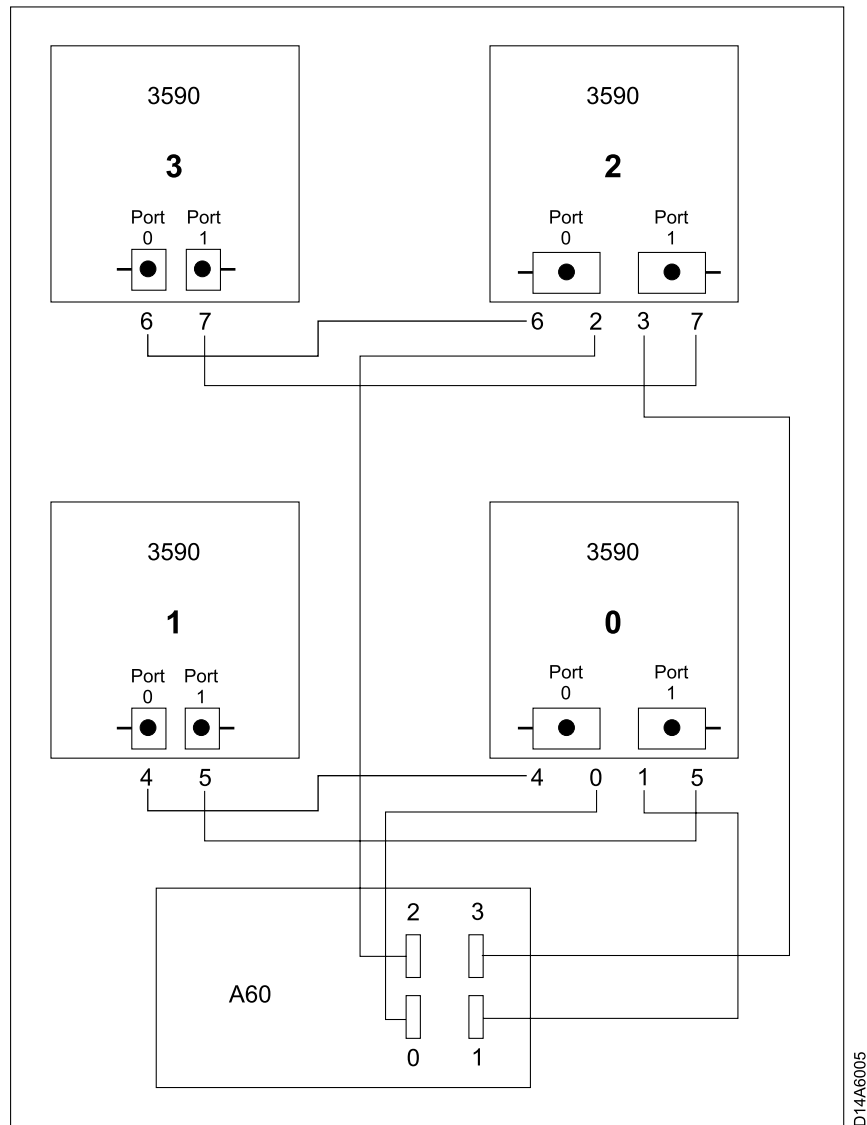


Figure 55. D14 Frame Drive Numbering Convention

At the completion of this installation, SCSI terminators (2) should be installed as shown in Table 23

Table 23. D14 3590 Drive SCSI Termination

Number of 3590 Drives	Drive Termination
One Drive	(2) terminators piggy backed on drive 0 SCSI cables
Two Drives	(2) terminators piggy backed on drive 1 SCSI cables
Three Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 2 SCSI cables
Four Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 3 SCSI cables

- \_\_\_ Step 1. Install the new SCSI cable Labeled #0 . Refer to Figure 55 and Figure 57 on page 250 view 1 **3A** , plugging on the drive end on port 0 (left port) on the lower right drive.

- \_\_\_ Step 2. Install the new SCSI cable Labeled #1. Refer to Figure 55 on page 247 and Figure 57 on page 250 view 1 **4A** plugging on the drive end on port 1 (right port) on the lower right drive.

**Note:** Do Not attach the SCSI cables to the A60 Controller until instructed to do so.

- \_\_\_ Step 3. Re-install drive power cables.
- \_\_\_ Step 4. Re-plug existing SCSI cables from drive 0 (lower right) to drive 1 (lower left).
- \_\_\_ Step 5. Install on the back a set of SCSI terminators (P/N 05H4793) on the cables plugged into drive 1

*If you have more than 2 drives, repeat 1 on page 247 through 5 for drives 3 and 4, using new control unit to drive SCSI cables Labeled 2 and 3*

- \_\_\_ Step 6. Starting at the drive end, place the new SCSI cables in the service loop shown in Figure 57 on page 250, view 2 **13** .

**Notes:**

- a. If you want to see a diagram of the drive service loop, go to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0*, INST section under "Cable Routing for Model B1A/E1A".
  - b. Make sure that the service loop allows the drives to fully extend out for service.
- \_\_\_ Step 7. When the service loop is correct, tighten the three sets of cable clamps, shown in Figure 57 on page 250, view 2 **4** .
  - \_\_\_ Step 8. Using the cable ties supplied with the MES, rebuild a neat and secure service loop.

*Repeat 6 through 8 for all drives installed in this D14 frame.*

- \_\_\_ Step 9. Counting from left to right, the SCSI Adapters should only be in A60 Controller slots 4 and 8, refer to Figure 59 on page 252. Ensure the SCSI adapter(s) are in the correct locations on the A60 Controller
- \_\_\_ Step 10. Route the SCSI cables from the drives down the right side of the D14 frame and through the cable clamp, refer to Figure 57 on page 250 **5** , tighten clamp.

**Note:** You will be forming a service loop with the cables. The following steps tell you where to route them. After routing use cable ties to complete service loop. Use holes in fan bracket to hold cables across or under fan bracket with the ties.

- \_\_\_ Step 11. Route the SCSI cables, Labeled 2 and 3 **1B** and **2B** across the top of the front fan, see Figure 57 on page 250.
- \_\_\_ Step 12. Route the SCSI cables, Labeled 0 and 1 **3B** and **4B** across the bottom of the front fan, see Figure 57 on page 250.
- \_\_\_ Step 13. Check that all of the cable clamps are tight to ensure minimum stress on the SCSI adapter connectors when the cables are attached.
- \_\_\_ Step 14. Connect SCSI cable Labeled 0 to the lower SCSI connector in slot 4 and SCSI cable Labeled 1 to the lower SCSI connector in slot 8, see Figure 59 on page 252.
- \_\_\_ Step 15. If more than 2 drives are installed, connect SCSI cable Labeled 2 to the upper SCSI connector in slot 4 and SCSI cable Labeled 3 to the upper SCSI connector in slot 8, see Figure 59 on page 252.

- \_\_\_ Step 16. Plug both A60 Controller controller power cables into the PCC (located on the right side of the D14). Route cable under fan and follow along SCSI service loop.

**Note:** The PCC is electrically divided in two separate banks with five outlets on each section, refer to Figure 57 on page 250 **7** and **8**. **Make sure that the two power cords coming from the A60 Controller are not plugged into the same bank.**

- \_\_\_ Step 17. 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. Address the 3590 drives according to the table shown in Table 24.

Table 24. 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

- \_\_\_ Step 18. You are now ready to do the installation check out, Go to “Installation Instructions for an A60 Controller in a 3494 D14 Frame” on page 184 to complete the installation.

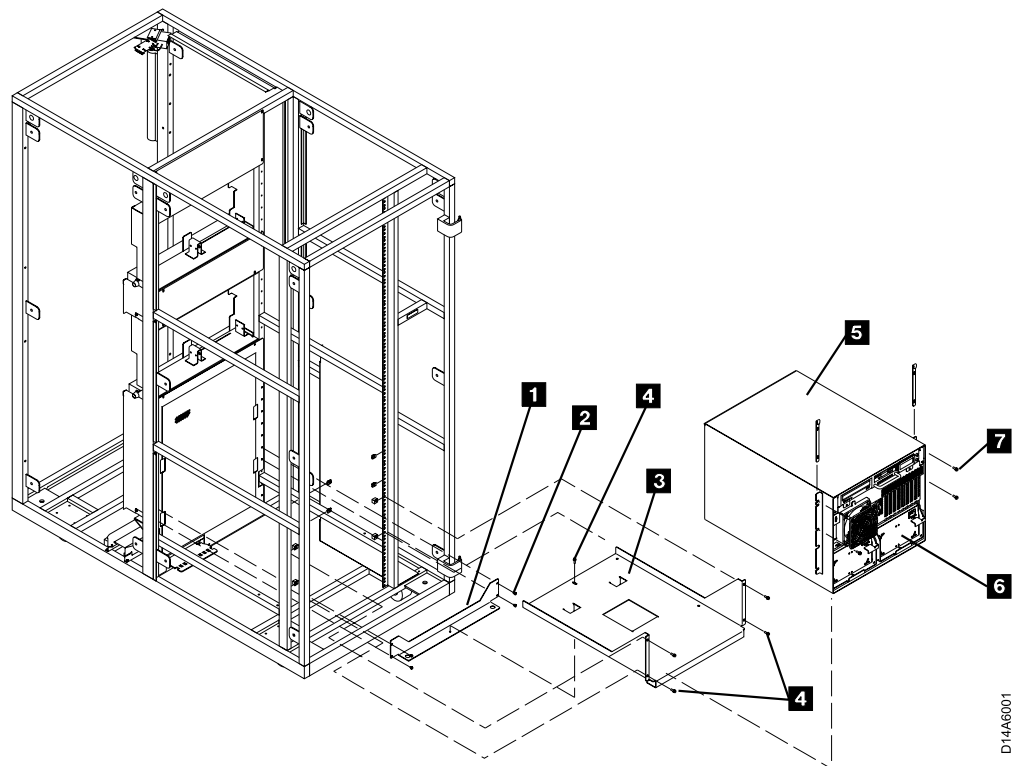


Figure 56. A60 Controller Hardware installation

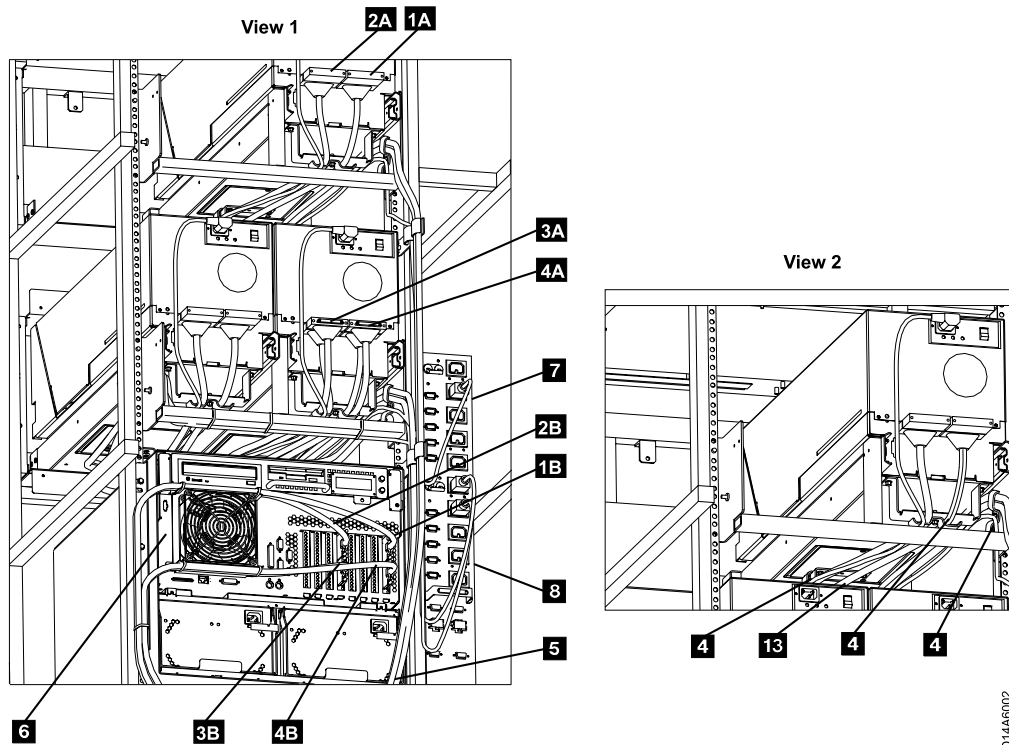


Figure 57. A60 Controller SCSI Cabling

## Instructions for Removing an A60 CU from a 3494 D14 Frame

You were sent here from MES instructions that should have made the 3494 Dataserver ready for service. All of the drive hardware and cables should have been removed from this D14. If there is still power on the D14 frame that you are working on, return to the MES instructions and make sure that power is removed before proceeding.

- \_\_\_ Step 1. If this D14 was attached via the LAN, remove the LAN cable from the A60 Controller, refer to Figure 58 on page 251 **13**.
- \_\_\_ Step 2. If this D14 was attached via the RS422, remove the RS422 cable from the A60 Controller, refer to Figure 58 on page 251, **8**.
- \_\_\_ Step 3. Remove the ESCON cables from the A60 Controller, refer to Figure 59 on page 252 **1** and **5**.
- \_\_\_ Step 4. Remove 4 screws, P/N 1624779, refer to Figure 60 on page 253 **7**.
- \_\_\_ Step 5. **CAUTION:**  
Remove the two power supplies from the A60 Controller, see "Removal and Replace of the Power Supply or Power Supply Fan Assembly" on page 312. With the power supplies removed, the A60 Controller requires a minimum of two CE's to lift the control unit into the frame.
- \_\_\_ Step 6. Physically remove the A60 Controller from the shelf by sliding forward. Refer to Figure 60 on page 253 **5**.
- \_\_\_ Step 7. Re—install the two power supplies removed previously.
- \_\_\_ Step 8. Remove 5 screws P/N 1624779, refer to Figure 60 on page 253 **4**.
- \_\_\_ Step 9. Remove the shelf from the D14 frame, see Figure 60 on page 253 **3**.
- \_\_\_ Step 10. Remove 4 screws P/N 1624765, refer to Figure 60 on page 253 **2**.
- \_\_\_ Step 11. Remove the shelf adapter bracket, refer to Figure 60 on page 253 **1**.

\_\_\_ Step 12. Remove the 8 nut clips (4 on each side) counting from bottom of the D14 frame in holes 7, 10, 28, and 36.

This completes the hardware removal of the A60 Controller, return to the procedure that sent you here.

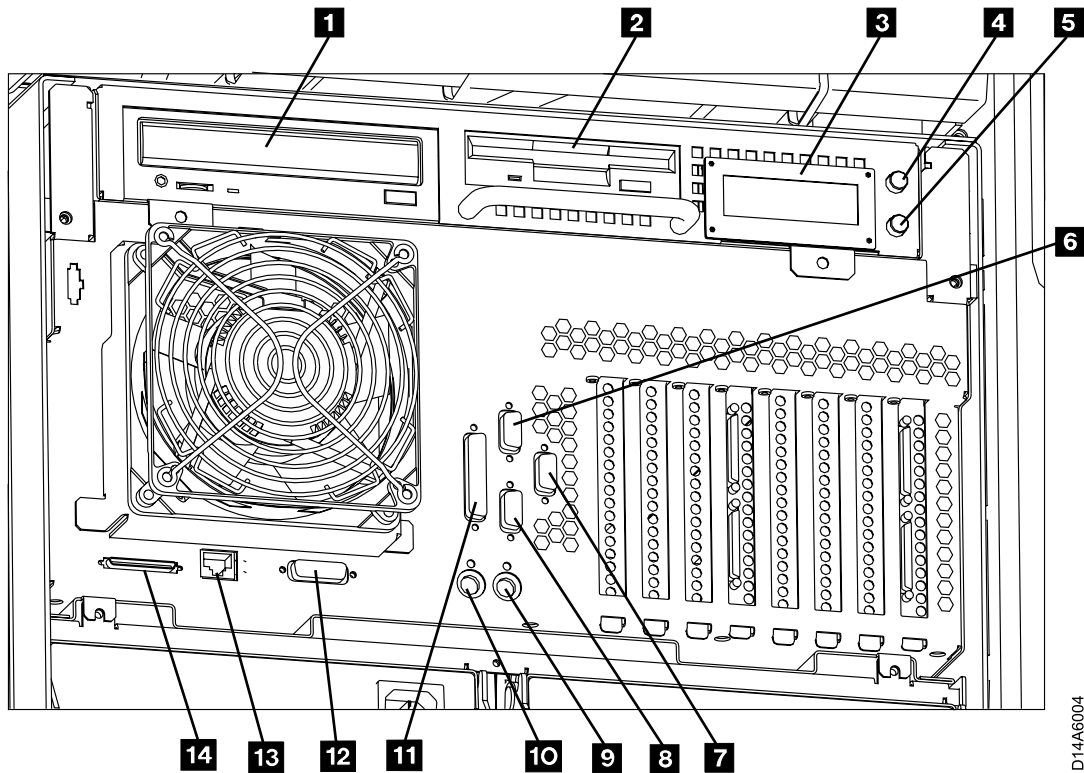
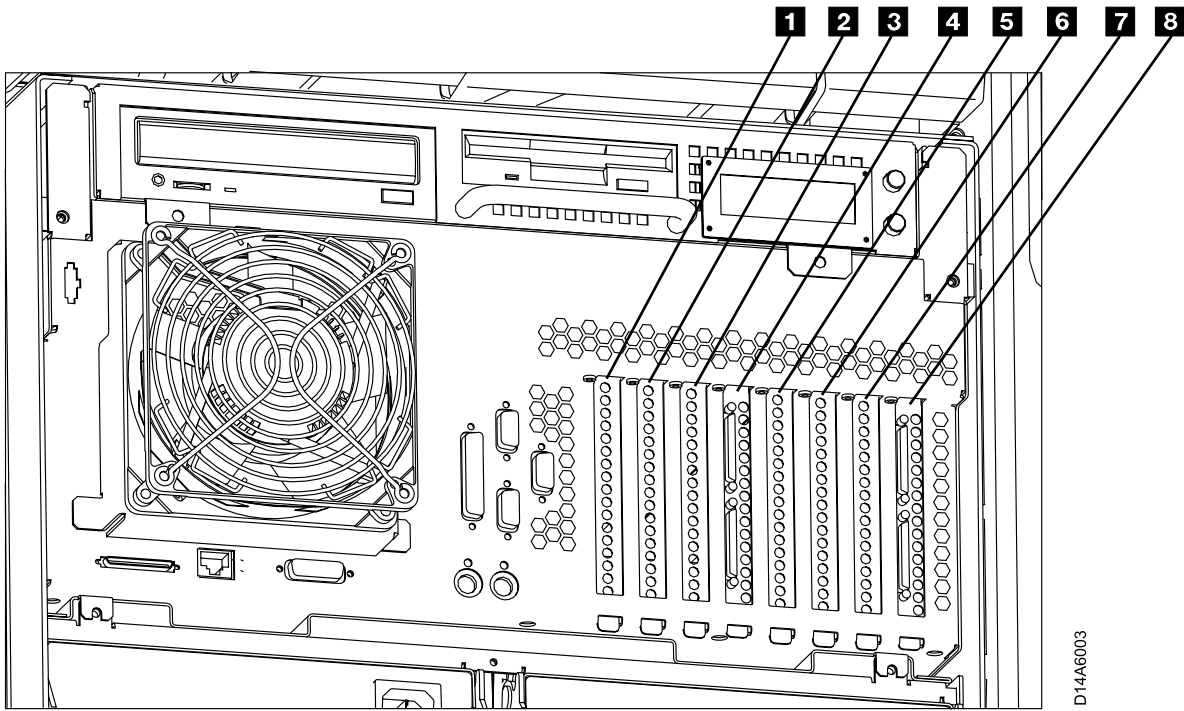


Figure 58. A60 Controller Controller Cable Connections

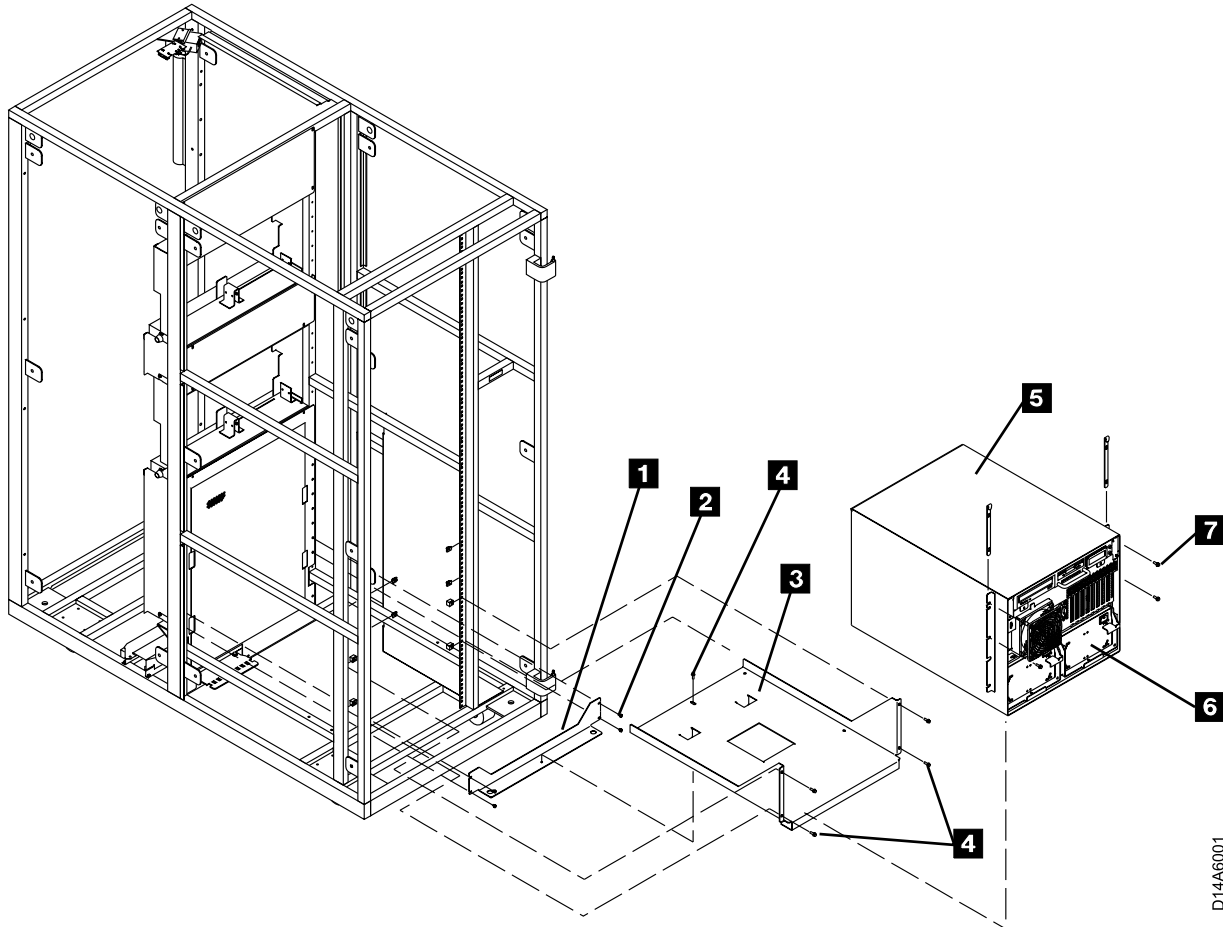
- **1** — CD-ROM Drive
- **2** — Floppy Disk Drive
- **3** — LED Display
- **4** — Power ON/OFF Switch
- **5** — Reset Switch
- **6** — Service Terminal or Remote EBTERM connection to WTI switch (S1 Port)
- **7** — Remote Service connection for SLIP to WTI switch (S3 Port)
- **8** — Library Manager Connection for RS422, (FC 9061) attach (S2 Port)
- **9** — Mouse (Not Used)
- **10** — Keyboard (Not Used)
- **11** — Parallel Port
- **12** — Ethernet (Not Used)
- **13** — LAN Connection
- **14** — SCSI Bus
-



D14A6003

Figure 59. A60 Controller Card Slots

- Slot **1** - ESCON Host Interface
- Slot **2** - Not Used
- Slot **3** - Token Ring
- Slot **4** - SCSI Drive Interface
- Slot **5** - ESCON Host Interface
- Slot **6** - Not Used
- Slot **7** - Not Used
- Slot **8** - SCSI Drive Interface



D14A6001

Figure 60. A60 Controller Hardware Locations

## Instructions for Adding a Second A60 CU in a 3590 C10 Frame

Determine the C10 frame where you will be installing the A60 Controller and follow the checkoff list below:

- \_\_\_ Step 1. You were sent here from MES instructions that should have made the C10 frame ready for service. If there is still power on the C10 frame that you are working on, return to the MES instructions and make sure that power is removed before proceeding to step 2.
- \_\_\_ Step 2. If not already unpacked, unpack the A60 Controller, from the carton. If the A60 Controller is on a pallet, you may want to leave it on the pallet to make it easier to install.

In the following steps, refer to Figure 61 on page 254.

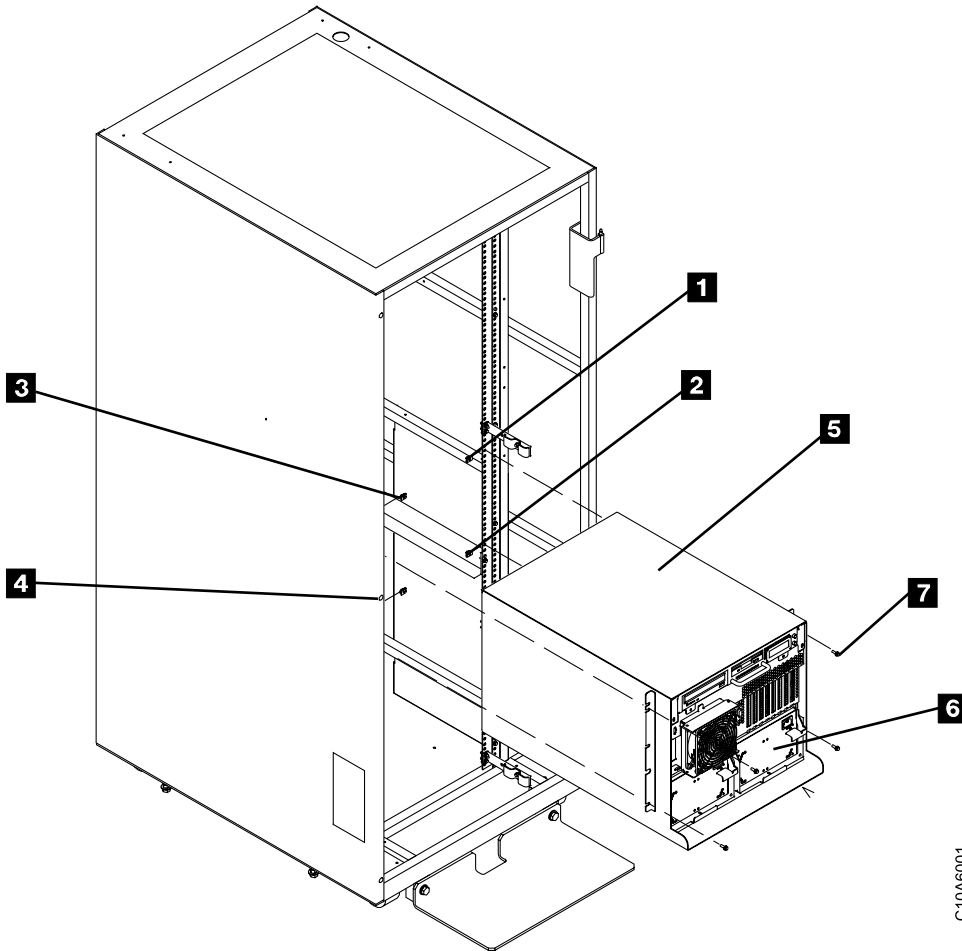
- \_\_\_ Step 3. Install 4 nut clips (2 on each side), **1** through **4** frame in holes 44 and 62 on each side. Refer to Figure 61 on page 254.

**Note:** The A60 Controller sets on the support (20' RACK member) shown at the nut clip holes 44 on each side of the frame.

- \_\_\_ Step 4. **CAUTION:**  
Remove the two power supplies from the A60 Controller, see “Removal and Replace of the Power Supply or Power Supply Fan Assembly” on page 312. With the power supplies removed, the A60 Controller requires a minimum of two CE’s to lift the control unit into the frame.

Install the A60 Controller **5** from the rear of the C10 frame with the front of the controller (side not enclosed in the case **6**) facing you, using 4 screws, P/N 1624779 **7** see Figure 61.

- \_\_\_ Step 5. Re—install power supplies previously removed.



C10A6001

Figure 61. Second A60 Controller in a C10 Frame

You are now ready to do the installation check out, Go to “Installation Instructions for a 3590 C10 Frame” on page 197 to complete the installation.



# Instructions for Installing an A60 CU in a RACK

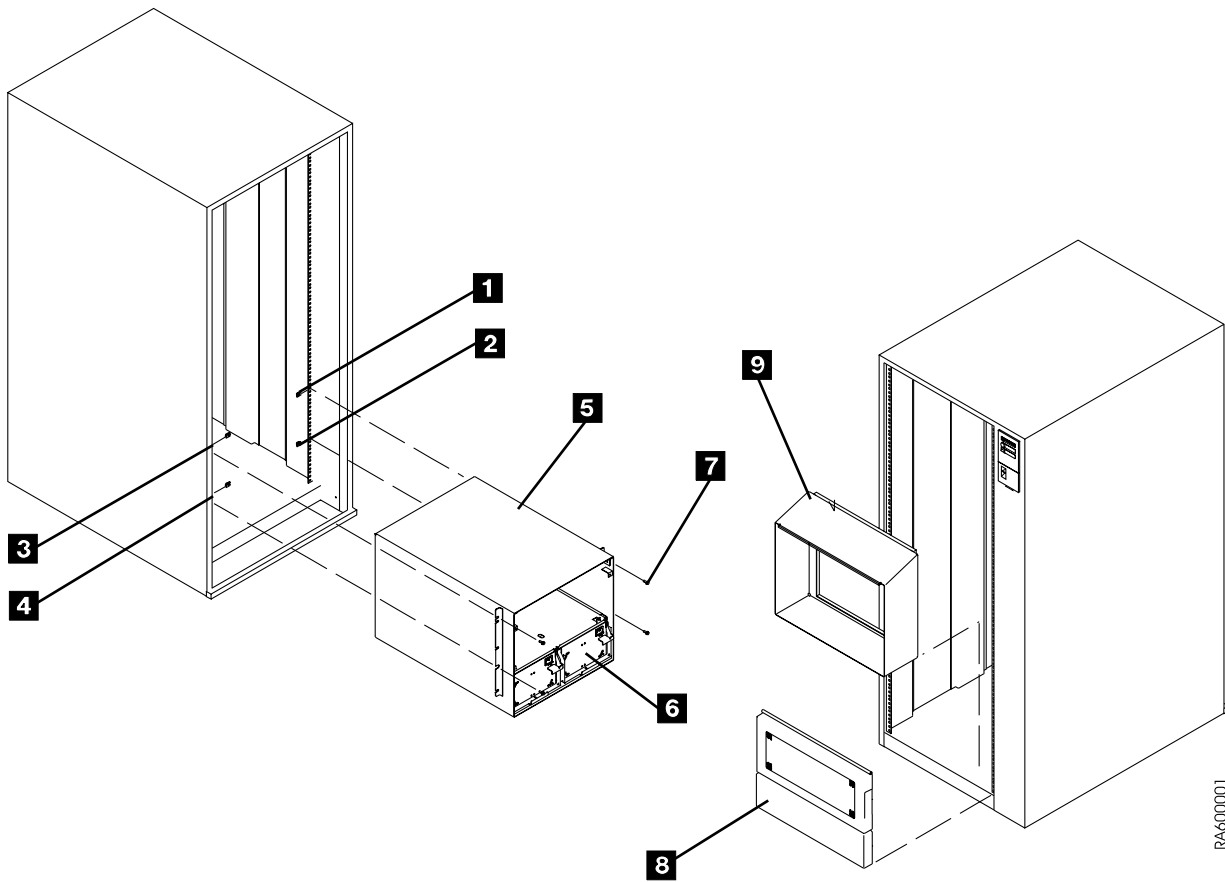
## Unpack the A60 Controller

Determine the frame where you will be installing the A60 Controller and follow the checkoff list below:

- \_\_\_ Step 1. The 3590 drives should already be install before you start this procedure, if the drives are not already installed, go to the IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0, INSTALL section and return here when drives are installed.
- \_\_\_ Step 2. If not already unpacked, unpack the A60 Controller, from the carton. If the A60 Controller is on a pallet, you may want to leave it on the pallet to make it easier to install.
- \_\_\_ Step 3. You were sent here from MES instructions that should have made the RACK ready for service. If there is still power on the RACK that you are working on, return to the MES instructions and make sure that power is removed before proceeding to step 4.
- \_\_\_ Step 4. Install 4 nut clips (2 on each side), **1** through **4** counting from bottom of the RACK in holes 6, and 25 on each side. Refer to Figure 62 on page 256

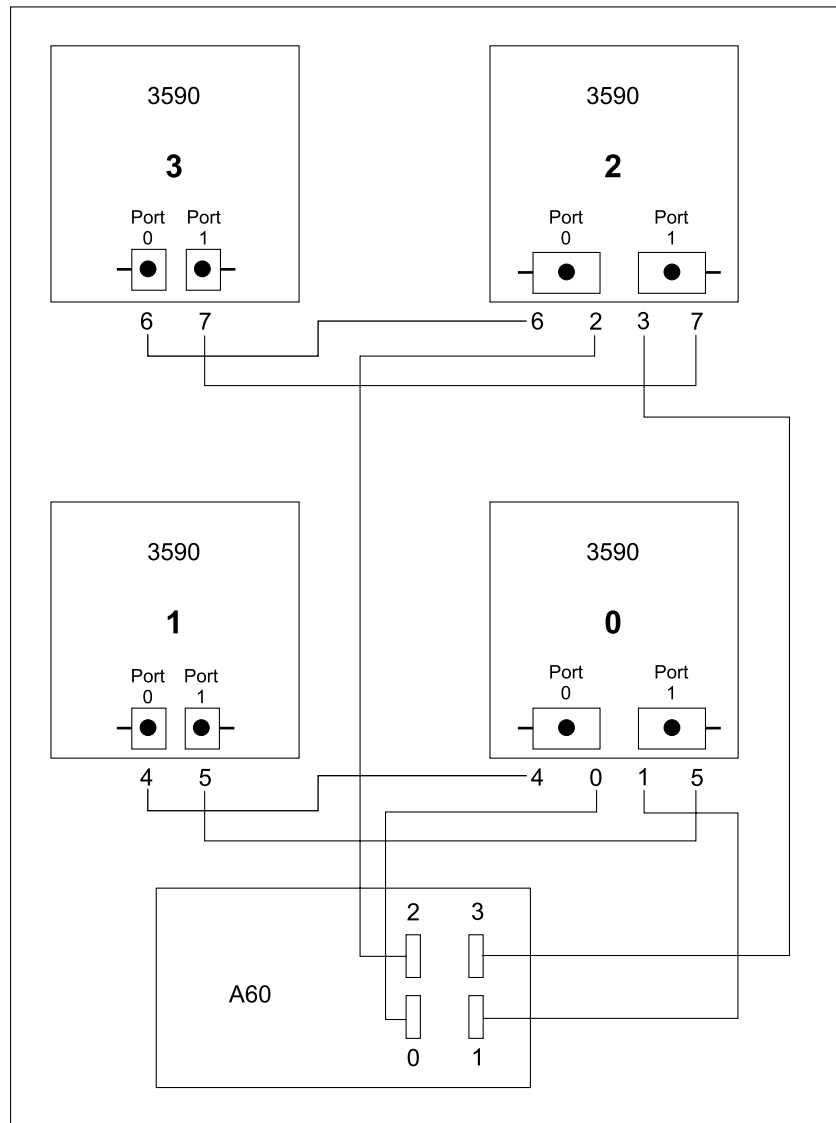
**Note:** The A60 Controller sets on the bottom of the RACK.

- \_\_\_ Step 5. **CAUTION:**  
**Remove the two power supplies from the A60 Controller, see "Removal and Replace of the Power Supply or Power Supply Fan Assembly" on page 312. With the power supplies removed, the A60 Controller requires a minimum of two CE's to lift the control unit into the frame.**  
Install the A60 Controller **5** from the rear of the RACK with the front of the controller (side not enclosed in the case **6** ) to the front of the RACK, using 4 screws, P/N 1624779 **7** see Figure 62 on page 256.
- \_\_\_ Step 6. Re—install power supplies previously removed.
- \_\_\_ Step 7. Install the baffle, refer to Figure 62 on page 256 **9** , above the A60 Controller as shown, on front of the RACK
- \_\_\_ Step 8. Install the two EIA panels, refer to Figure 62 on page 256 **8**



RA600001

Figure 62. A60 RACK Hardware Installation



D14A6005

Figure 63. RACK Drive Numbering Convention

**Notes:**

1. Notice that the new SCSI cable has a different type of connector on each end, the small connector attaches to the A60 Controller and the large connector attaches to the drive. If your RACK contains 1 or 2 drives, you will receive a pair of 3.5 meter control unit to drive cables, P/N 09L5107. Label one of these cables 0 and the other cable 1 (place the labels on both ends of the cable). Refer to Figure 63.
2. If your RACK contains 3 or 4 drives, you will receive a second pair of new controller unit to drive cables. Label the cables, P/N 05H4650, 2 and 3 (place the labels on both ends of the cable). Refer to Figure 63.

At the completion of this installation, SCSI terminators (2) should be installed as shown in Table 25.

Table 25. RACK 3590 Drive SCSI Termination

Number of 3590 Drives	Drive Termination
One Drive	(2) terminators piggy backed on drive 0 SCSI cables

Table 25. RACK 3590 Drive SCSI Termination (continued)

Number of 3590 Drives	Drive Termination
Two Drives	(2) terminators piggy backed on drive 1 SCSI cables
Three Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 2 SCSI cables
Four Drives	(2) terminators piggy backed on drive 1 SCSI cables and (2) terminators piggy backed on drive 3 SCSI cables

- \_\_\_ Step 1. Install the new SCSI cable Labeled #0, refer to IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0, INSTALL section
- \_\_\_ Step 2. Install the new SCSI cable Labeled#1, refer to IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0, INSTALL section.

**Note: Do Not** attach the SCSI cables to the A60 Controller until instructed to do so.

- \_\_\_ Step 3. Re-install drive power cables.
- \_\_\_ Step 4. Re-plug existing SCSI cables from drive 0 (lower right) to drive 1 (lower left).
- \_\_\_ Step 5. Install on the back a set of SCSI terminators (P/N 05H4793) on the cables plugged into drive 1 (lower left).

**If you have more than 2 drives, repeat 1 through 5 for drives 3 and 4, using new control unit to drive SCSI cables Labeled 2 and 3**

- \_\_\_ Step 6. Starting at the drive end, place the new SCSI cables in the service loop using the articulating arm as shown in IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0. INSTALL section.

**Notes:**

- a. If you want to see a diagram of the drive service loop, go to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0, INST section under "Cable Routing for Model B1A/E1A"*.
- b. Make sure that the service loop allows the drives to fully extend out for service.
- \_\_\_ Step 7. Using the cable ties supplied with the MES, rebuild a neat and secure service loop.

**Repeat 6 through 7 for all drives installed in this RACK.**

- \_\_\_ Step 8. Counting from left to right, the SCSI Adapters should only be in A60 Controller slots 4 and 8, refer to Figure 64 on page 259.
- \_\_\_ Step 9. Ensure the SCSI adapter(s) are in the correct locations on the A60 Controller , refer to Figure 64 on page 259.

**Note:** You will be forming a service loop with the cables. The following steps tell you where to route them. After routing use cable ties to complete service loop. Use holes in fan bracket to hold cables across or under fan bracket with the ties.

- \_\_\_ Step 10. Route the SCSI cables Labeled 0 and 1 across the bottom of the front fan.
- \_\_\_ Step 11. Route the SCSI cables Labeled 2 and 3 across the top of the front fan.

- \_\_\_ Step 12. Connect SCSI cable Labeled 0 to the lower SCSI connector in slot 4 and SCSI cable Labeled 1 to the lower SCSI connector in slot 8, see Figure 64.
- \_\_\_ Step 13. If more than 2 drives are installed, connect SCSI cable Labeled 2 to the upper SCSI connector in slot 4 and SCSI cable Labeled 3 to the upper SCSI connector in slot 8, see Figure 64.
- \_\_\_ Step 14. Plug both A60 Controller controller power cables into the PCC (located on the lower left side of the RACK). Route cable under fan and follow along SCSI service loop.

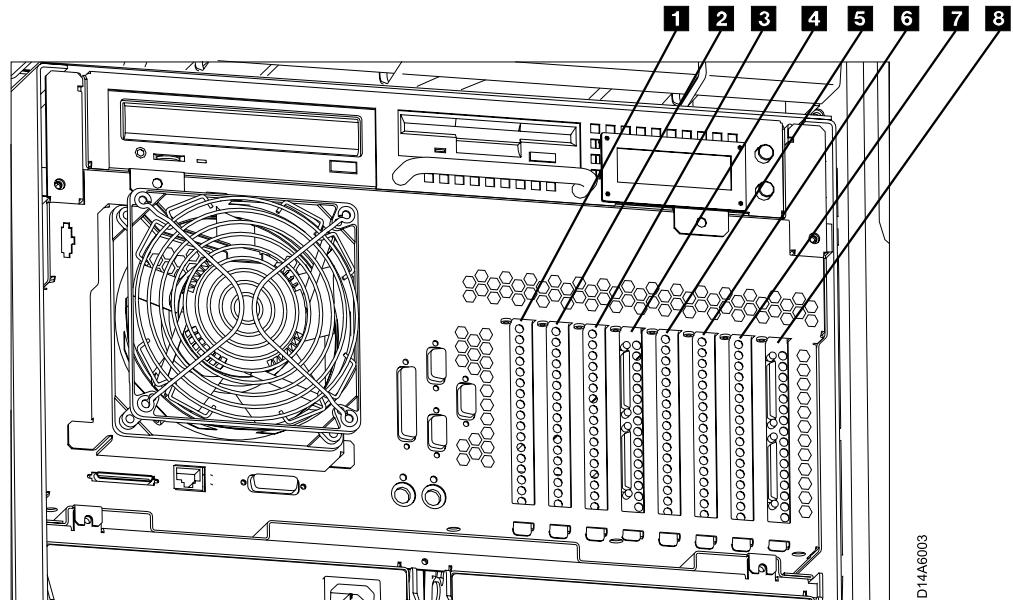
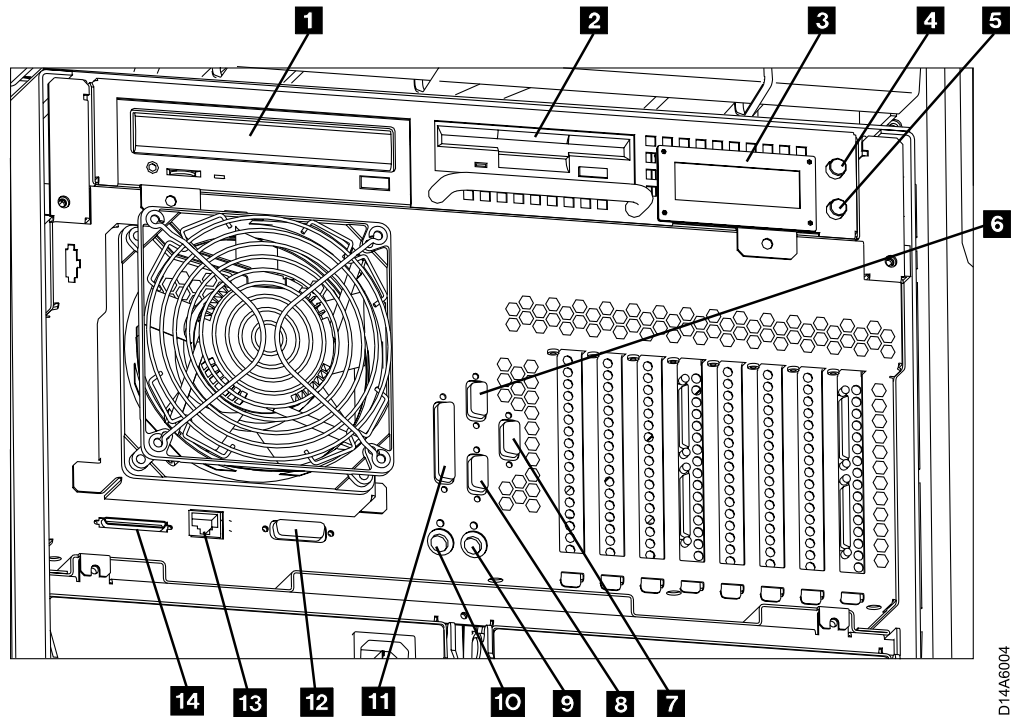


Figure 64. A60 Controller Card Slots

- Slot **1** - ESCON Host Interface
- Slot **2** - Not Used
- Slot **3** - Token Ring
- Slot **4** - SCSI Drive Interface
- Slot **5** - ESCON Host Interface
- Slot **6** - Not Used
- Slot **7** - Not Used
- Slot **8** - SCSI Drive Interface



D14A6004

Figure 65. A60 Controller Connection and Device Locations

- **1** — CD-ROM Drive
- **2** — Floppy Disk Drive
- **3** — LED Display
- **4** — Power ON/OFF Switch
- **5** — Reset Switch
- **6** — Service Terminal or Remote EBTERM connection to WTI switch (S1 Port)
- **7** — Remote Service connection for SLIP to WTI switch (S3 Port)
- **8** — Library Manager Connection for RS422, (FC 9061) attach (S2 Port)
- **9** — Mouse (Not Used)
- **10** — Keyboard (Not Used)
- **11** — Parallel Port
- **12** — Ethernet (Not Used)
- **13** — LAN Connection
- **14** — SCSI Bus

**b:** Do the following checkout below:

- \_\_\_ Step 1. Power on the A60 Controller with the power on switch, see Figure 65 **4**
- \_\_\_ Step 2. 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. Address the 3590 drives according to the table shown in Table 26 on page 261.

Table 26. 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

- \_\_\_ Step 3. The A60 Controller should arrive from the factory with the correct AIX and microcode installed. If this A60 Controller has down level AIX or microcode, go to “Installing AIX in the A60 Control Unit Environment” on page 354 for AIX updates, and “Adding new Code Images to the A60” on page 358 for microcode updates. Return here and continue.
- \_\_\_ Step 4. Continue with installation at “Setting Up EBTERM or Terminal Emulator for Setting Modem Password” on page 400 or “Setting up NetTerm Terminal Emulator (Windows 95/98 Platforms)” on page 364 to connect your Service Terminal.
- \_\_\_ Step 5. Refer to “Running Diagnostics from the A60 Controller” on page 389 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.
  - a. Select the tape utility to access the read/write tests.
  - b. Run the write and read options.
  - c. Load and Unload tape each time.
  - d. Remove the scratch cartridge when complete.

**Diagnostic Checkout of the ESCON Adapters before Host Attach: CAUTION:** The ESCON adapters used in the A60 Controller each have two ESCON ports. When running the ESCON wrap test it is necessary that both ports on the adapter have a ESCON wrap tool attached.

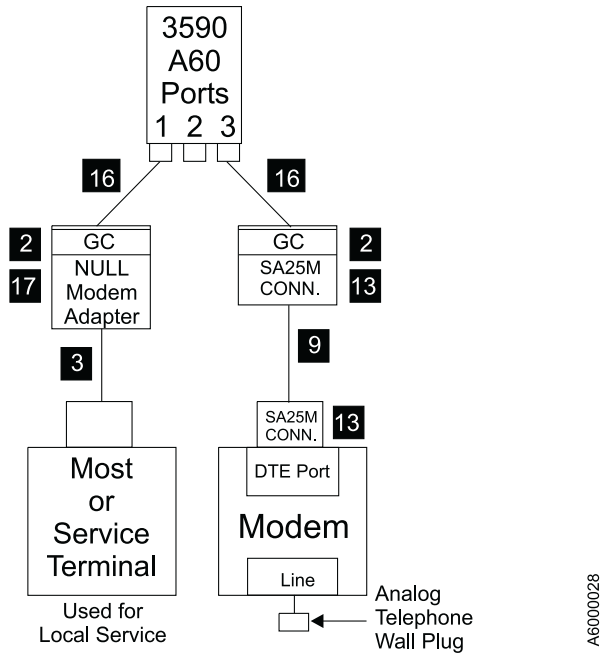
**Note:** These ESCON wrap tools are in the ship group.

Run the ESCON diagnostics by selecting the diagnostics and selecting the **advanced diagnostics routines**, and then **System Verification**, from this list presented select the **escon0 — escon3**.

**Attaching the Host ESCON Cable(s) to the A60 Controller:** Connect the ESCON cables to the ESCON Adapters according to the service planning guide. Refer to Figure 64 on page 259, **1** and **5**.

**Service Terminal Installation and Remote Assistance Installation without a Switch:** To connect the Service Terminal to the RACK, you connect directly to the A60 Controller in Port 1 (S1) (see Figure 65 on page 260) using the null modem adapter. See Figure 66 on page 262. The local Service Terminal connection is made using **16**, **2**, **17**, and **3**.

To connect for remote assistance, without using a switch, the modem is attached directly to the A60 Controller in Port 2 (S2), see Figure 65 on page 260. The remote connection is made using **16**, **2**, **13** twice, and **9** see Figure 66 on page 262.



### Remote Assistance Feature Direct to Modem (No WTI Data Switch)

Figure 66. Direct Attach to Service Terminal at the A60 Controller

1. **2** Gender Changer (25 pin F-F) P/N 05H7939
2. **3** Cable (9 pin to 25 pin) P/N 05H3299
3. **9** Cable (6 conductor RJ12) 100 foot P/N 05H3352
4. **13** Adapter SA-25M (25 pin to RJ12) P/N 05H3358
5. **16** Cable (9 pin to 25 pin) 1 foot P/N/40H6328
6. **17** Null Modem Adapter (25 pin) P/N 05H7876

**Remote Assistance Feature Installation using a WTI Switch:** There are two remote WTI switches that can be ordered. The instructions are explained for both shown in the list below:

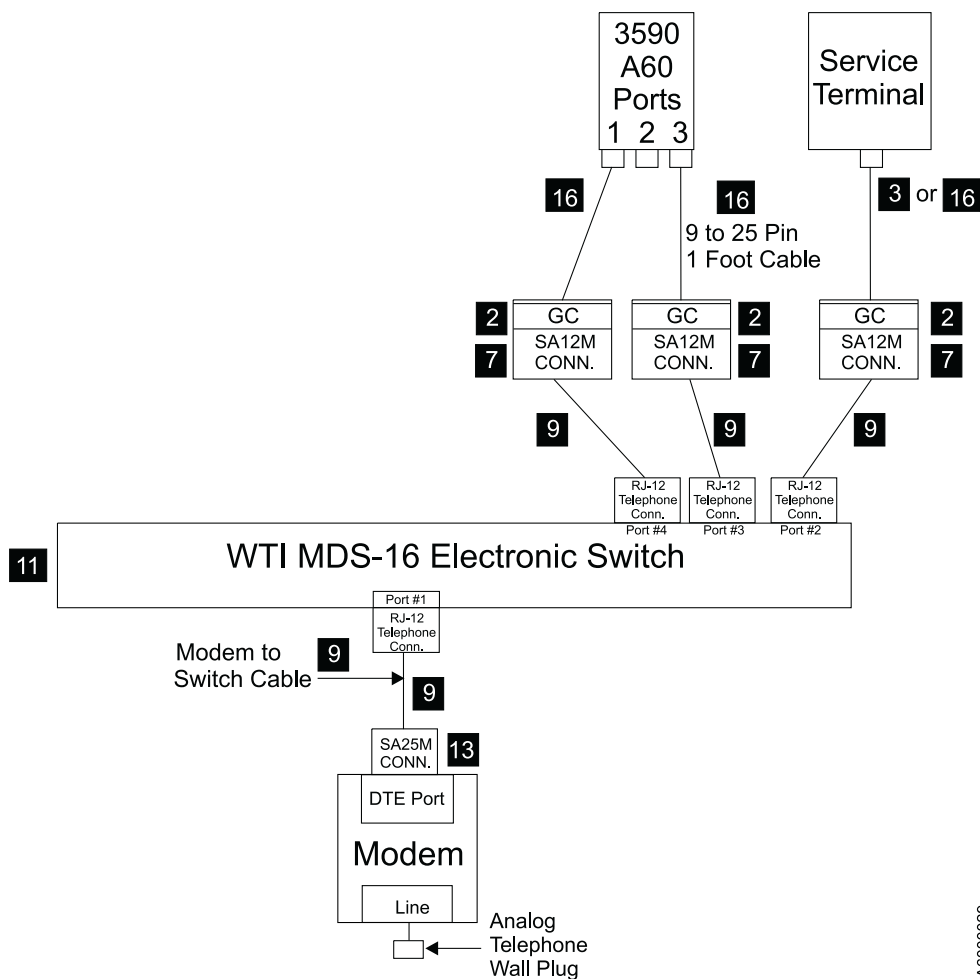
- If your customer has ordered the WTI — MDS switch, (refer to Figure 67 on page 263) to make the necessary connections.
- If your customer has ordered the WTI — APS switch, (refer to Figure 68 on page 265) to make the necessary connections.



- \_\_\_ 1. Install the modem near an electrical and analog telephone source, and as near to the RACK as possible.
- \_\_\_ 2. Install the WTI Electronic Switch in the vicinity of the RACK, and near the modem.
- \_\_\_ 3. See Figure 67 or Figure 68 on page 265 depending on the WTI switch installed and make the following connections as shown for the switch you are installing.

For **Remote assistance Feature Using WTI APS-16 Data Switch**, see Figure 68 on page 265

Null Modem P/N 005H7876 will be required when connecting directly from Library Manager (cable P/N 05H3299) to any of the service panel ports **Local Service**.



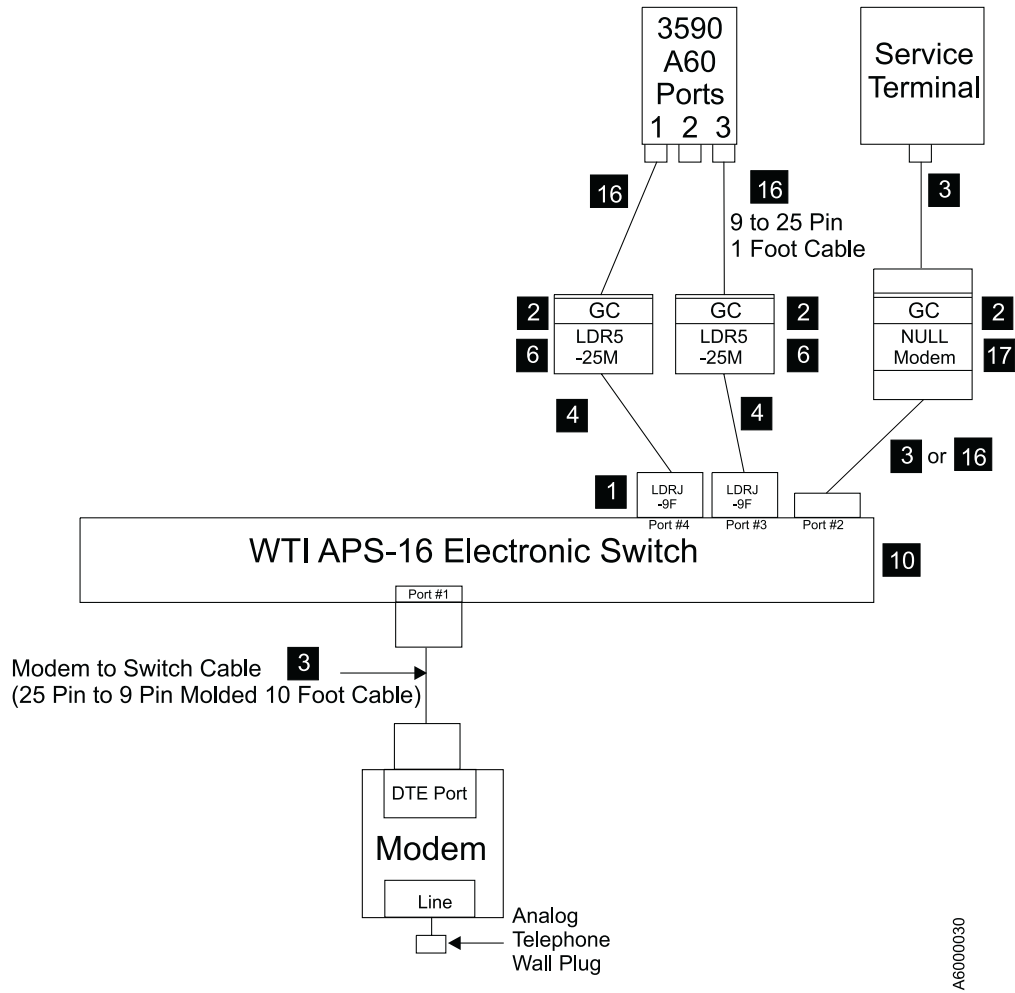
### Remote Assistance Feature Using WTI MDS-16 Data Switch

Figure 67. A60 Controller Service Panel Attachment—Remote Feature MDS Switch

#### WTI MDS-16 Electronic Switch

The following list identifies the highlighted keys and the associated part number for Figure 67.

- **2** Gender Changer (25 pin F-F) P/N 05H7939
- **3** Gender Changer (9 to 25 pin) P/N 05H3299
- **7** Adapter SA-12M (25 pin to RJ12) P/N 05H3357
- **9** Cable (6 conductor RJ12) P/N 05H3352
- **11** WTI Data Switch Model MDS-16 P/N 05H3350
- **13** Adapter SA-25M (25 pin to RJ12) P/N 05H3358
- **16** Cable (9 pin to 25 pin) 1 foot P/N 40H6328



## Remote Assistance Feature Using WTI APS-16 Data Switch

Figure 68. A60 Controller Service Panel Attachment—Remote Feature APS Switch

## WTI APS-16 Electronic Switch

The following list identifies the highlighted keys and the associated part number for Figure 68 on page 265.

- **1** Adapter LDRJ-9F (9 pin to RJ45) P/N 05H9745
  - **2** Gender Changer (25 pin F-F) P/N 05H7939
  - **3** Cable (9 pin to 25 pin ) P/N 05H3299
  - **4** Cable (8 conductor RJ45) 150 foot P/N 05H9744
  - **6** Adapter LDRJ-25M (25 pin to RJ45) P/N 05H9746
  - **10** WTI Data Switch Model APS-16 P/N 05H9742
  - **16** Cable (9 pin to 25 pin) 1 foot P/N 40H6328
- a. Modem analog connector to telephone plug provided by the customer.
  - b. Power cord from the modem to the customer power source. Leave the power to the modem turned off for now.
  - c. Remove any Null Modems that may be attached to the cables.
  - d. 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 MDS-16 data switch:* Refer to Table 27 on page 268

- \_\_\_ 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-12 (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 67 on page 263.
- \_\_\_ 3. locate the "Setup" switches on the back of the WTI Electronic Switch and set according chart Table 27 on page 268.
- \_\_\_ 4. Continue at "Common Procedures for both Models of data switch".

*If installing WTI Model APS-16 data switch:* Refer to Table 27 on page 268

- \_\_\_ 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 68 on page 265.
- \_\_\_ 3. Locate the "Setup" switches on the back of the WTI Electronic Switch and set according to chart Table 27 on page 268.
- \_\_\_ 4. Continue at "Common Procedures for both Models of data switch".

*Common Procedures for both Models of data switch:* Refer to Table 27 on page 268.

- \_\_\_ 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 366 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 366 or "Modem Initialization" on page 368, 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 A60 Controller to ensure that the switch and modem is working properly.
- \_\_\_ 7. Return to the step that sent you here.

Table 27. Matrix for WTI Switch Settings for 3590–Axx and B3494–Bxx Controllers

	<b>One A60 Controller directly attached to modem, with no WTI Switch</b>	<b>Only Axx's on WTI Switch</b>	<b>Only Bxx's on WTI Switch</b>	<b>Mixed Axx's and Bxx's on WTI Switch</b>
Modem Settings	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-Bxx set up string (38400 baud).  LCD display on modem will show 28.8.	Use 3494-Bxx 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 266	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 266	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 Port 1 (S10 connection to a baud rate of 9600 and handshake to xon.	None required	Use WTI /p command to change ONLY the Axx Port 1 (S10 connection to a baud rate of 9600 and handshake to xon.

This completes the Installation checkout. Return to the process that sent you to the 3590 Model A60 Controller MI.

## Instructions for Replacing an A00 with a A60 CU in a RACK

To install an A60 Controller in a RACK containing an A00 CU, you must first remove the existing A00 and ALL mounting hardware associated with the A00 controller.

- \_\_\_ Step 1. Remove the SCSI cables attached to the A00 from the service loop.
- \_\_\_ Step 2. Remove the physical A00 control unit from the RACK.
- \_\_\_ Step 3. Remove all the mounting hardware associated with the A00 controller from the RACK
- \_\_\_ Step 4. Go to “Instructions for Installing an A60 CU in a RACK” on page 255 to install the A60 Controller and verify the installation.

## Instructions for Replacing an A50 with a A60 CU in a RACK

To install an A60 Controller in a RACK containing an A50 CU, you must first remove the existing A50 and ALL mounting hardware associated with the A50 controller.

- \_\_\_ Step 1. Remove the SCSI cables attached to the A00 from the service loop.
- \_\_\_ Step 2. Remove the physical A00 control unit from the RACK.
- \_\_\_ Step 3. Remove all the mounting hardware associated with the A00 controller from the RACK
- \_\_\_ Step 4. Go to "Instructions for Installing an A60 CU in a RACK" on page 255 to install the A60 Controller and verify the installtion.



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### Contents

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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.

---

## Model A60 SIM/MIM Presentation

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.

```
3590 Subsystem Maintenance

Move cursor to desired item and press Enter.

Control Unit and Drive Online/Offline Control
Service Information Message (SIM) Maintenance
Subsystem Diagnostics
Subsystem Trace and Dump
Microcode Maintenance
Vital Product Data (VPD)
Configuration
3590 Tape Drive Utilities

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

Figure 69. 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 70. SIM Maintenance Screen



Table 28. ESCON I/O Subsystem Service Information Message (continued)

Message Code Abbreviation	Description
ref1-ref2-ref3	Ref Codes 1-3 from sense byte 17-21
<b>Note:</b> Refer to "Decoding SIM Refcodes" on page 282 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:

Table 29. ESCON Device Service Information Message

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 282 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
```

Table 30 and Table 37 on page 287 provide the meaning of the SIM Sense Bytes:

Table 30. Axx (A00 or A50) Controller SIM Sense Bytes

0-7 Common Sense Bytes	
Byte	Meaning
0	Flags 0
1	Flags 1

Table 30. Axx (A00 or A50) Controller SIM Sense Bytes (continued)

2	<b>Bit</b>	<b>Description</b>
	0-1	Basic Recovery Action (BRAC)
	1	Continue
	2	Reissue
	2-4	Logging Code (LC)
	3	A3
	5	VLF Active
6	Synchronous Transfer Mode	
7	Medium Positioning	
3	Recovery Action code (RAC)	
	C0	Basic Recovery Action (BRAC)
4-5	Reason Code (RC) - Reason Qualifier Code (RQC)	
	11-01	I/O-Subsystem SIM
	11-02	Device SIM
6	Message Code (MC)	
	F1	I/O-Subsystem SIM
	F2	Device SIM
7	Sense Format	
	71	SIM Sense
<b>8-22 Format Dependent Sense Bytes</b>		
<b>Byte</b>	<b>I/O-Subsystem SIM Sense (Message Code=F1) Meaning</b>	<b>Device SIM Sense (Message Code=F2) Meaning</b>

Table 30. Axx (A00 or A50) Controller SIM Sense Bytes (continued)

8-9	Message Modifier	Message Modifier
Bit	Description	Bit Description
0-3	Exception Message Code 0 Reserved 1 Effect of failure is unknown 2 CU Exception - No performance Impact 3-F Reserved	0-3 Exception Message Code 0 Reserved 1 Effect of failure is unknown 2 DV Exception - No performance Impact 3 DV Exception on Interface <i>xx</i> 4 DV Exception on ACF 5 DV Exception on Operator Panel 6 DV Exception on Tape path 7 DV Exception in Drive 8 DV Preventive Maintenance Required 9-F Reserved
4-7	Service Message Code 0 Reserved 1 Repair Impact is unknown 2 Repair will not impact CU performance 3-F Reserved	Where italicized fields are determined as follows: <i>xx</i> Format 71, byte 10 4-7 Service Message Code 0 Reserved 1 Repair Impact is unknown 2-6 Reserved 7 Repair will disable access to DV 8 Repair will disable message display <i>ids</i> on DV 9 DV Cleaning Required A DV Cleaning Complete B-F Reserved
8-9	Report Severity 0 Service 1 Moderate 2 Serious 3 Acute	8-9 Report Severity 0 Service 1 Moderate 2 Serious 3 Acute
10	Repeated Report Presentation: set to 1 if this SIM was previously reported.	10 Repeated Report Presentation: set to 1 if this SIM was previously reported.
11	Message To Operator (MTO): set to 1 if this SIM should be reported to the Operator Console.	11 Message To Operator (MTO): set to 1 if this SIM should be reported to the Operator Console.
12-14	Reserved	12-14 Reserved
15	Message Data Flag	15 Message Data Flag

Table 30. Axx (A00 or A50) Controller SIM Sense Bytes (continued)

<p><b>10-12</b></p>	<p>Message Data Reserved, set to X'000000'</p>	<table border="0"> <tr> <td><b>Byte</b></td> <td><b>Meaning</b></td> </tr> <tr> <td><b>10</b></td> <td>Exception Data <i>xx</i></td> </tr> <tr> <td><b>11</b></td> <td>SIM Message Code</td> </tr> <tr> <td></td> <td><b>Value (ASCII)</b></td> </tr> <tr> <td></td> <td><b>Description</b></td> </tr> <tr> <td><b>00</b></td> <td>No Message</td> </tr> <tr> <td><b>41</b></td> <td>Device Degraded - Call for Service</td> </tr> <tr> <td><b>42</b></td> <td>Device Hardware Failure - Call for Service</td> </tr> <tr> <td><b>43</b></td> <td>Service Circuits Failed, Operations Not Affected - Call for Service</td> </tr> <tr> <td><b>55</b></td> <td>Drive Needs Cleaning: Load Cleaning Cartridge</td> </tr> <tr> <td><b>57</b></td> <td>Drive Cleaning Complete: Cleaning Cartridge Ejected</td> </tr> <tr> <td><b>12</b></td> <td>Reserved - set to X'00'</td> </tr> </table>	<b>Byte</b>	<b>Meaning</b>	<b>10</b>	Exception Data <i>xx</i>	<b>11</b>	SIM Message Code		<b>Value (ASCII)</b>		<b>Description</b>	<b>00</b>	No Message	<b>41</b>	Device Degraded - Call for Service	<b>42</b>	Device Hardware Failure - Call for Service	<b>43</b>	Service Circuits Failed, Operations Not Affected - Call for Service	<b>55</b>	Drive Needs Cleaning: Load Cleaning Cartridge	<b>57</b>	Drive Cleaning Complete: Cleaning Cartridge Ejected	<b>12</b>	Reserved - set to X'00'
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<b>12</b>	Reserved - set to X'00'																									
<p><b>13</b></p>	<p>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.</p>	<p>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.</p>																								
<p><b>14-15</b></p>	<p>Unit Modifier Reserved - set to X'0000'</p>	<p>Unit Modifier Expert Systems Data from Log Page 31, bytes 16-19 (ASCII-&gt;HEX)</p>																								
<p><b>16-17</b></p>	<p>REF Code 1</p> <table border="0"> <tr> <td><b>Bit</b></td> <td><b>Description</b></td> </tr> <tr> <td><b>0-2</b></td> <td>SIM Type</td> </tr> <tr> <td><b>B'000'</b></td> <td>Hardware, non-encoded SRN (HDWE)</td> </tr> <tr> <td><b>B'001'</b></td> <td>Hardware, encoded POST error (EPOST) (future)</td> </tr> <tr> <td><b>B'111'</b></td> <td>Microcode Detected Error (MDE)</td> </tr> <tr> <td><b>3-15</b></td> <td>Reserved (used for encoded POST errors in future)</td> </tr> </table>	<b>Bit</b>	<b>Description</b>	<b>0-2</b>	SIM Type	<b>B'000'</b>	Hardware, non-encoded SRN (HDWE)	<b>B'001'</b>	Hardware, encoded POST error (EPOST) (future)	<b>B'111'</b>	Microcode Detected Error (MDE)	<b>3-15</b>	Reserved (used for encoded POST errors in future)	<p>REF Code 1</p> <table border="0"> <tr> <td><b>Bit</b></td> <td><b>Description</b></td> </tr> <tr> <td><b>0-2</b></td> <td>SIM Type</td> </tr> <tr> <td><b>B'011'</b></td> <td>Device SIM</td> </tr> <tr> <td><b>3-7</b></td> <td>Reserved</td> </tr> <tr> <td><b>8-15</b></td> <td>FRU Identifier (FID)</td> </tr> </table>	<b>Bit</b>	<b>Description</b>	<b>0-2</b>	SIM Type	<b>B'011'</b>	Device SIM	<b>3-7</b>	Reserved	<b>8-15</b>	FRU Identifier (FID)		
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<b>3-7</b>	Reserved																									
<b>8-15</b>	FRU Identifier (FID)																									
<p><b>18-19</b></p>	<p>REF Code 2</p> <p><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</p> <p><b>MDE SIM Type</b> bits 0-15 are set to the CU MDE code</p>	<p>REF Code 2</p> <p>For Device SIMs, this value will be set to the 1st FSC code reported from the device.</p>																								



Table 30. Axx (A00 or A50) Controller SIM Sense Bytes (continued)

20-21	REF Code 3 <b>HDWE SIM Type</b> bits 0-15 are set to the last 4 digits of SRN <b>MDE SIM Type</b> bits 0-15 contain CU MDE supporting data	REF Code 3  For Device SIMs, this value will be set to the last FSC code reported from the device.
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 Serial (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:

Table 31. ESCON Media Information Message Console Message

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

Table 32 gives details on the contents of the MIM Sense Bytes:

Table 32. Axx (A00 or A50) Controller MIM Sense Bytes

<b>0-7 Common Sense Bytes</b>	
Byte	Meaning

Table 32. Axx (A00 or A50) Controller MIM Sense Bytes (continued)

0	Flags 0																		
1	Flags 1																		
2	<table border="1"> <thead> <tr> <th>Bit</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0-1</td> <td>Basic Recovery Action (BRAC)</td> </tr> <tr> <td>1</td> <td>Continue</td> </tr> <tr> <td>2</td> <td>Reissue</td> </tr> <tr> <td>2-4</td> <td>Logging Code (LC)</td> </tr> <tr> <td>3</td> <td>A3</td> </tr> <tr> <td>5</td> <td>VLF Active</td> </tr> <tr> <td>6</td> <td>Synchronous Transfer Mode</td> </tr> <tr> <td>7</td> <td>Medium Positioning</td> </tr> </tbody> </table>	Bit	Description	0-1	Basic Recovery Action (BRAC)	1	Continue	2	Reissue	2-4	Logging Code (LC)	3	A3	5	VLF Active	6	Synchronous Transfer Mode	7	Medium Positioning
Bit	Description																		
0-1	Basic Recovery Action (BRAC)																		
1	Continue																		
2	Reissue																		
2-4	Logging Code (LC)																		
3	A3																		
5	VLF Active																		
6	Synchronous Transfer Mode																		
7	Medium Positioning																		
3	Recovery Action code (RAC) C0 Basic Recovery Action (BRA)																		
4-5	Reason Code (RC) - Reason Qualifier Code (RQC) 11-00 MIM																		
6	Message Code (MC) F0 MIM																		
7	Sense Format 70 MIM Sense																		
<b>8-22 Format Dependent Sense Bytes</b>																			

Table 32. Axx (A00 or A50) Controller MIM Sense Bytes (continued)

8-9	<p>Message Modifier</p> <table border="1"> <thead> <tr> <th>Bit</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0-3</td> <td>Exception Message Code</td> </tr> <tr> <td>0-1</td> <td>Reserved</td> </tr> <tr> <td>2</td> <td>Data Degraded</td> </tr> <tr> <td>3</td> <td>Data Degraded in Partition <i>yyyy</i></td> </tr> <tr> <td>4</td> <td>Medium Degraded</td> </tr> <tr> <td>5</td> <td>Medium Degraded in Partition <i>yyyy</i></td> </tr> <tr> <td>6</td> <td>Block 0 Error</td> </tr> <tr> <td>7</td> <td>Medium Exception</td> </tr> <tr> <td>8-F</td> <td>Reserved</td> </tr> </tbody> </table> <p>Where italicized fields are determined as follows:  <i>yyyy</i> Determined from sense format 70, bytes 14-15</p> <p>4-7 Reserved</p> <p>8-9 Report Severity</p> <table border="1"> <tbody> <tr> <td>0</td> <td>Reserved</td> </tr> <tr> <td>1</td> <td>Moderate</td> </tr> <tr> <td>2</td> <td>Serious</td> </tr> <tr> <td>3</td> <td>Acute</td> </tr> </tbody> </table> <p>10 Repeated Report Presentation: set to 1 if this MIM was previously reported.</p> <p>11 Message To Operator (MTO): set to 1 if this MIM should be reported to the Operator Console.</p> <p>12-14 Reserved</p> <p>15 Message Data Flag</p>	Bit	Description	0-3	Exception Message Code	0-1	Reserved	2	Data Degraded	3	Data Degraded in Partition <i>yyyy</i>	4	Medium Degraded	5	Medium Degraded in Partition <i>yyyy</i>	6	Block 0 Error	7	Medium Exception	8-F	Reserved	0	Reserved	1	Moderate	2	Serious	3	Acute
Bit	Description																												
0-3	Exception Message Code																												
0-1	Reserved																												
2	Data Degraded																												
3	Data Degraded in Partition <i>yyyy</i>																												
4	Medium Degraded																												
5	Medium Degraded in Partition <i>yyyy</i>																												
6	Block 0 Error																												
7	Medium Exception																												
8-F	Reserved																												
0	Reserved																												
1	Moderate																												
2	Serious																												
3	Acute																												
10-11	REF Code																												
12-13	<p>Medium Identifier (MID)  <b>X'0120 - 013F'</b>            Half Inch Cartridge Tapes</p>																												
14-15	Medium Partition																												
16-21	<p>VOLID</p> <p>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').</p>																												
22	<p>Format Identifier  <b>X'23'</b> 16X8 (128) Track</p>																												
<b>23-31 Common Sense Bytes</b>																													
23	Flags 3																												
24	Flags 4																												
25-26	Product Identifier (MM-PP)																												
27-29	Product Serial (SSSS)																												
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

### Refcodes 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.

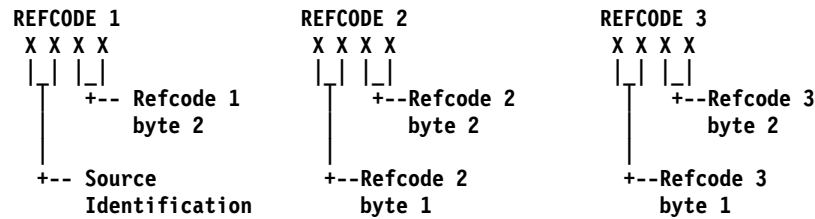


Table 33. Axx SIM Source Decode

Source Identification Value (HEX)	Explanation
'00'	<p>Control Unit hardware error</p> <p>Refcodes 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> <p style="text-align: center;"><b>SRN = 865-503</b></p>
'40'	<p>Unknown Control Unit hardware error</p> <p>Refcodes 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> <p style="text-align: center;"><b>AIX error log sequence # = 45503</b></p>

Table 33. Axx SIM Source Decode (continued)

Source Identification Value (HEX)	Explanation
'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-start;"> <div style="text-align: center;"> <p><b>REFCODE 1</b></p> <p>6 0 D 4</p> <p style="font-size: small;">   </p> <p style="font-size: small;">+--+</p> <p style="font-size: small;"> </p> <p><b>FID = D4</b></p> </div> <div style="text-align: center;"> <p><b>REFCODE 2</b></p> <p>3 6 3 0</p> <p style="font-size: small;">   </p> <p style="font-size: small;">+--+</p> <p style="font-size: small;"> </p> <p><b>FSC1 = 3630</b></p> </div> <div style="text-align: center;"> <p><b>REFCODE 3</b></p> <p>3 3 3 5</p> <p style="font-size: small;">   </p> <p style="font-size: small;">+--+</p> <p style="font-size: small;"> </p> <p><b>FSC2 = 3335</b></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-start;"> <div style="text-align: center;"> <p><b>REFCODE 1</b></p> <p>E 0 0 0</p> <p style="font-size: small;">   </p> <p style="font-size: small;">+--+</p> <p style="font-size: small;"> </p> <p><b>Unused</b></p> </div> <div style="text-align: center;"> <p><b>REFCODE 2</b></p> <p>7 0 3 5</p> <p style="font-size: small;">   </p> <p style="font-size: small;">+--+</p> <p style="font-size: small;"> </p> <p><b>MDE = 7035</b></p> </div> <div style="text-align: center;"> <p><b>REFCODE 3</b></p> <p>0 0 0 0</p> <p style="font-size: small;">   </p> <p style="font-size: small;">+--+</p> <p style="font-size: small;"> </p> <p><b>data = 0000</b></p> </div> </div>

## ES/9000 EREP Reports

An example of a SIM EREP report is shown below, as well as a table describing the entries.

### SIM EREP Report (Format 71)

```

1 TAPE SERVICE INFORMATION MESSAGES
2 REPORT DATE 263 96
3 .
PERIOD FROM 262 96
TO 263 96

*****
4 5 6 7 8
DEVICE-0883 S/N 01113-00001 DATE-262/96 TIME-06:54:49:45 ID=21
9 10 11 12 13 14
* SERVICE ALERT D/T-3590-B11 REF1-60FF REF2-C559 REF3-C559 UM-1229
15
* DV PREVENTIVE MAINTENANCE COMPLETED
16
* DV CLEANING COMPLETE

DEVICE-0887 S/N 0113-23456 DATE-262/96 TIME-09:26:32:65 ID=73
* SERIOUS ALERT D/T-3590-A00 REF1-E000 REF2-7019 REF3-0000 UM-0000
* EFFECT OF FAILURE IS UNKNOWN
    
```

\* REPAIR IMPACT IS UNKNOWN

DEVICE-08A2 S/N 0113-00011 DATE-262/96 TIME-11:25:38:00 ID=3E  
 \* SERVICE ALERT D/T-3590-B1A REF1-60FF REF2-C559 REF3-C559 UM-2229  
 \* DV PREVENTIVE MAINTENANCE COMPLETED  
 \* DV CLEANING COMPLETE

DEVICE-08A3 S/N 0113-00011 DATE-262/96 TIME-11:25:56:01 ID=3F  
 \* SERIOUS ALERT D/T-3590-B1A REF1-60FF REF2-C559 REF3-C559 UM-2229  
 \* DV PREVENTIVE MAINTENANCE COMPLETED  
 \* DV CLEANING COMPLETE

An explanation of each of the reverse key fields is shown in Table 34.

Table 34. 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
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.
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
<b>16</b>	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 272 for detailed definitions.	

## MIM EREP Report (Format 70)

```

1
TAPE MEDIA INFORMATION MESSAGES
2
REPORT DATE 262 96
3
PERIOD FROM 152 93
TO 300 93
*****
4 5 6 7
VOLUME-0883 DEVICE-0333 DATE-300/93 TIME-07:45:44:04

```

```

* D/T-      8          S/N 1804-MXGKM      9
* SERIOUS ALERT REFCODE-6033  MEDIA IDENTIFIER-0130  IDENTIFIER-23

```

**Note:** Refcode 60=REFCODE, 33=Engineering Data

```

* MEDIUM EXCEPTION      14
* REFERENCE MEDIA MAINTENANCE PROCEDURE xx      14

VOLUME-JANZ01 DEVICE-0338 DATE-300/93 TIME-07:40:45:04
* D/T-UNKNOWN S/N 160G-*****
* SERVICE ALERT REFCODE-0124 MEDIA IDENTIFIER-0051 IDENTIFIER-E8
* DATA DEGRADED IN PARTITION 0304
* REFERENCE MEDIA MAINTENANCE PROCEDURE xx

VOLUME-JANZ01 DEVICE-0338 DATE-300/93 TIME-07:40:45:04 **REPEATED**
* D/T-UNKNOWN S/N 16G4-*****
* SERVICE ALERT REFCODE-0124 MEDIA IDENTIFIER-0051 IDENTIFIER-E8
* MEDIUM EXCEPTION
* REFERENCE MEDIA MAINTENANCE PROCEDURE xx

VOLUME-JANZ04 DEVICE-0336 DATE-300/93 TIME-07:45:44:04
* D/T-UNKNOWN S/N 160G-*****
* SERVICE ALERT REFCODE-0124 MEDIA IDENTIFIER-0051 IDENTIFIER-E8
* DATA DEGRADED IN PARTITION 0304
* REFERENCE MEDIA MAINTENANCE PROCEDURE xx

VOLUME-JANZ04 DEVICE-0337 DATE-300/93 TIME-07:39:44:0 **REPEATED**
* D/T-UNKNOWN S/N 16G4-*****
* SERVICE ALERT REFCODE-0124 MEDIA IDENTIFIER-0051 IDENTIFIER-E8
* MEDIUM EXCEPTION
* REFERENCE MEDIA MAINTENANCE PROCEDURE xx

VOLUME-JANZ04 DEVICE-0341 DATE-300/93 TIME-07:45:44:04 **REPEATED**
* D/T-UNKNOWN S/N 16G4-*****
* SERVICE ALERT REFCODE-0124 MEDIA IDENTIFIER-0051 IDENTIFIER-E8
* MEDIUM EXCEPTION
* REFERENCE MEDIA MAINTENANCE PROCEDURE xx

```

**Note:** xx=Engineering Data

\*\*\*\*\* An explanation of each of the reverse key fields is shown in Table 35.

Table 35. ESCON Media Information Message (MIM) Format Description

Reverse Keys	Field explanation
<b>1</b>	Type of report - Media Information Messages (MIM)
<b>2</b>	Julian date the report ran
<b>3</b>	Julian date of the earliest record and latest record
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

Table 35. ESCON Media Information Message (MIM) Format Description (continued)

Reverse Keys	Field explanation
<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
	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

## JES2 Job Log

```

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

                3
22.32.31 JOB01383 IRRO10I USERID PFE  IS ASSIGNED TO THIS JOB.
                4
22.32.32 JOB01383 ICH70001I PFE  LAST ACCESS AT 16:28:39 ON FRIDAY DECEMBER 13, 1996
                5
22.32.32 JOB01383 $HASP373 LB1EA2  STARTED - INIT  D - CLASS A - SYS 91AA
                6
22.32.32 JOB01383 *IEF233A M OEA2,DA4898,,LB1EA2,WRITEIT
                7
22.32.32 JOB01383 IOS000I OEA2,28,I02,1F,0600,,**,DA4898,LB1EA2
                8
                024410C050305650000 001FFF0000000000 0331003529333690 43042300
9
0                POSITIONING LOST
                10
22.33.56 JOB01383 *IEC513D I/O ERR OEA2,DA4898,SL,LB1EA2,WRITEIT
                11
22.33.56 JOB01383 *83 IEC513D REPLY 'U' -ABEND OR 'M' -MOUNT SCRATCH

```

An explanation of each of the reverse key fields is shown in Table 36.

Table 36. 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.
	Last time this User ID had access to this system.
<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>



Table 36. ESCON JES2 Job Log Format Description (continued)

Reverse Keys	Field explanation
<b>9</b>	Describes the error
<b>10</b>	The drive address and VOLID that failed. e.g., Drive EA2, Volid 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 0002FF0
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 0002FF0
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

Table 37 provides the meaning of the SIM Sense Bytes:

Table 37. RS/6000 SIM Sense Bytes

0-7 Common Sense Bytes	
Byte	Meaning
0	Flags 0
1	Flags 1

Table 37. RS/6000 SIM Sense Bytes (continued)

2	<b>Bit</b>	<b>Description</b>
	0-1	Basic Recovery Action (BRAC)
	1	Continue
	2	Reissue
	2-4	Logging Code (LC)
	3	A3
	5	VLF Active
6	Synchronous Transfer Mode	
7	Medium Positioning	
3	Error Recovery Action (ERA)	
48	Unsolicited Informational Data	
4-5	Reason Code (RC) - Reason Qualifier Code (RQC)	
11-01	I/O-Subsystem SIM	
11-02	Device SIM	
6	Message Code (MC)	
F1	I/O-Subsystem SIM	
F2	Device SIM	
7	Sense Format	
71	SIM Sense	
<b>8-22 Format Dependent Sense Bytes</b>		
<b>Byte</b>	<b>I/O-Subsystem SIM Sense (Message Code=F1) Meaning</b>	<b>Device SIM Sense (Message Code=F2) Meaning</b>

Table 37. RS/6000 SIM Sense Bytes (continued)

8-9	Message Modifier	Message Modifier	
Bit	Description	Bit	Description
0-3	Exception Message Code	0-3	Exception Message Code
0	Reserved	0	Reserved
1	Effect of failure is unknown	1	Effect of failure is unknown
2	CU Exception - No performance	2	DV Exception - No performance
3-F	Reserved	3	DV Exception on Interface <i>xx</i>
4-7	Service Message Code	4	DV Exception on ACF
0	Reserved	5	DV Exception on Operator Panel
1	Repair Impact is unknown	6	DV Exception on Tape path
2	Repair will not impact CU performance	7	DV Exception in Drive
3-F	Reserved	8	DV Preventive Maintenance Required
8-9	Report Severity	9-F	Reserved
0	Service	Where italicized fields are determined as follows:	
1	Moderate	<i>xx</i>	Format 71, byte 10
2	Serious	4-7	Service Message Code
3	Acute	0	Reserved
10	Repeated Report Presentation: set to 1 if this SIM was previously reported.	1	Repair Impact is unknown
11	Message To Operator (MTO): set to 1 if this SIM should be reported to the Operator Console.	2-6	Reserved
12-14	Reserved	7	Repair will disable access to DV
15	Message Data Flag	8	Repair will disable message display <i>ids</i> on DV
		9	DV Cleaning Required
		A	DV Cleaning Complete
		B-F	Reserved
		8-9	Report Severity
		0	Service
		1	Moderate
		2	Serious
		3	Acute
		10	Repeated Report Presentation: set to 1 if this SIM was previously reported.
		11	Message To Operator (MTO): set to 1 if this SIM should be reported to the Operator Console.
		12-14	Reserved
		15	Message Data Flag

Table 37. RS/6000 SIM Sense Bytes (continued)

<p><b>10-12</b></p>	<p>Message Data Reserved, set to X'000000'</p>	<p><b>Byte    Meaning</b></p> <p><b>10</b>    Exception Data <i>xx</i></p> <p><b>11</b>    SIM Message Code</p> <p><b>Value (ASCII)</b></p> <p><b>Description</b></p> <p><b>00</b>    No Message</p> <p><b>41</b>    Device Degraded - Call for Service</p> <p><b>42</b>    Device Hardware Failure - Call for Service</p> <p><b>43</b>    Service Circuits Failed, Operations Not Affected - Call for Service</p> <p><b>55</b>    Drive Needs Cleaning: Load Cleaning Cartridge</p> <p><b>57</b>    Drive Cleaning Complete: Cleaning Cartridge Ejected</p> <p><b>12</b>    Reserved - set to X'00'</p>
<p><b>13</b></p>	<p>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.</p>	<p>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.</p>
<p><b>14-15</b></p>	<p>Unit Modifier Reserved - set to X'0000'</p>	<p>Unit Modifier  Expert Systems Data from Log Page 31, bytes 16-19 (ASCII-&gt;HEX)</p>
<p><b>16-17</b></p>	<p>REF Code 1</p> <p><b>Bit    Description</b></p> <p><b>0-2</b>    SIM Type</p> <p><b>B'000'</b> Hardware, non-encoded SRN (HDWE)</p> <p><b>B'001'</b> Hardware, encoded POST error (EPOST) (future)</p> <p><b>B'111'</b> Microcode Detected Error (MDE)</p> <p><b>3-15</b>    Reserved (used for encoded POST errors in future)</p>	<p>REF Code 1</p> <p><b>Bit    Description</b></p> <p><b>0-2</b>    SIM Type</p> <p><b>B'011'</b> Device SIM</p> <p><b>3-7</b>    Reserved</p> <p><b>8-15</b>    FRU Identifier (FID)</p>
<p><b>18-19</b></p>	<p>REF Code 2</p> <p><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</p> <p><b>MDE SIM Type</b> bits 0-15 are set to the CU MDE code</p>	<p>REF Code 2  For Device SIMs, this value will be set to the 1st FSC code reported from the device.</p>

Table 37. RS/6000 SIM Sense Bytes (continued)

20-21	REF Code 3 <b>HDWE SIM Type</b> bits 0-15 are set to the last 4 digits of SRN <b>MDE SIM Type</b> bits 0-15 contain CU MDE supporting data	REF Code 3  For Device SIMs, this value will be set to the last FSC code reported from the device.
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 Serial (SSSSS)	
30	CU/Library Type-Model	
31	Device Type-Model	

Table 38 gives details on the contents of the MIM Sense Bytes:

Table 38. RS/6000 MIM Sense Bytes

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

Table 38. RS/6000 MIM Sense Bytes (continued)

8-9	<p>Message Modifier</p> <table border="1"> <thead> <tr> <th>Bit</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0-3</td> <td>Exception Message Code</td> </tr> <tr> <td>0-1</td> <td>Reserved</td> </tr> <tr> <td>2</td> <td>Data Degraded</td> </tr> <tr> <td>3</td> <td>Data Degraded in Partition <i>yyyy</i></td> </tr> <tr> <td>4</td> <td>Medium Degraded</td> </tr> <tr> <td>5</td> <td>Medium Degraded in Partition <i>yyyy</i></td> </tr> <tr> <td>6</td> <td>Block 0 Error</td> </tr> <tr> <td>7</td> <td>Medium Exception</td> </tr> <tr> <td>8-F</td> <td>Reserved</td> </tr> </tbody> </table> <p>Where italicized fields are determined as follows:  <i>yyyy</i> Determined from sense format 70, bytes 14-15</p> <table border="1"> <tbody> <tr> <td>4-7</td> <td>Reserved</td> </tr> <tr> <td>8-9</td> <td>Report Severity</td> </tr> <tr> <td>0</td> <td>Reserved</td> </tr> <tr> <td>1</td> <td>Moderate</td> </tr> <tr> <td>2</td> <td>Serious</td> </tr> <tr> <td>3</td> <td>Acute</td> </tr> <tr> <td>10</td> <td>Repeated Report Presentation: set to 1 if this MIM was previously reported.</td> </tr> <tr> <td>11</td> <td>Message To Operator (MTO): set to 1 if this MIM should be reported to the Operator Console.</td> </tr> <tr> <td>12-14</td> <td>Reserved</td> </tr> <tr> <td>15</td> <td>Message Data Flag</td> </tr> </tbody> </table>	Bit	Description	0-3	Exception Message Code	0-1	Reserved	2	Data Degraded	3	Data Degraded in Partition <i>yyyy</i>	4	Medium Degraded	5	Medium Degraded in Partition <i>yyyy</i>	6	Block 0 Error	7	Medium Exception	8-F	Reserved	4-7	Reserved	8-9	Report Severity	0	Reserved	1	Moderate	2	Serious	3	Acute	10	Repeated Report Presentation: set to 1 if this MIM was previously reported.	11	Message To Operator (MTO): set to 1 if this MIM should be reported to the Operator Console.	12-14	Reserved	15	Message Data Flag
Bit	Description																																								
0-3	Exception Message Code																																								
0-1	Reserved																																								
2	Data Degraded																																								
3	Data Degraded in Partition <i>yyyy</i>																																								
4	Medium Degraded																																								
5	Medium Degraded in Partition <i>yyyy</i>																																								
6	Block 0 Error																																								
7	Medium Exception																																								
8-F	Reserved																																								
4-7	Reserved																																								
8-9	Report Severity																																								
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15	Message Data Flag																																								
10-11	REF Code																																								
12-13	<p>Medium Identifier (MID)  X'0120 - 013F'  Half Inch Cartridge Tapes</p>																																								
14-15	Medium Partition																																								
16-21	<p>VOLID</p> <p>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').</p>																																								
22	<p>Format Identifier  X'23' 16X8 (128) Track</p>																																								
<b>23-31 Common Sense Bytes</b>																																									
23	Flags 3																																								
24	Flags 4																																								
25-26	Product Identifier (MM-PP)																																								
27-29	Product Serial (SSSS)																																								
30	CU/Library Type-Model																																								
31	Device Type-Model																																								

## A60 Controller Microcode SRN's

Table 39. 3590 A60 Controller Value Match Table

If You Have This value Displayed	Perform This Action
1c1	Common area check 1 (Not recovered). (See note below.)
1c2	Common area check 2 (Recovered). No CE action is required.
2c1	ATAPE (Device Driver for the 3590 area check 1 (Not recovered). (See note below.)
2c2	ATAPE area check 2 (Recovered). No CE action is required.
3c1	ATL (Automated Tape Lib. Ucode) area check 1 (Not recovered). (See note below.)
3c2	ATL area check 2 (Recovered). No CE action is required.
4c1	CU (Control Unit Process Ucode) area check 1 (Not recovered). (See note below.)
4c2	CU area check 2 (Recovered). No CE action is required.
500	Loading LP Code. (If on solid, see note below)
501	Loading EP Code. (If on solid, see note below)
502	Loading CDT. (If on solid, see note below)
503	Setting Subchannel. (If on solid, see note below)
504	Setting Adapter. (If on solid, see note below).
505	Go Online. (If on solid, see note below).
506	Online. (If on solid, see note below).
507	Offline. No action required-Indicates CU taken offline.
508	Logout. No action required-Informational indicator only.
509	Running Diagnostics No action required-Indicates ESCON diagnostics are currently running.
520	Tape Daemon Started. (If on solid, see note below).
521	Tape Daemon Started (If on solid, see note below).
522	Tape Daemon Started (If on solid, see note below).
523	Tape Daemon Started (If on solid, see note below).
540	Library Started (If on solid, see note below).
560	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
561	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
562	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
563	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
5c1	CADD (Channel Adapter Device Driver Ucode) area check 1 (Not recovered). (See note below.)
5c2	CADD area check 2 (Recovered). No CE action is required.
7c1	TAPE (Tape Ucode.) area check 1 (Not recovered). (See note below.)
7c2	TAPE area check 2 (Recovered). No CE action is required.
8c1	RAS (RAS Ucode) area check 1 (Not recovered). (See note below.)
8c2	RAS area check 2 (Recovered). No CE action is required.
9c0	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.
9c1	Install Procedures check 1 (not recovered). (See note below.)

Table 39. 3590 A60 Controller Value Match Table (continued)

If You Have This value Displayed	Perform This Action
9c2	Install Procedures check 2 (Recovered). No CE action is required.
u82	LP check 1 Microcode error. Contact your next level of support for direction.
The value displayed is not in this table.	If the SRN displayed was not in Table 39 on page 293, go to "A60 Controller Unique SRN's"

## A60 Controller Unique SRN's

Table 40. 3590 A60 Controller Value Match Table

If You Have This value Displayed	Perform This Action
1c1	Common area check 1 (Not recovered). (See note below.)
1c2	Common area check 2 (Recovered). No CE action is required.
2c1	ATAPE (Device Driver for the 3590 area check 1 (Not recovered). (See note below.)
2c2	ATAPE area check 2 (Recovered). No CE action is required.
3c1	ATL (Automated Tape Lib. Ucode) area check 1 (Not recovered). (See note below.)
3c2	ATL area check 2 (Recovered). No CE action is required.
4c1	CU (Control Unit Process Ucode) area check 1 (Not recovered). (See note below.)
4c2	CU area check 2 (Recovered). No CE action is required.
500	Loading LP Code. (If on solid, see note below)
501	Loading EP Code. (If on solid, see note below)
502	Loading CDT. (If on solid, see note below)
503	Setting Subchannel. (If on solid, see note below)
504	Setting Adapter. (If on solid, see note below).
505	Go Online. (If on solid, see note below).
506	Online. (If on solid, see note below).
507	Offline. No action required-Indicates CU taken offline.
508	Logout. No action required-Informational indicator only.
509	Running Diagnostics No action required-Indicates ESCON diagnostics are currently running.
520	Tape Daemon Started. (If on solid, see note below).
521	Tape Daemon Started (If on solid, see note below).
522	Tape Daemon Started (If on solid, see note below).
523	Tape Daemon Started (If on solid, see note below).
540	Library Started (If on solid, see note below).
560	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
561	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
562	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
563	Tape Device Online. No action required-Indicates Tape daemon may have been restarted.
5c1	CADD (Channel Adapter Device Driver Ucode) area check 1 (Not recovered). (See note below.)



Table 40. 3590 A60 Controller Value Match Table (continued)

If You Have This value Displayed	Perform This Action
5c2	CADD area check 2 (Recovered). No CE action is required.
7c1	TAPE (Tape Ucode.) area check 1 (Not recovered). (See note below.)
7c2	TAPE area check 2 (Recovered). No CE action is required.
8c1	RAS (RAS Ucode) area check 1 (Not recovered). (See note below.)
8c2	RAS area check 2 (Recovered). No CE action is required.
9c0	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.
9c1	Install Procedures check 1 (not recovered). (See note below.)
9c2	Install Procedures check 2 (Recovered). No CE action is required.
u82	LP check 1 Microcode error. Contact your next level of support for direction.
The value displayed is not in this table.	If the SRN was not found in "A60 Controller Unique SRN's" on page 294, go to the <b>POWERstation and POWERserver Diagnostic Information for Micro Channel Bus Systems (document number SA23-2765), "Start of Call Map"</b> and follow instructions.

If you did not find the SRN displayed in any of the previous tables, Connect the Service Terminal (see "Getting Started" on page 304) and retrieve the dump data. (see "3590 A60 Retrieving Engineering and Dump Data" on page 381). Call your next level of support.

## Model A60 ControllerService Processor Checkpoints

Service Processor checkpoints are in the range E010 to E0FF. The message **OK** indicates successful service processor testing and initialization. Firmware checkpoints are listed in "A60 Controller Unique SRN's" on page 294

**Note:** Go to "Minimum Configuration Map" on page 297 for any of the following conditions:

- A four-digit code in the range of E001 through EFFF displays on the operator panel but is not listed in the checkpoint table.
- A four-digit code displays in the checkpoint table, but does not contain a repair action or FRU listing.
- All of the FRUs listed in the repair action have been replaced and the problem has not been corrected.

If you replace FRUs and the problem is corrected, go to **Map 410: Repair checkout** in the Diagnostic Information for Multiple Bus System. Return here when complete and go to "End of Call" on page 354

Table 41. A60 Controller Service Processor Checkpoints

Checkpoint	Description	Action/Possible Failing FRU
E000	System Support Controller begins operation. This is an informational checkpoint	See 295
E010	Starting service processor self-tests	I/O Planar
E011	Service self-tests completed successfully	NA
E012	Begin to set up Service Processor helps	I/O Planar

Table 41. A60 Controller Service Processor Checkpoints (continued)

Checkpoint	Description	Action/Possible Failing FRU
E020	Configuring CMOS	I/O Planar
E021	Configuring NVRAM	I/O Planar
E030	Beginning to build I <sup>2</sup> C resources.	1. CPU Card 2. I/O Planar
E031	Finished building I <sup>2</sup> C resources.	• CPU Card • I/O Planar
E040	Starting serial port tests	• I/O Planar • CPU Card
EE042	Configuring serial port 1	• I/O Planar • CPU Card
E043	Configuring serial port 2	• I/O Planar • CPU Card
E044	Preparing to set serial port line speed	• I/O Planar • CPU Card
E045	Preparing to initialize serial port	• I/O Planar • CPU Card
E060	Preparing to auto power-on (AC restored)	• I/O Planar • CPU Card
E061	Preparing to auto power-on (Timer	• I/O Planar • CPU Card
E070	Configuring modem	• Modem • I/O Planar • CPU Card
E072	Preparing to call home	• Modem • I/O Planar • CPU Card
E075	Entering SP Menus	• I/O Planar • CPU Card
E076	Leaving SP menus; attempting to disconnect modems	• I/O Planar • CPU
E0A0	Beginning Bring-Up Phase	• I/O Planar • CPU Card
E0B0	Starting CPU BIST	• CPU Card • I/O Planar
E0C0	Starting X5 BIST	• CPU Card • I/O Planar
E0E0	Pulling CPU out of reset	• CPU Card. • I/O Planar

Table 41. A60 Controller Service Processor Checkpoints (continued)

Checkpoint	Description	Action/Possible Failing FRU
E0E1	Pull CPU out of reset ; okay	<ul style="list-style-type: none"> <li>• Remove processor card in slot 2 (if installed) and see if the problem is resolved. If Problem is resolved replace processor card. If not continue.</li> <li>• Exchange processor card in slot 1 with the processor card removed in 297 (or replace processor card if only one processor card exists) and see if problem is resolved. If problem is resolved replace processor card. If not continue.</li> <li>• System Planar</li> <li>• I/O Planar</li> </ul>
E0E2	Check point for hot-swap fans and power supply.	Power supply hot-swap is in progress. Fans and power supply must be replaced within 5 minutes. After 5 minutes the service processor initiates a fast shutdown of the system
OK	SP Ready Waiting for Power-On	None. Normal operation.
STBY	SP Ready; System was shutdown by the operating system and is still powered on.	This condition can be requested by a privileged system user with no faults. See service processor error log for possible operating system fault indications.

not

**Note:**

1. If more than eight digits are displayed in the operator panel, use only the first eight digits to find the error in the tables. The digits that display beyond the first eight digits are location codes that can assist you in diagnosing the problem
2. Licensed programs frequently rely on network configuration, and system information stored on the VPD on the operator panel. If the action indicate that the Operator Panel should be replaced, swap the VPD from the old operator plane to the new one. If the old VPD module has to be replaced call technical support for recovery instruction. If recovery is not possible, notify the system owner that new keys for licensed programs may be required
3. If a network adapter of the I/O Planar is replaced, the network administrator must be notified so that the client IP addresses used by the server can be changed. In addition, the operating system configuration of the network controller may need to be changed in order to enable system startup. Also ensure any client or server that addressed this system is updated.
4. Each power supply has a test switch. If you are instructed to replace a power supply, see 312

## Minimum Configuration Map

This map is used to locate defective FRUs not found by normal diagnostics. For this procedure, diagnostics are run on a minimally-configured system. If a failure is detected on the minimally-configured system, the remaining FRUs are exchanged

one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

**Note:**

1. Be sure to unplug the power cable before removing or installing the Service Processor, processor card(s), Memory card(s), System planar or I/O planar to avoid damaging them.
2. This MAP assumes that a DC-ROM drive is installed and connected to the integrated SCSI adapter connector (port 1), and a Diagnostics CD-ROM disc is available.
3. If a power-on password or privileged-access password is installed, you are prompted to enter the password before the diagnostics CD-ROM loads.
4. The term "POST indicators" refer to the icons (graphic display) or device mnemonics (ASCII terminal) that appear during the power-on self-test (POST).
5. The Service Processor may have been set by the user to monitor server operations and to attempt recoveries. You may wish to disable these actions while you diagnose and service the system. IF you disable them, you should make notes of their current settings for restoration before you leave. Following are the settings you will need for the minimum configuration testing.

*Table 42. A60 Controller Service Processor Checkpoints*

Setting	How to Set
Surveillance	From the service Processor Setup Menu, go to the Surveillance Setup Menu and disable surveillance.
Unattended Start	From the Service Processor System Power Control Menu disable unattended start mode.
Reboot Policy	From the System Power Control Menu go to the Reboot/Restart Policy Setup Menu and set: <ol style="list-style-type: none"> <li>1. Number of Reboot attempts to <b>0</b>(zero)</li> <li>2. Use OS-Defined restart policy to <b>No</b></li> <li>3. Enable supplemental restart policy to <b>No</b></li> </ol>
Call Out	From the Call-In/Call-Out Setup Menu, go to the Serial Port Selection Menu and disable call-out on both serial ports.

**Step 001**

1. Insert the diagnostic CD-ROM into the CD-ROM drive
2. Ensure the diagnostics and the operating system are shut down.
3. Turn the power off.
4. Turn the power on
5. When the keyboard indicator is displayed (the word **keyboard** on an ASCII terminal or the keyboard and hand icon on the graphical display, press the F5 key on the directly-attached keyboard or the number 5 key on an ASCII terminal.
6. Enter the appropriate password if prompted to do so.

**Is the "Please define the System Console" screen displayed?**

**NO** Go to "Step 002" on page 299

**YES** Go to "Step 008" on page 302

## Step 002

1. Turn the power off.
2. If you have not already done so, configure the Service Processor with the instructions in "Minimum Configuration Map" on page 297
3. Exit Service Processor Menus and remove the power cable.
4. Disconnect all external cables (parallel, serial 1, serial 2, serial 3, keyboard, mouse, AUIO/RJ45 ethernet, SCSI, etc.)
5. Place the drawer in the Service position (slide out) and open the top to expose the planars and cards
6. Record the slot numbers of the ISA and PCI adapters. Label and record the location of any cables attached to the adapters. Disconnect any cables attached to the adapters and remove all the adapters. Remove the second processor card, (if present).
  - slot J8

(If second processor card removed, ensure first processor card is in processor card connector #1.)

7. Record the slot numbers of the memory modules. Remove all installed memory modules except for one pair from the first memory card.

**Note:** Memory modules must be installed in pairs and in the correct slots. For example, install the pair in J1 and J2

8. Remove the second memory card, (if present).
  - Slot J2
9. Disconnect the SCSI cables from the internal SCSI connectors on the I/O planar
  - connectors J3 and J12
10. Disconnect the signal and power connectors from all the SCSI devices except the CD-ROM drive.
11. Disconnect the diskette drive cable from the diskette drive connector J13 on the I/O planar
12. Plug in the power cable and wait for OK on the operator panel display.
13. Turn the power on.

**Does the system stop with code E1F2, E1F3, STBY, 20EE00B or 4BA00839 displayed on the operator panel?**

**NO** Go to "Step 003"

**YES**

If a second processor card was removed go to "Step 004" on page 300

If the system has only one processor card go to "Step 005" on page 301

## Step 003

One of the FRUs remaining in the system unit is defective.

If a memory module is exchanged, ensure the new module is the same size and speed as the original module.

Turn the power off, remove the power cable, and exchange the following FRUs in order:

1. Processor card
2. Memory modules (pair)

3. Memory card
4. Fan Monitor control card
5. I/O planar
6. System planar
7. Power distribution board

Plug in the power cable and wait for OK on the operator panel display.

Turn the power on.

**Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 display on the operator panel?**

**NO**

Reinstall the original FRU.

Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call you service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problem. If you do not find a problem, return to "Step 001" on page 298 and follow the instructions for the new symptom.

**YES**

If the last FRU exchanged was the pair of memory modules go to "Step 007" on page 301

Go to "Map 0410: Repair Checkout" in the *Diagnostic Information for Multiple Bus Systems*.

### **Step 004**

No failure was detected with this configuration.

1. Turn the power off and remove the power cable.
2. Reinstall the second processor card.
3. Plug in the power cable and wait for OK on the operator panel display.
4. Turn the power on.

**Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 displayed on the operator panel?**

**NO**

one of the FRUs remaining in the system unit is defective.

In the following order, exchange the FRUs that have not be exchanged:

1. Processor card (last one installed)
2. System Planar
3. I/O planar

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have bee exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems. If you do not find a problem, return to "Step 001" on page 298 and follow the instructions for the new symptom.

**YES** Go to "Step 005"

### **Step 005**

No failure was detected with this configuration.

1. Turn the power off and remove the power cable.
2. Install a pair of memory modules.
3. Plug in the power cable and wait for OK on the operator panel display.
4. Turn the power on.

**Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 displayed on the operator panel?**

**NO** Go to "Step 006"

**YES**

Repeat this step until all the memory modules are installed and tested.

After all the memory modules are installed and tested, record the positions of the memory modules in the second memory card. Remove all of the memory modules from the second memory card except on pair. Repeat this step with the second memory card (if previously installed).

Go to "Step 008" on page 302

### **Step 006**

The failure may be caused by the last pair of memory modules installed or the memory card. To isolate the failing FRU, do the following:

1. Turn the power off and remove the power cable.
2. Exchange the last memory module pair installed.
3. Plug in the power cable and wait for OK on the operator panel display.
4. Turn the power on.

**Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 displayed on the operator panel?**

**NO** Go to "Step 008" on page 302

**YES** Go to "Step 007"

### **Step 007**

The memory module(s) (may be both) you exchanged in the previous step may be defective. To isolate the failing memory module, do the following:

1. Turn the power off and remove the power cable.
2. Reinstall one of the memory modules you exchanged in the previous step.
3. Plug in the power cable and wait for OK on the operator panel display.
4. Turn the power on.

**Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 displayed on the operator panel?**

**NO**

Replace the memory module.

If you have not tested both memory modules repeat this step with the second memory module you exchanged in the previous step.

If the symptom did not change and both memory modules have been exchanged go to "Step 008"

#### **YES**

Repeat this step with the second memory module you exchanged in the previous step.

If both memory modules have been tested go to "Map 0410: Repair Checkout" in the *Diagnostic Information for Multiple Bus Systems*.

#### **Step 008**

One of the FRUs remaining in the system unit is defective.

1. Turn the power off and remove the power cable.
2. Exchange the following FRUs in the order listed.
  - Memory card
  - System Planar
  - I/O Planar
  - Fan monitor control card
  - Power supply
  - Power distribution board
3. Plug in the power cable and wait for OK on the operator panel display
4. Turn the power on

**Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00830 displayed on the operator panel?**

#### **NO**

Reinstall the original FRU.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problem. If you do not find a problem, return to "Step 001" on page 298 and follow the instructions for the new symptom.

#### **YES**

Go to "Map 0410: Repair Checkout" in the *Diagnostic Information for Multiple Bus Systems*.



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## Chapter 12. Operator Panel

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Getting Started . . . . .	304	Model A60 Menu Tree . . . . .	305

### Contents

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## A60 Service Terminal Connection and Menus

There are six (6) different frames that contain the A60 control Unit. The instructions for connecting the Service Terminal for each of these frames is under **Getting Started**.

- A60 in the A14 frame
- A60 in the C10 frame
- A60 in IBM Rack subsystems 9309, 7051R00, and 7202 or in any EIA compatible rack.
- A60 in the 3494 Tape library models D14

### Getting Started

**Note:** Before starting, ensure 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 366 if the emulator is set up on your Service Terminal. If you need to load the emulator, and your Service Terminal is running OS/2 go to “Setting up the EBTERM or Terminal Emulator (OS/2 Platform)” on page 366 or if your Service Terminal is running Windows 95 go to “Setting up NetTerm Terminal Emulator (Windows 95/98 Platforms)” on page 364 to load the emulator and return here when completed.

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. Select the **EBTERM** icon
5. Select **Modify** from the tool bar
6. In the window select **Direct Connect Mode**

**Note:** A check mark (✓) to the left of **Direct Connect** mode indicates proper selection.

7. Select **Connect** from the tool bar
8. In the window select **3590 Tape Subsystem** and the following screen will appear (see Figure 72 on page 305).

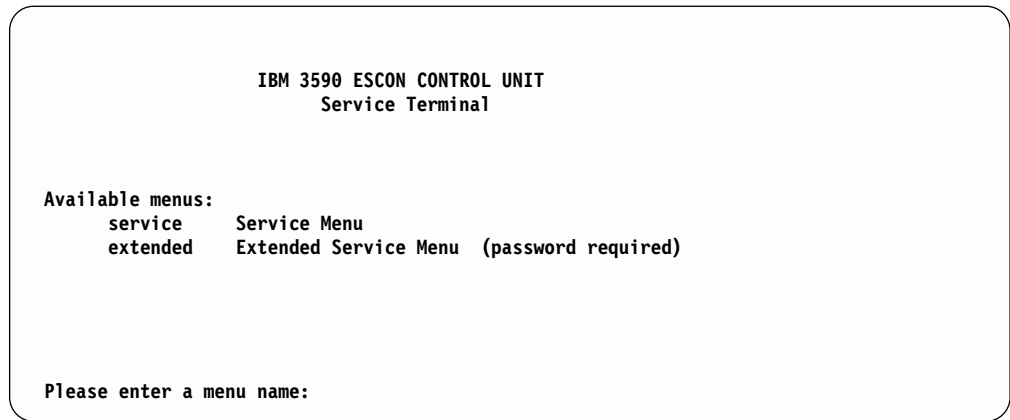


Figure 72. First Service Terminal Maintenance Screen

9. At the prompt, from the screen shown above, (see Figure 72) type **service** and press **enter**

The Main Service Menu (see Figure 73), is the first screen that will come and you can select the option that is the reason for connecting the Service Terminal.

## 3590Model A60 Subsystem Maintenance Menu

This is the first screen shown after selecting the **Service Menu** from the IBM 3590 CONTROL UNIT screen (see Figure 72).

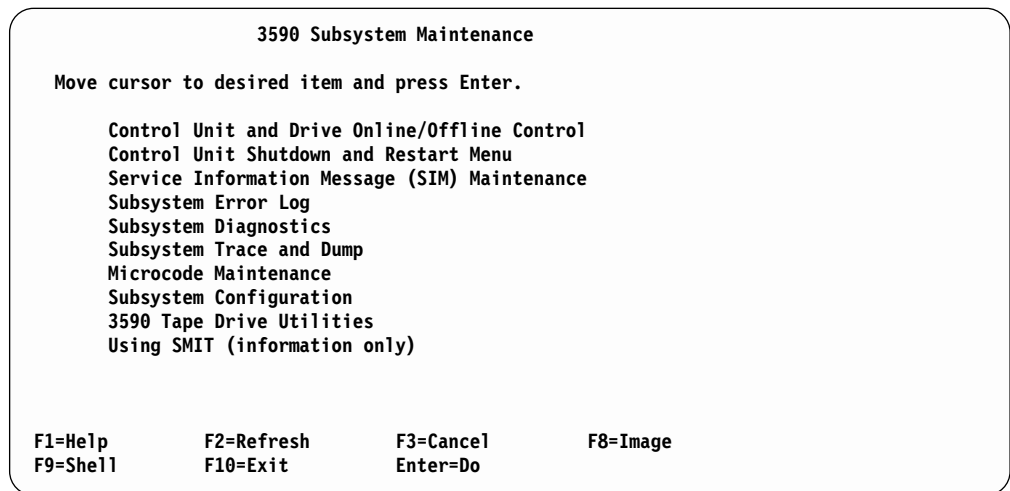


Figure 73. Main 3590 Subsystem Maintenance Screen

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## Model A60 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**
  - Display Control Unit, ESCON, and Tape Device Status
  - Vary Control Unit Offline

- Vary Control Unit Online
  - Vary Tape Drive Offline
  - Vary Tape Drive Online
  - Force Control Unit Offline
  - Show Channel Path Tables
  - Show Having Trace Table
2. **Control Unit Shutdown and Restart Menu**
    - Force Concurrent Control Unit Trace and Dump
    - Select Trace/Dump files and copy to diskette
    - Restat Only the Control Unit Code
    - Restart AIX and Control Unit Code
    - Shutdown AIX and Control Unit Code (use prior to power off)
  3. **Service Information Message (SIM) Maintenance**
    - 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
    - Change ALL OPEN Control Unit and Tape Drive SIMS to CLOSED
    - Show/Change SIM & MIM Presentation Controls
    - Show Microcode Detected Error (MDE) Description
    - Clear SIM Log, Error Log, and Trace/Dump Files
  4. **Subsystem Error Log**
    - Generate an Error Report
    - Clean the Error Log:
    - Show Microcode Detected Error (MDE) Description
    - Make Entry in AIX Error Log
  5. **Subsystem Diagnostics**
    - ARTIC960 ESCON Adapter Diagnostics
    - All Other Hardware Diagnostics
  6. **Subsystem Trace and Dump**
    - Start Subsystem Trace
    - Show Current Trace Parameters
    - Stop Subsystem Trace
    - Start Subsystem Dump
    - Clear (Disable) all Error Match Code (EMC) Settings
    - Show/Change Error Match Code (EMC) Settings
    - Set/Reset 3590 Drive FSC Trap
    - Select Trace/Dump Files and Copy to Diskette
    - Select Trace/Dump Files to Erase From Hard Disk
  7. **Microcode Maintenance**
    - Display Active Code level and Status
    - List Code Images Available for Activation
      - List 3590 Subsystem Code Images 'Whats new' Change History File
      - List 3590 Tape Drive Code Images

- Copy Code Image From Source Media
  - List 3590 subsystem Code 'Whats new' Change History File from Diskette
  - List VTS Subsystem Code 'Whats new' Change History File from CD
  - Copy 3590 Tape Drive Code from Diskette
- Activate Code Image
  - Activate 3590 Subsystem Code Image
  - Display 3590 Subsystem Code Image 'Whats new' Change History File
  - Activate 3590 Tape Drive Code
- Display Detailed Results for Last Code Activation
- Delete Code Image
  - Delete 3590 Subsystem Code
  - Delete 3590 Tape Drive Code
- Display Control Unit Code 'Whats new' Change History File
  - Display Available Images 'Whats new' Change History File
  - Display Active Code 'Whats new' Change History File
  - Display Floppy Disk 'Whats new' Change History File
  - Display CD 'Whats new' Change History File

#### 8. Subsystem Configuration

- Show/Change Date, Time, and Time Zone
- Show/Change Vital Product Data (VPD)
  - Show/Change Control Unit Vital Product Data (VPD)
  - Show Tape Device Vital Product Data (VPD)
- Show Control unit Hardware Data (VPD)
- Show/Change ESCON Channel Path Definitions
- Show/Change Control Unit Definitions
- Show/Change 3490 E Emulation Fencing Settings
- Show/Change Automatic REBOOT after System Crash

#### 9. Control Unit Service Utilities

- Run PFE/Support Center Provided Functions
- Display/Modify Tape Daemon Mode Parameters
- SCSI Path Enable/Disable

#### 10. 3590 Tape Drive Utilities (Tapeutil)

#### 11. 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 ask to use a specific menu to complete a procedure, look in the menu tree shown above to determine the correct menu path to choose.**



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## Chapter 13. Locations, Removals and Replacement

A60 Controller FRU List . . . . .	310	Replace . . . . .	327
Removal and Replace of the RISC Components . . . . .	311	Removal and Replace of the Microprocessor Card or Memory Card . . . . .	329
Removal and Replace of the Power Supply or Power Supply Fan Assembly . . . . .	312	Removal . . . . .	329
Removal . . . . .	312	Replace . . . . .	329
Replace . . . . .	312	Removal and Replace of the Card Assembly . . . . .	332
Removal and Replace of the Front Fan . . . . .	314	Removal . . . . .	332
Removal . . . . .	314	Replace . . . . .	333
Replace . . . . .	314	Removal and Replace of the Planar Boards . . . . .	335
Removal and Replace of the Rear Fan Assembly	315	Removal of the Planar Boards . . . . .	335
Removal . . . . .	315	Replacing the Planar Boards . . . . .	336
Replace . . . . .	316	Removal and Replace of the Internal SCSI Drive's Disk Cable . . . . .	339
Removal and Replace of the Power Distribution Card . . . . .	317	Removal . . . . .	339
Removal . . . . .	317	Replace . . . . .	340
Replace . . . . .	318	Removal and Replace of the Fan Control Card . . . . .	342
Removal and Replace of the Hard Disk Drive . . . . .	321	Removal . . . . .	342
Removal . . . . .	321	Replace . . . . .	345
Replace . . . . .	321	Removal and Replace of the Serial Adapter Card Assembly. . . . .	346
Removal and Replace of the Optical Disk Drive	323	Removal . . . . .	346
Removal . . . . .	323	Replace . . . . .	349
Replace . . . . .	323	Removal of the Fan Cable . . . . .	350
Removal and Replacement of the 3 1/4" Disk Drive . . . . .	325	Removal . . . . .	350
Removal . . . . .	325	Replace . . . . .	350
Replace . . . . .	325	Remove and Replace of the Memory modules . . . . .	350
Removal and Replace of the CE Panel . . . . .	327	Removal . . . . .	350
Removal . . . . .	327	Replace . . . . .	351

## A60 Controller FRU List

Table 43. A60 Controller FRU's by Number

FRU Number	Description	R/R Procedure
34L2832	I/O Planar Board	Go to "Removal and Replace of the Planar Boards" on page 335
34L2833	Microprocessor Card	Go to "Removal and Replace of the Microprocessor Card or Memory Card" on page 329
34L2835	Memory Card	Go to "Removal and Replace of the Microprocessor Card or Memory Card" on page 329
07L7729	Memory module (32MB)	Go to "Remove and Replace of the Memory modules" on page 350
93H4702	Memory module (128MB)	Go to "Remove and Replace of the Memory modules" on page 350
97H7610	Optical Disk Drive	Go To "Removal and Replace of the Optical Disk Drive" on page 323
	Power Supply	Go to "Removal and Replace of the Power Supply or Power Supply Fan Assembly" on page 312
34L2834	System Planar	Go to "Removal and Replace of the Planar Boards" on page 335
93H6010	Card ASM	Go to "Removal and Replace of the Card Assembly" on page 332
09L4614	3 1/4" Disk Drive	Go to "Removal and Replacement of the 3 1/4" Disk Drive" on page 325
	Power Distribution Card	Go to "Removal and Replace of the Power Distribution Card" on page 317
093F2361	3.5" Diskette Drive	
09L4752	Rear Fan Assembly	Go to "Removal and Replace of the Rear Fan Assembly" on page 315
34L2870	Front Fan Assembly	Go to "Removal and Replace of the Front Fan" on page 314
93H8868	Power Supply fan	Go to "Removal and Replace of the Power Supply or Power Supply Fan Assembly" on page 312
	Power supply fan Cable	
09L4486	Cable (disk)	Go to "Removal and Replace of the Internal SCSI Drive's Disk Cable" on page 339
09L4489	Cable (3 1/4" Disk Drive)	
09L4491	Cable (SCSI Internal)	Go to "Removal and Replace of the Internal SCSI Drive's Disk Cable" on page 339
09L4492	Cable (Fan Control)	
09L4493	Cable (+5 volts)	
09L4494	Cable (+3 volts)	Go to "Removal of the Fan Cable" on page 350



Table 43. A60 Controller FRU's by Number (continued)

FRU Number	Description	R/R Procedure
09L4495	Cable (Power Signal)	
09L4496	Cable (+3 volts)	
09L4497	Cable (+5 volts)	
	Cable (fan control)	
	Cable (fan)	
	Cable (parallel port)	
09L4707	Cable (operator switch)	
06H7082	CE Panel	Go to "Removal and Replace of the CE Panel" on page 327
	Control fan (card)	Go to "Removal and Replace of the Fan Control Card" on page 342
	Hard Disk Drive	Go to "Removal and Replace of the Hard Disk Drive" on page 321
05H8911	Line Cord (3590)	
05J8924	Symbios SCSI (adapter)	Go to "Removal and Replace of the Card Assembly" on page 332
34L2836	ARTIC2/PENQUIN2 (adapter)	Go to "Removal and Replace of the Card Assembly" on page 332
93H5834	Serial Adapter Card	Go to "Removal and Replace of the Serial Adapter Card Assembly" on page 346

## Removal and Replace of the RISC Components

To ensure efficient parts removal and replacement it is suggested that you select the procedure to be performed and read it completely prior to performing the removal and replacement.

---

## Removal and Replace of the Power Supply or Power Supply Fan Assembly

This procedure is a concurrent procedure and does not require a power off or an offline operation

### CAUTION:

This Procedure must be completed within five (5) minutes (Power Supply has been removed and new supply installed) to prevent the Model A60 from powering down. A code of E0E2 on the Display indicates that a HOT SWAP is in progress.

### CAUTION:

If you are here to repair a power supply fan, you must unlatch and undock the power supply within 30 seconds of removing the power cord to prevent the A60 Controller from powering down.

## Removal

Ensure a flat bladed screw driver and unpacked replacement parts are available for immediate use before proceeding.

- \_\_\_ Step 1. Remove power supply housing mounting screw, refer to Figure 74 on page 313 **1** one per Power Supply.
- \_\_\_ Step 2. Unplug power cord from power supply affected, refer to Figure 74 on page 313 **4**
- \_\_\_ Step 3. Lift power supply actuator handle Figure 74 on page 313 **5** and gently remove power supply from Model A60 housing.
- \_\_\_ Step 4. Depress the Tab Locks (at the rear of the supply) and remove the fan connections to the chassis.
- \_\_\_ Step 5. Loosen **DO NOT REMOVE** screw between chassis mounted fan connectors.
- \_\_\_ Step 6. Slide fan assembly, refer to Figure 74 on page 313 **3**, in direction away from chassis mounted fan connectors and remove from Power Supply Assembly.

Before you replace a power supply, use this procedure to determine if the power supply needs replacing:

- a. Once the power supply is out of the A60, connect the line cord to the power supply just removed from the system.
- b. If the LED on the rear of the power supply is not blinking, the power supply is defective. Continue with the replacement, see 312.
- c. If the LED on the rear of the power supply is blinking, Use a pencil to press the test switch on the side of the power supply.
- d. If the LED on the rear of the power supply is on steady and the fans spin, the power supply is good and can be returned to the A60.
- e. If the LED on the rear of the power supply is not on steady and the fans do not spin, the power supply is defective. Continue with the replacement, see 312.

## Replace

- \_\_\_ Step 1. Do one of the following:
  - Slide new fan on existing power supply (fan replacement)

- Slide old fan on new power supply (power supply replacement).
- \_\_\_ Step 2. Tighten screw between chassis mounted fan connectors
- \_\_\_ Step 3. Plug fan cable connectors at rear of power supply
- \_\_\_ Step 4. Push the power supply into position in the Model A60 chassis
- \_\_\_ Step 5. Close power supply actuator handle refer to Figure 74 **5**
- \_\_\_ Step 6. Replace power cord to power supply refer to Figure 74 **4**
- \_\_\_ Step 7. Replace Power supply housing screw, refer to Figure 74 **1**
- \_\_\_ Step 8. Go to “End of Call” on page 354

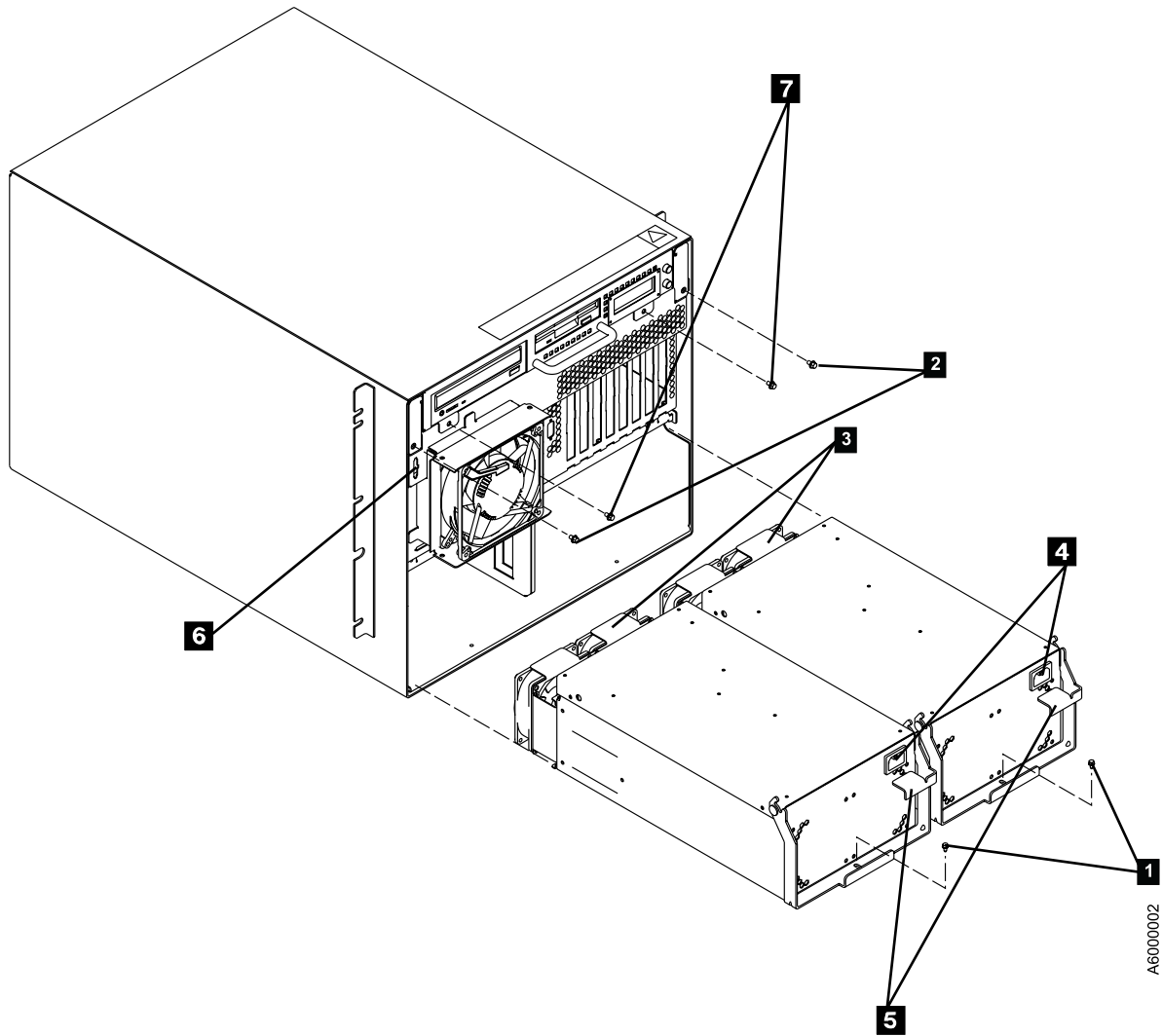


Figure 74. A60 Controller Rear View



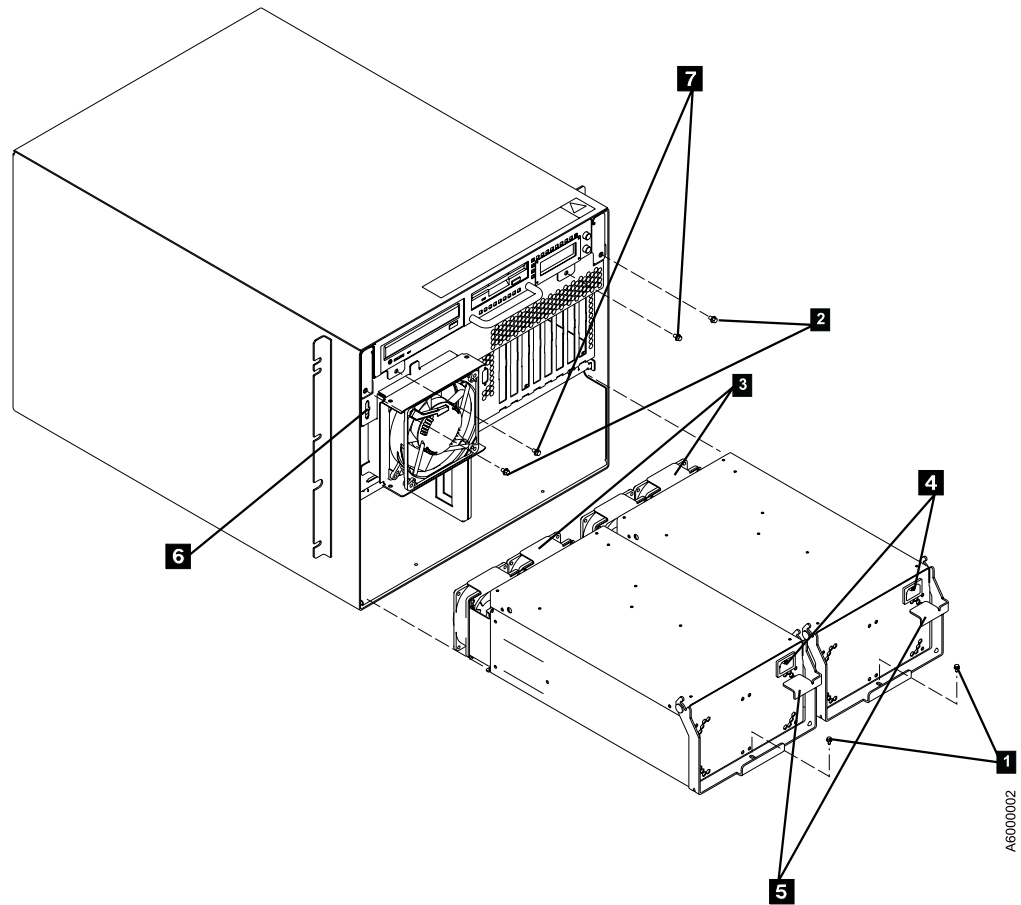


Figure 76. A60 Controller Rear View

## Removal and Replace of the Rear Fan Assembly

### Removal

**Attention:** You may require more space to remove the Fan Assembly from the rear of the Model A60. If this is the case disconnecting the SCSI cables at the Model A60 SCSI ports will give you the added clearance.

**CAUTION:**

**The Rear Fan Assembly must be supported with one hand before last of four (4) assembly mounting screws are removed completely.**

For this procedure, refer to Figure 77 on page 316 and Figure 78 on page 317

- \_\_\_ Step 1. Go to "Prepare the A60 Controller for Service" on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 78 on page 317 **2**
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end). Refer to Figure 78 on page 317 **4**
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.

- \_\_\_ Step 6. At the rear of the Model A60 there are 3 cable connectors, one for each rear fan. Unplug these 3 connectors.
- \_\_\_ Step 7. There are 4 mounting screws, Refer to Figure 77 **2** securing the assembly to the chassis. Remove the 4 mounting screws , two on left rear side and two on right rear side.
- \_\_\_ Step 8. Remove the Fan Assembly, slide through the right rear side of the Model A60.

## Replace

- \_\_\_ Step 1. Slide the replacement rear fan assembly in position, through right rear side of Model A60, and install the 4 mounting screws, refer to Figure 77 **2** attaching the assembly to the chassis, two on left rear side and two on right rear side.
- \_\_\_ Step 2. Connect the 3 cable connectors, one for each rear fan assembly, at the A60 chassis end.
- \_\_\_ Step 3. Grasp handle below the diskette drive and push drawer completely into the chassis.
- \_\_\_ Step 4. Replace the two chassis housing screws, refer to Figure 78 on page 317 **2** .
- \_\_\_ Step 5. Replug the two power cords from the power supply connectors (power supply end). Refer to Figure 78 on page 317 **4**
- \_\_\_ Step 6. Press the **White** button on the operator panel to power on the Model A60 Controller
- \_\_\_ Step 7. Go to “Prepare the A60 Controller for Service” on page 380 to return Model A60 to Online.
- \_\_\_ Step 8. Go to “End of Call” on page 354.

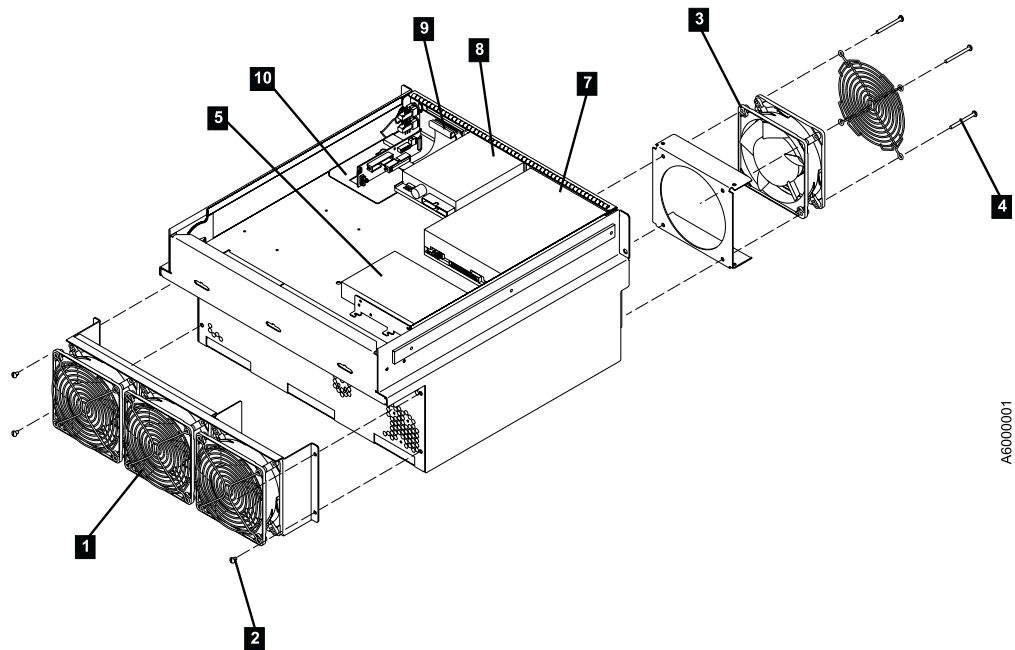


Figure 77. A60 Controller Rear Fan Assembly

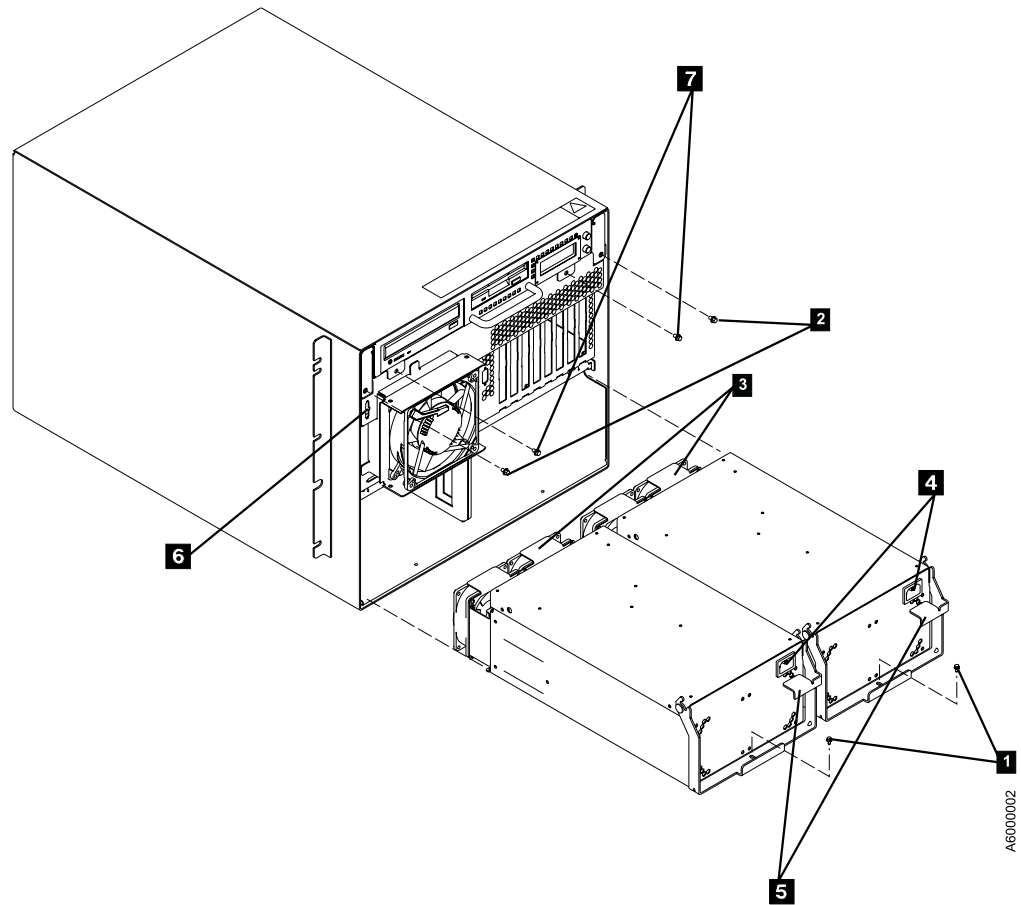


Figure 78. A60 Controller Rear View

## Removal and Replace of the Power Distribution Card

### Removal

**Attention:** You may require more space to remove the Fan Assembly from the rear of the Model A60. If this is the case disconnecting the SCSI cables at the Model A60 SCSI ports will give you the added clearance.

**CAUTION:**

**The Rear Fan Assembly must be supported with one hand before last of four (4) assembly mounting screws are removed completely.**

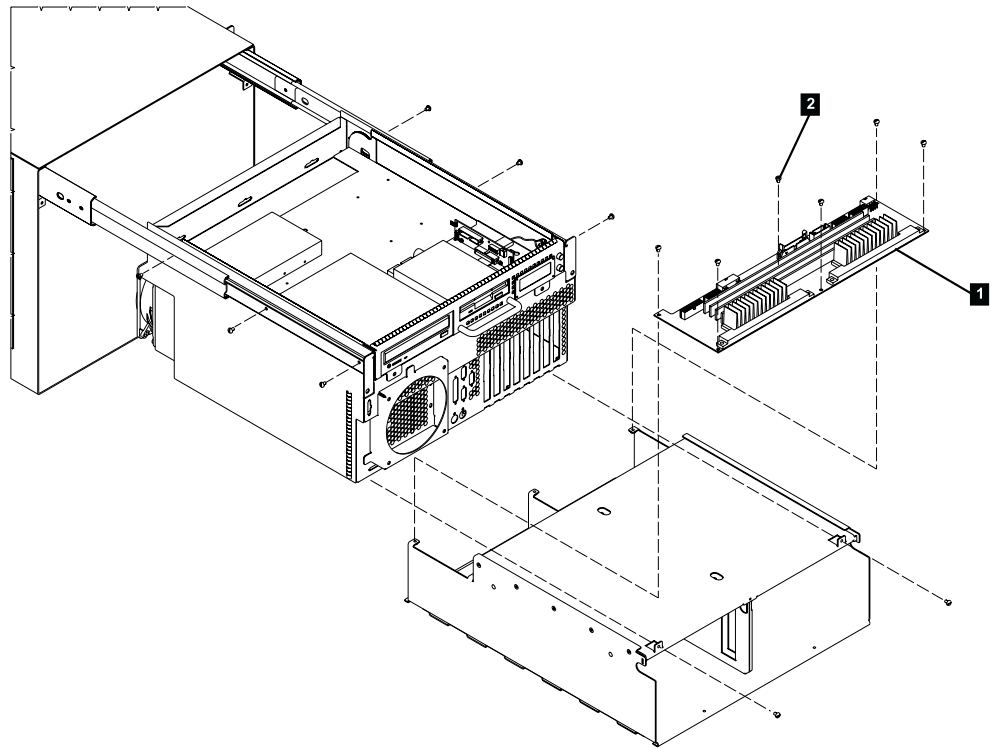
- \_\_\_ Step 1. Go to “Prepare the A60 Controller for Service” on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 80 on page 320 **2**
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end) Figure 80 on page 320 **4** .
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. At the rear of the Model A60 there are 3 cable connectors, one for each rear fan. Unplug these 3 connectors.

- \_\_\_ Step 7. The Model A60 there are 4 mounting screws connecting the rear fan assembly to the chassis. Remove the screws , two on left rear side and two on right rear side, refer to Figure 81 on page 320 **2** .
- \_\_\_ Step 8. Remove the Fan Assembly, slide through the right rear side of the Model A60, and put aside for now .
- \_\_\_ Step 9. Remove the power distribution card, refer to Figure 79 on page 319 **1** , from chassis by removing 6 mounting screws, refer to Figure 79 on page 319(6) **2** .
- \_\_\_ Step 10. Unplug the eight (8) cables from **J5** , **J6** , **J8** , **J3** , **J4** , **J10** , **J7** and **J9** . Cables should be laced. If they are not record placement before removing.
- \_\_\_ Step 11. Remove the Power Card.

## Replace

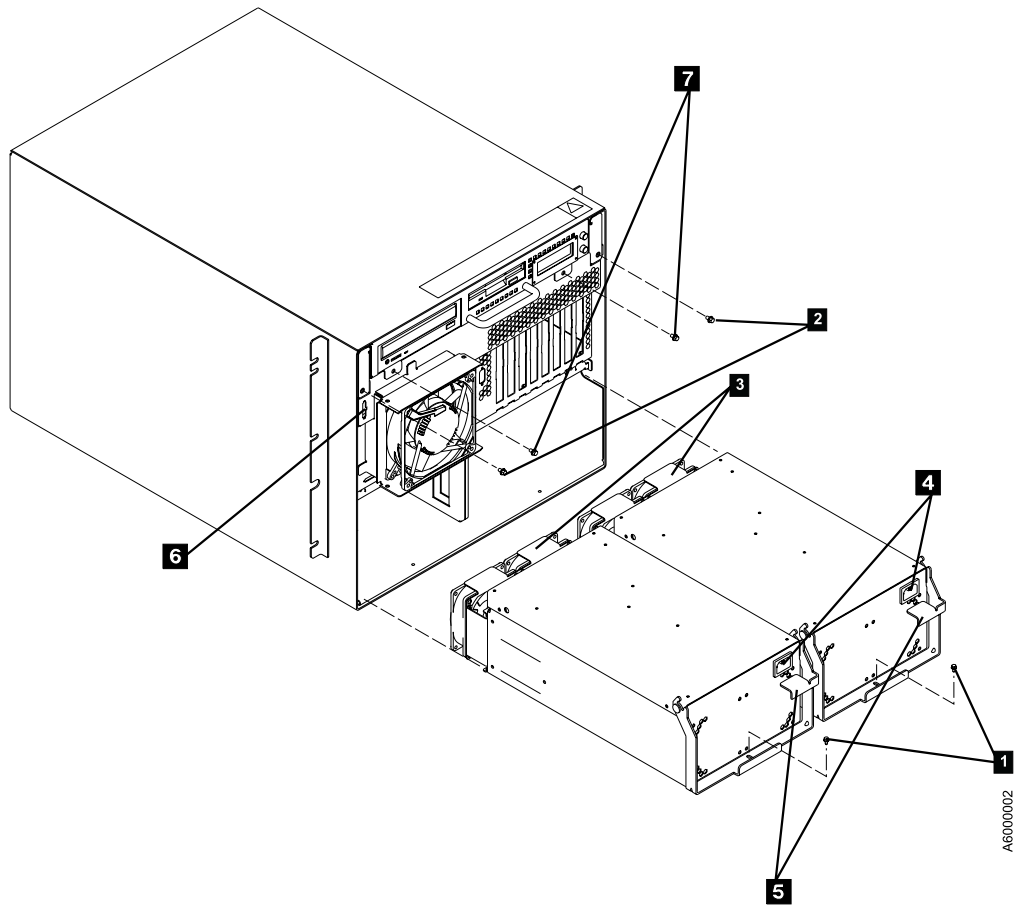
- \_\_\_ Step 1. Place the new power card in position and replug cables **J3** thru **J10** .
- \_\_\_ Step 2. Secure the power card, refer to Figure 79 on page 319 **1** to chassis using mounting screws (6), refer to Figure 79 on page 319 **2** .
- \_\_\_ Step 3. Slide the rear fan assembly in position, through right rear side of Model A60, and install the 4 mounting screws, refer to Figure 81 on page 320 **2** attaching the assembly to the chassis, two on left rear side and two on right rear side.
- \_\_\_ Step 4. Reconnect the 3 cable connectors, one for each rear fan assembly, at the A60 chassis end.
- \_\_\_ Step 5. Grasp handle below the diskette drive and push drawer completely into the chassis.
- \_\_\_ Step 6. Replace the two chassis housing screws.refer to Figure 80 on page 320 **2** .
- \_\_\_ Step 7. Replug the two power cords to the supply connectors, refer to Figure 80 on page 320 **4**
- \_\_\_ Step 8. Press the **White** button on the operator panel to power on the Model A60 Controller
- \_\_\_ Step 9. Go to “Prepare the A60 Controller for Service” on page 380 to return Model A60 to Online.
- \_\_\_ Step 10. Go to “End of Call” on page 354.





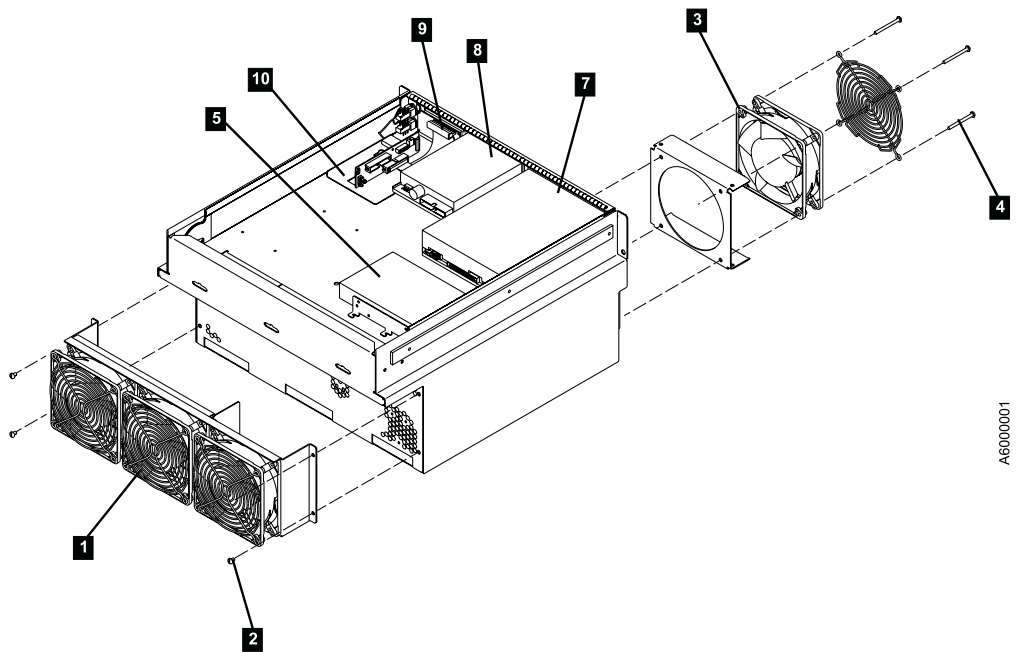
A6000003

Figure 79. A60 Controller Rear View



A6000002

Figure 80. A60 Controller Rear View



A6000001

Figure 81. A60 Controller Rear View

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## Removal and Replace of the Hard Disk Drive

### Removal

- \_\_\_ Step 1. Go to “Prepare the A60 Controller for Service” on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 82 on page 322 **2**
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end). Refer to Figure 82 on page 322 **4**
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. Unplug both cables at rear of Hard disk drive assembly. Figure 83 on page 322 **5**
- \_\_\_ Step 7. Loosen, but do not remove, four screws securing Hard disk drive assembly to chassis
- \_\_\_ Step 8. Slide Hard Disk drive assembly to right of chassis, lift up, and remove

### Replace

- \_\_\_ Step 1. Slide new Hard Disk Drive assembly towards the left of the chassis until it is in position, refer to Figure 83 on page 322 **5**
- \_\_\_ Step 2. Tighten the four screws securing Hard Disk Drive assembly to chassis
- \_\_\_ Step 3. Plug both cables to connectors at rear of Hard Disk Drive assembly
- \_\_\_ Step 4. Grasp Handle below the diskette drive and push drawer completely into the chassis
- \_\_\_ Step 5. Replace the two chassis housing screws, refer to Figure 82 on page 322 **2**
- \_\_\_ Step 6. Plug the power supply cords back into the power supplies. Refer to Figure 82 on page 322 **4**
- \_\_\_ Step 7. Press the **White** button on the Operator panel to power on the A60 Controller
- \_\_\_ Step 8. Go to “Prepare the A60 Controller for Service” on page 380 to return the A60 Controller Online.
- \_\_\_ Step 9. Go to “End of Call” on page 354

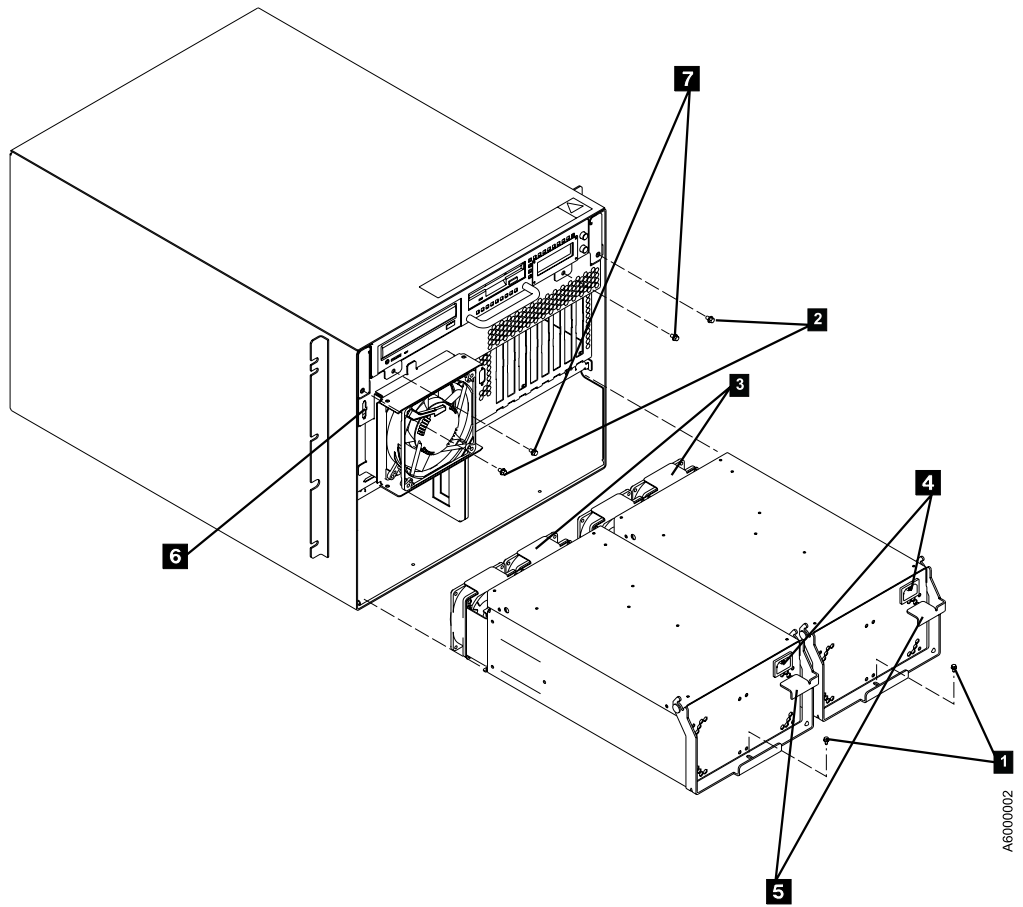


Figure 82. A60 Controller Rear View

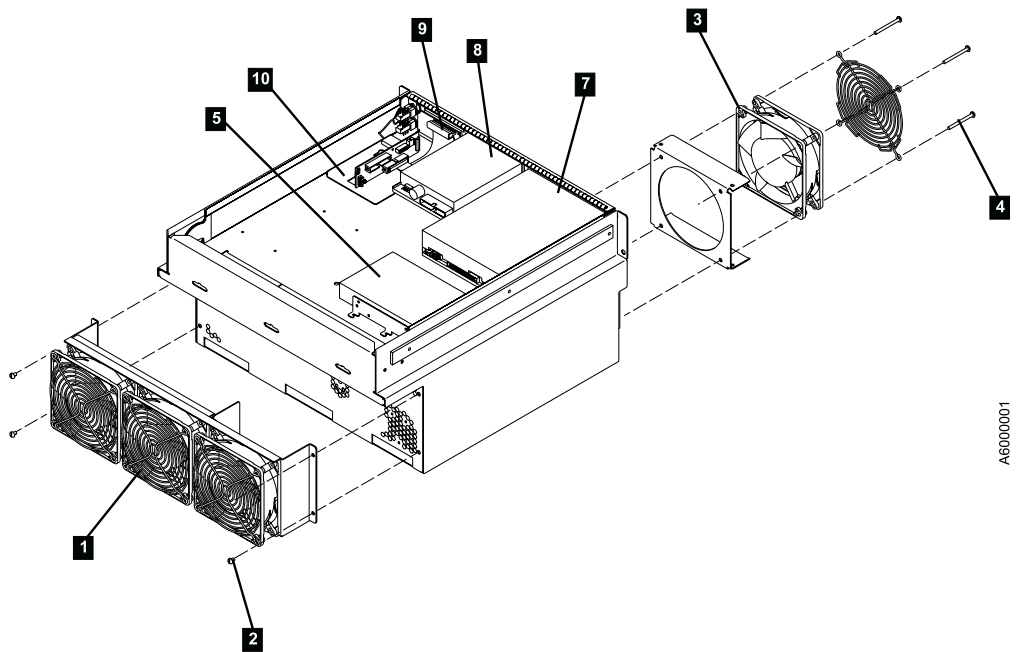


Figure 83. A60 Controller Top View

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## Removal and Replace of the Optical Disk Drive

### Removal

- \_\_\_ Step 1. Go to “Prepare the A60 Controller for Service” on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 84 on page 324 **2**
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end). Refer to Figure 84 on page 324 **4**
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. Unplug both cables at rear of Optical disk drive assembly. refer to Figure 85 on page 324 **7**
- \_\_\_ Step 7. Loosen, but do not remove, four screws securing Optical disk drive assembly to chassis
- \_\_\_ Step 8. Slide Optical disk drive assembly to rear of chassis, lift up, and remove

### Replace

- \_\_\_ Step 1. Slide new Optical Disk Drive assembly to the front of the chassis until it is in position, refer to Figure 84 on page 324 **7**
- \_\_\_ Step 2. Tighten the four screws securing Optical Disk Drive assembly to chassis
- \_\_\_ Step 3. Plug cables to connectors at rear of Optical Disk Drive assembly
- \_\_\_ Step 4. Grasp Handle below the diskette drive and push drawer completely into the chassis
- \_\_\_ Step 5. Replace the two chassis housing screws, refer to Figure 84 on page 324 **2**
- \_\_\_ Step 6. Plug the power supply cords back into the power supplies. Refer to Figure 84 on page 324 **4**
- \_\_\_ Step 7. Press the **White** button on the Operator panel to power on the A60 Controller
- \_\_\_ Step 8. Go to “Prepare the A60 Controller for Service” on page 380 to return the A60 Controller Online.
- \_\_\_ Step 9. Go to “End of Call” on page 354

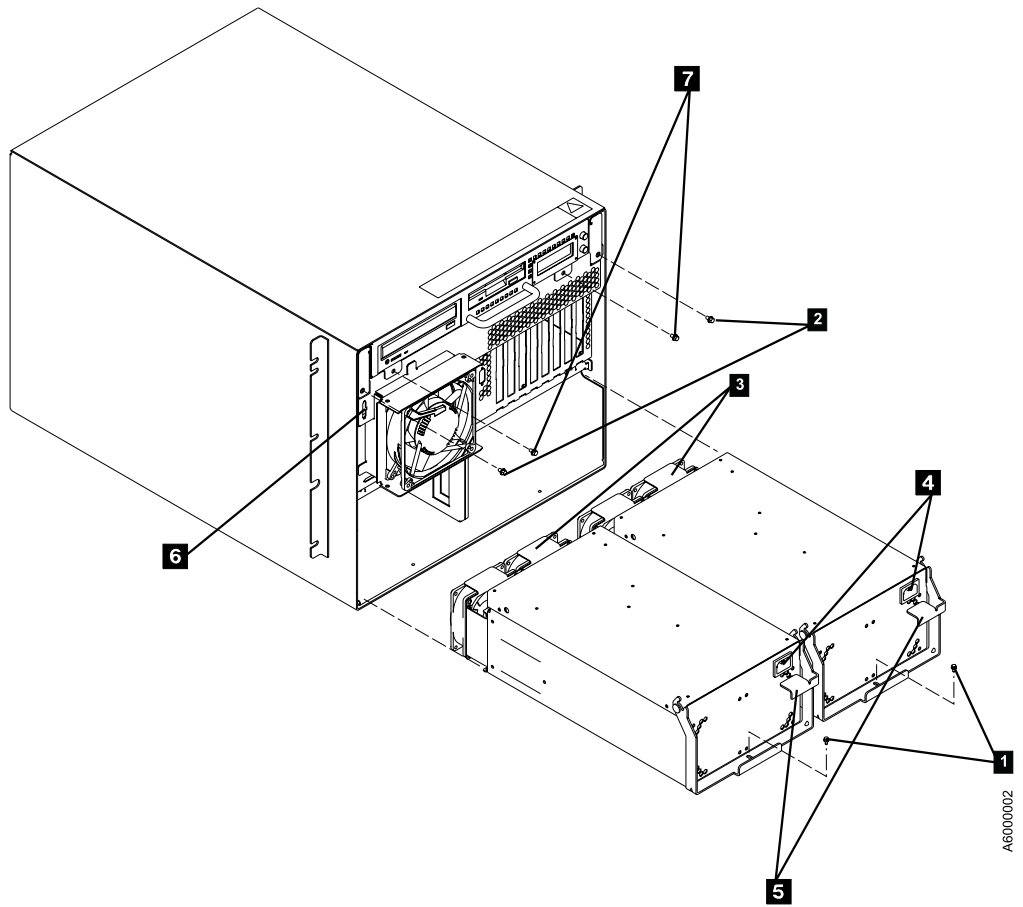


Figure 84. A60 Controller Rear View

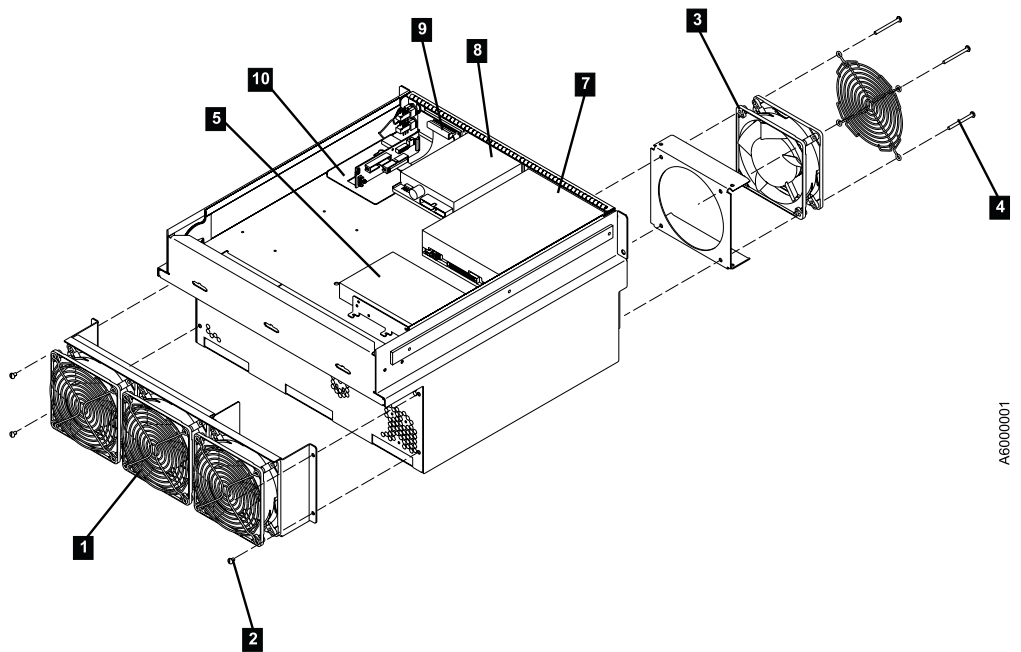


Figure 85. A60 Controller Top View

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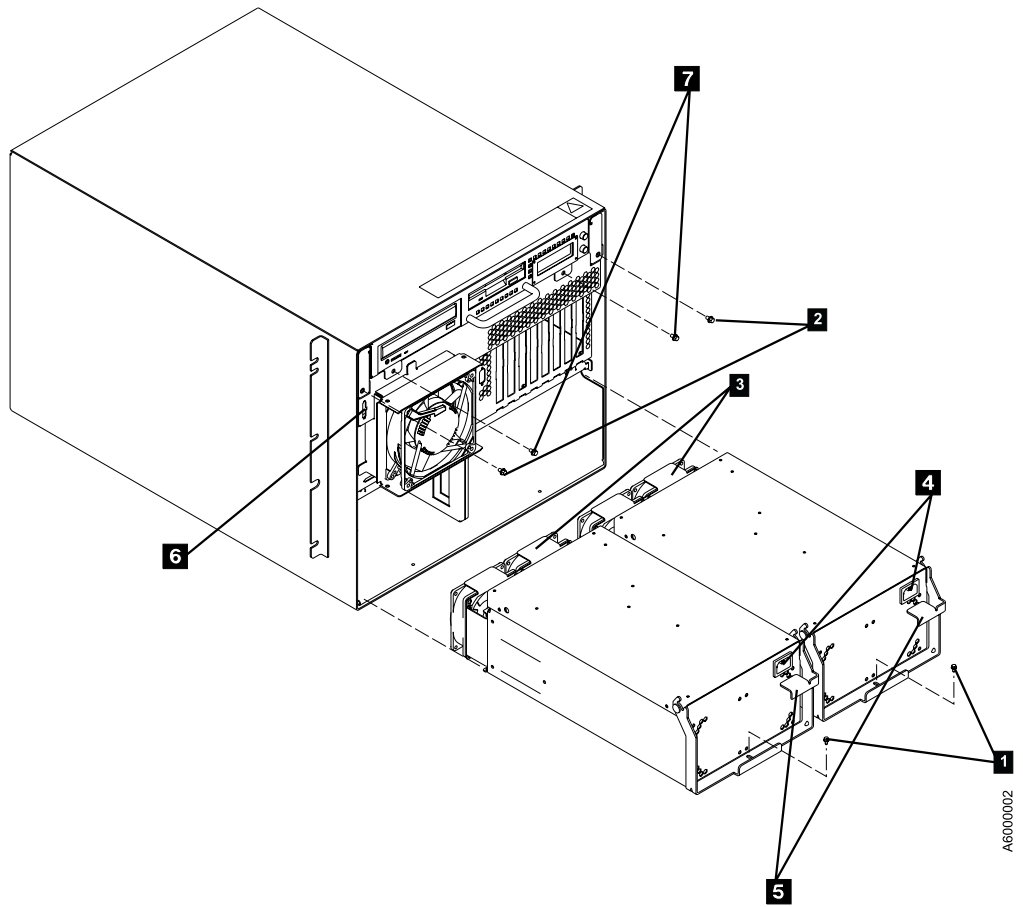
## Removal and Replacement of the 3 1/4" Disk Drive

### Removal

- \_\_\_ Step 1. Go to "Prepare the A60 Controller for Service" on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 86 on page 326 **2**
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end). Refer to Figure 86 on page 326 **4**
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. Unplug both cables at rear of 3 1/4" disk drive assembly, refer to Figure 87 on page 326 **8**
- \_\_\_ Step 7. Loosen, but do not remove, four screws securing 3 1/4" disk drive assembly to chassis
- \_\_\_ Step 8. Slide 3 1/4" disk drive assembly to rear of chassis, lift up, and remove

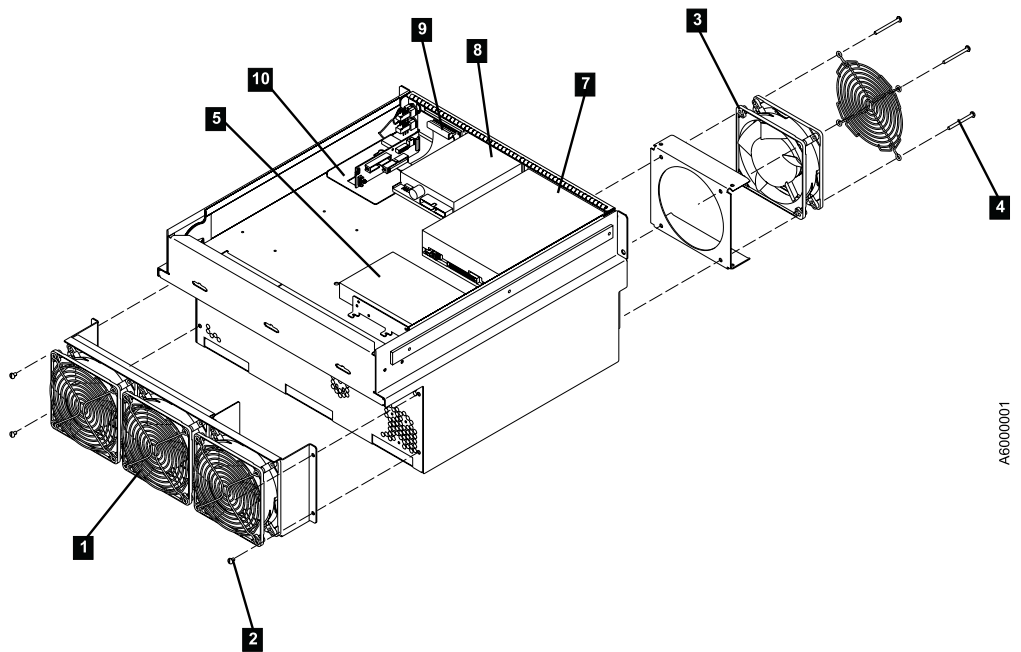
### Replace

- \_\_\_ Step 1. Slide new 3 1/4" Disk Drive assembly to the front of the chassis until it is in position, refer to Figure 87 on page 326 **8**
- \_\_\_ Step 2. Tighten the four screws securing 3 1/4" Disk Drive assembly to chassis
- \_\_\_ Step 3. Plug both cables to connectors at rear of 3 1/4" Disk Drive assembly
- \_\_\_ Step 4. Grasp Handle below the diskette drive and push drawer completely into the chassis
- \_\_\_ Step 5. Replace the two chassis housing screws, refer to Figure 86 on page 326 **2**
- \_\_\_ Step 6. Plug the power supply cords back into the power supplies. Refer to Figure 86 on page 326 **4**
- \_\_\_ Step 7. Press the **White** button on the Operator panel to power on the A60 Controller
- \_\_\_ Step 8. Go to "Prepare the A60 Controller for Service" on page 380 to return the A60 Controller Online.
- \_\_\_ Step 9. Go to "End of Call" on page 354



A6000002

Figure 86. A60 Controller Rear View



A6000001

Figure 87. A60 Controller Top View



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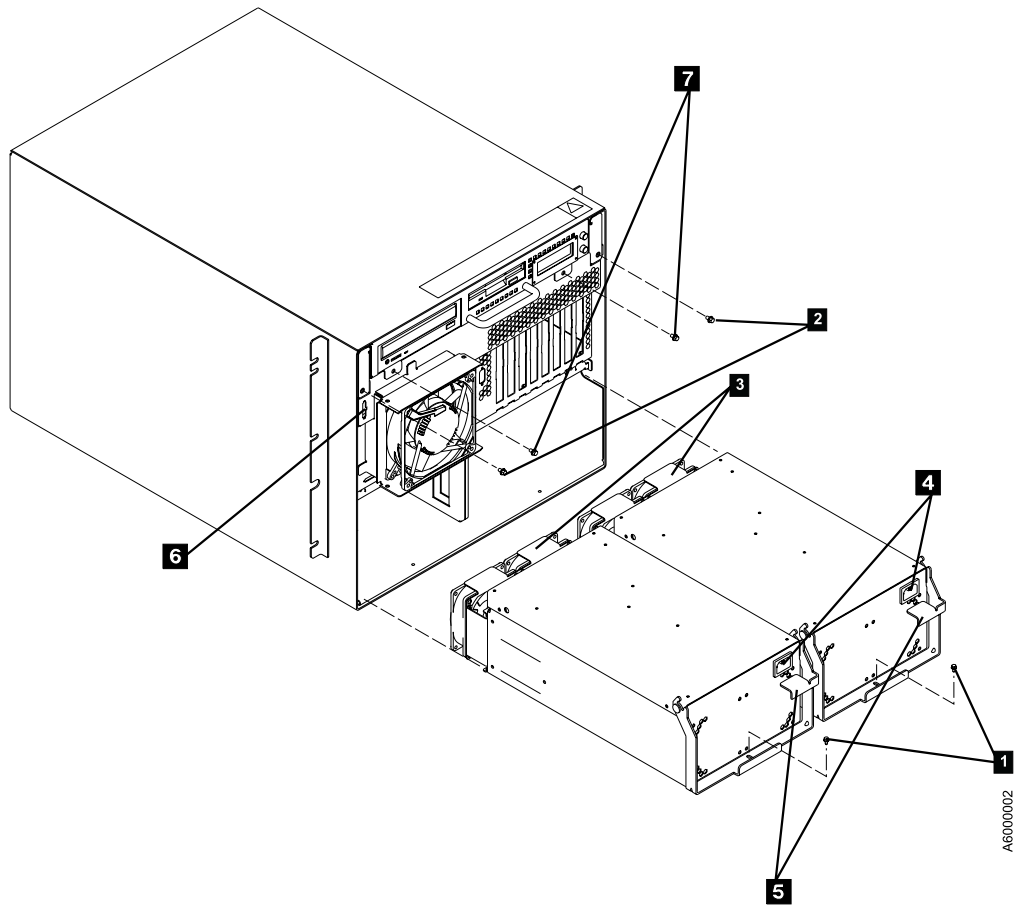
## Removal and Replace of the CE Panel

### Removal

- \_\_\_ Step 1. Go to “Prepare the A60 Controller for Service” on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 88 on page 328 **2**
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end). Refer to Figure 88 on page 328 **4**
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. Unplug cable at rear of CE Panel assembly, refer to Figure 89 on page 328 **10**
- \_\_\_ Step 7. Loosen, but do not remove, two screws securing CE Panel assembly to chassis
- \_\_\_ Step 8. Slide CE Panel assembly to rear of chassis, lift up, and remove

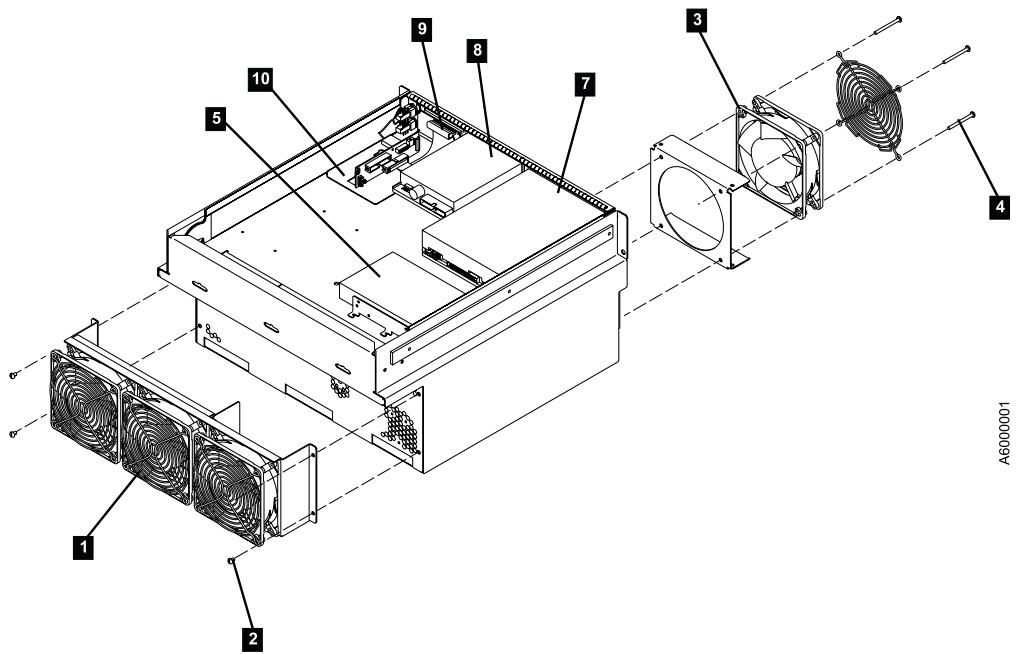
### Replace

- \_\_\_ Step 1. Remove the VPD module from the CE Panel Assembly just removed, and place it in the new CE Panel Assembly.
- \_\_\_ Step 2. Slide new CE Panel assembly to the front of the chassis until it is in position, refer to Figure 89 on page 328 **10**
- \_\_\_ Step 3. Tighten the two screws securing CE Panel assembly to chassis
- \_\_\_ Step 4. Plug cable to connector at rear of CE Panel assembly
- \_\_\_ Step 5. Grasp Handle below the diskette drive and push drawer completely into the chassis
- \_\_\_ Step 6. Replace the two chassis housing screws, refer to Figure 88 on page 328 **2**
- \_\_\_ Step 7. Plug the power supply cords back into the power supplies. Refer to Figure 88 on page 328 **4**
- \_\_\_ Step 8. Press the **White** button on the Operator panel to power on the A60 Controller
- \_\_\_ Step 9. Go to “Prepare the A60 Controller for Service” on page 380 to return the A60 Controller Online.
- \_\_\_ Step 10. Go to “End of Call” on page 354



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Figure 88. A60 Controller Rear View



A6000001

Figure 89. A60 Controller Top View

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## Removal and Replace of the Microprocessor Card or Memory Card

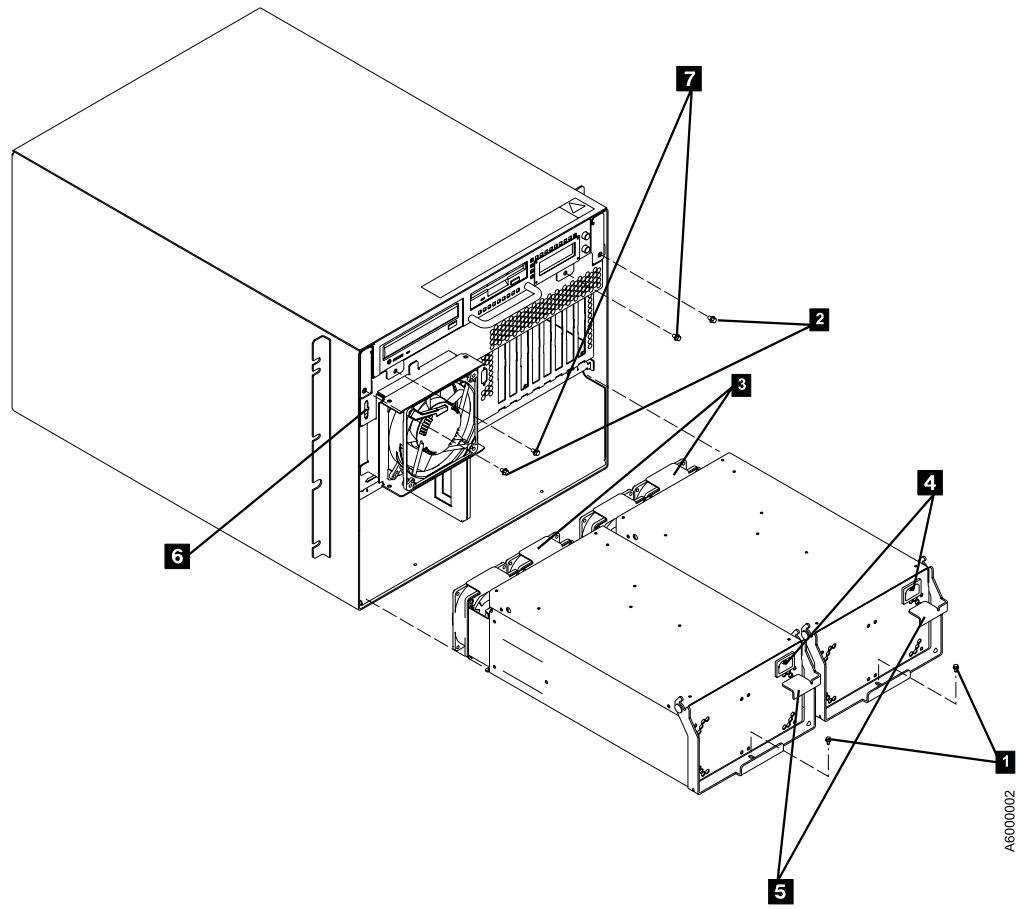
### Removal

ESD controls are to be adhered to at all times.

- \_\_\_ Step 1. Go to “Prepare the A60 Controller for Service” on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 90 on page 330 **2**
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end). Refer to Figure 90 on page 330 **4**
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. Remove two shelf chassis housing screws, refer to Figure 90 on page 330 **7**
- \_\_\_ Step 7. Grasp handle below diskette drive and lift and rotate upwards until upper housing lock into place, refer to Figure 91 on page 331
- \_\_\_ Step 8. Grasp the corner tabs on either the Memory Card, refer to Figure 92 on page 332 **2** or the Processor Card **1** to be replaced and lift to remove.

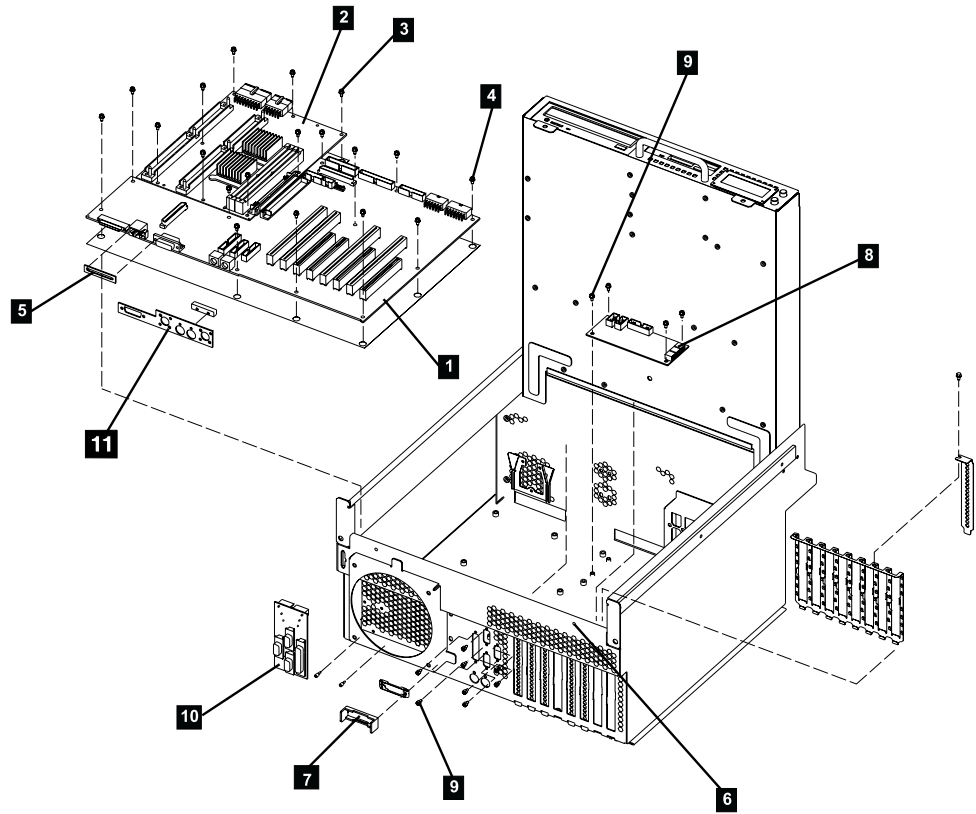
### Replace

- \_\_\_ Step 1. Replace with new Memory Card, refer to Figure 92 on page 332 **2** or the Processor Card **1**.
- \_\_\_ Step 2. Grasp handle on the shelf housing, refer to Figure 91 on page 331 and pull up to release the latch. Lower the shelf housing back down on the A60 Controller
- \_\_\_ Step 3. Replace the two shelf chassis housing screws, refer to Figure 90 on page 330 **7**
- \_\_\_ Step 4. Grasp Handle below the diskette drive and push drawer completely into the chassis
- \_\_\_ Step 5. Replace the two chassis housing screws, refer to Figure 90 on page 330
- \_\_\_ Step 6. **2**
- \_\_\_ Step 7. Plug the power supply cords back into the power supplies. Refer to Figure 90 on page 330 **4**
- \_\_\_ Step 8. Press the **White** button on the Operator panel to power on the A60 Controller
- \_\_\_ Step 9. Go to “Prepare the A60 Controller for Service” on page 380 to return the A60 Controller Online.
- \_\_\_ Step 10. Go to “End of Call” on page 354



A6000002

Figure 90. A60 Controller Rear View



A6000004

Figure 91. A60 Controller Inside Top View

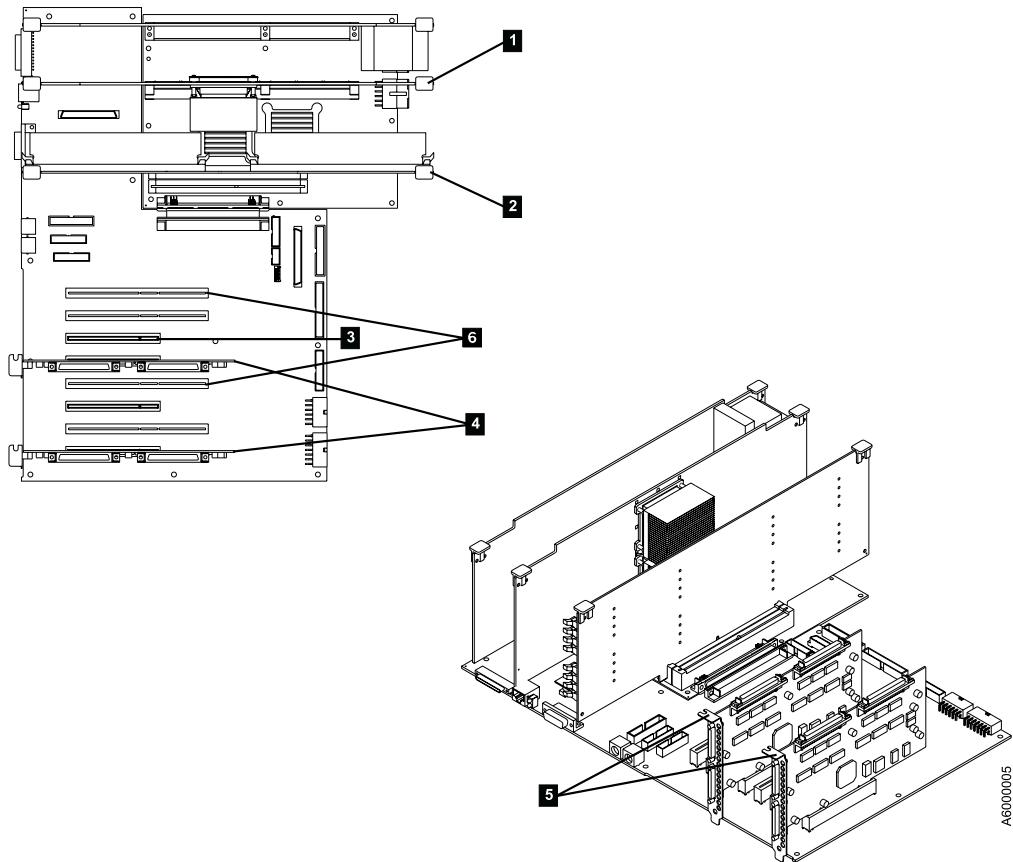


Figure 92. A60 Controller Card Assemblies

## Removal and Replace of the Card Assembly

The following Remove and Replace procedure is the same for each of the following cards, refer to Figure 92:

- SCSI Adapter (2) **4**
- ESCON Adapter (2) **6**
- Ethernet Adapter (1) **3**

### Removal

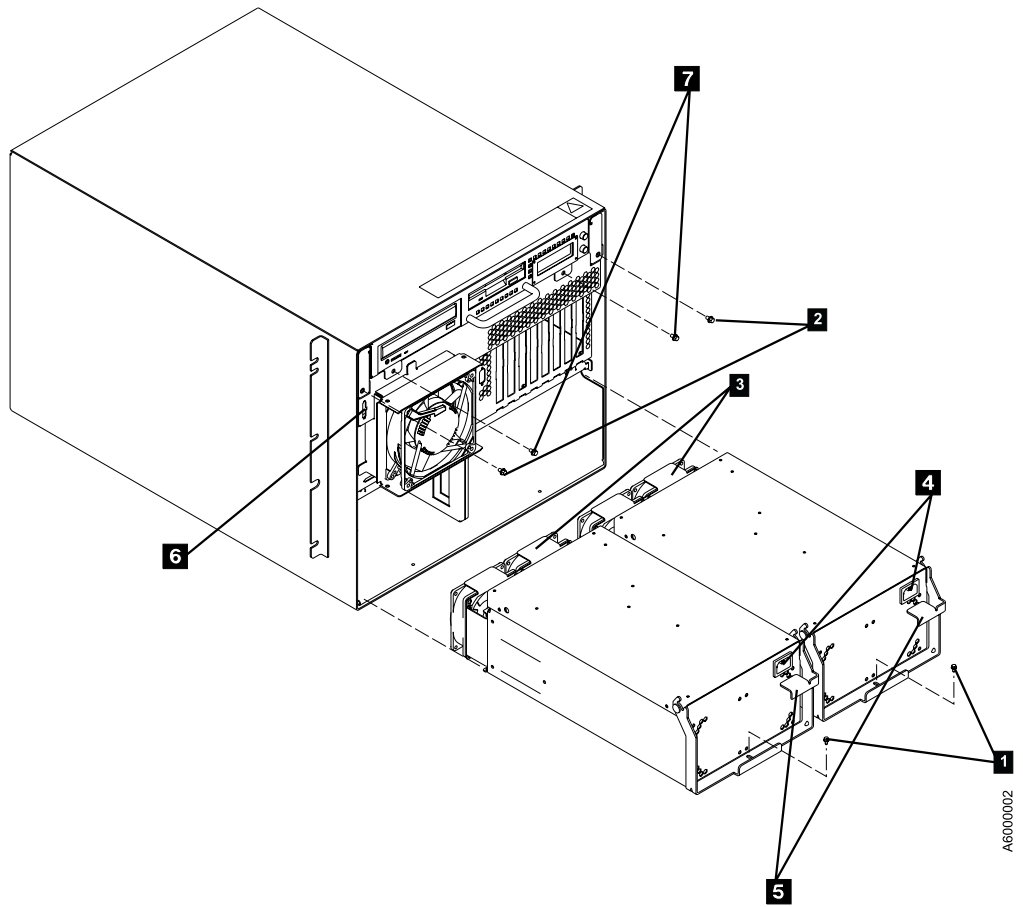
**ESD controls are to be adhered to at all times.**

- \_\_\_ Step 1. Go to "Prepare the A60 Controller for Service" on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 93 on page 334 **2**
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end). Refer to Figure 93 on page 334 **4**
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. Remove two shelf chassis housing screws, refer to Figure 93 on page 334 **7**
- \_\_\_ Step 7. Grasp handle below diskette drive and lift and rotate upwards until upper housing locks into the opened position

- \_\_\_ Step 8. Remove the screw retention anchoring the card to the chassis, refer to Figure 92 on page 332 **5**.
- \_\_\_ Step 9. Disconnect any external cables attached to the card to be removed.
- \_\_\_ Step 10. Grasp the corners of the Card to be removed, refer to Figure 92 on page 332 and lift to remove.

## Replace

- \_\_\_ Step 1. Replace with new Card.
- \_\_\_ Step 2. Attach any external cables removed from the old card
- \_\_\_ Step 3. Replace the screw retention anchoring the card to the chassis, refer to Figure 92 on page 332 **5**.
- \_\_\_ Step 4. Grasp handle on the shelf housing, refer to Figure 91 on page 331 and pull up to release the latch. Lower the shelf housing back down on the A60 Controller
- \_\_\_ Step 5. Replace the two shelf chassis housing screws, refer to Figure 93 on page 334 **7**
- \_\_\_ Step 6. Grasp Handle below the diskette drive and push drawer completely into the chassis
- \_\_\_ Step 7. Replace the two chassis housing screws, refer to Figure 93 on page 334 **2**
- \_\_\_ Step 8. Plug the power supply cords back into the power supplies. Refer to Figure 93 on page 334 **4**
- \_\_\_ Step 9. Press the **White** button on the Operator panel to power on the A60 Controller
- \_\_\_ Step 10. Go to "Prepare the A60 Controller for Service" on page 380 to return the A60 Controller Online.
- \_\_\_ Step 11. Go to "End of Call" on page 354



A6000002

Figure 93. A60 Controller Rear View



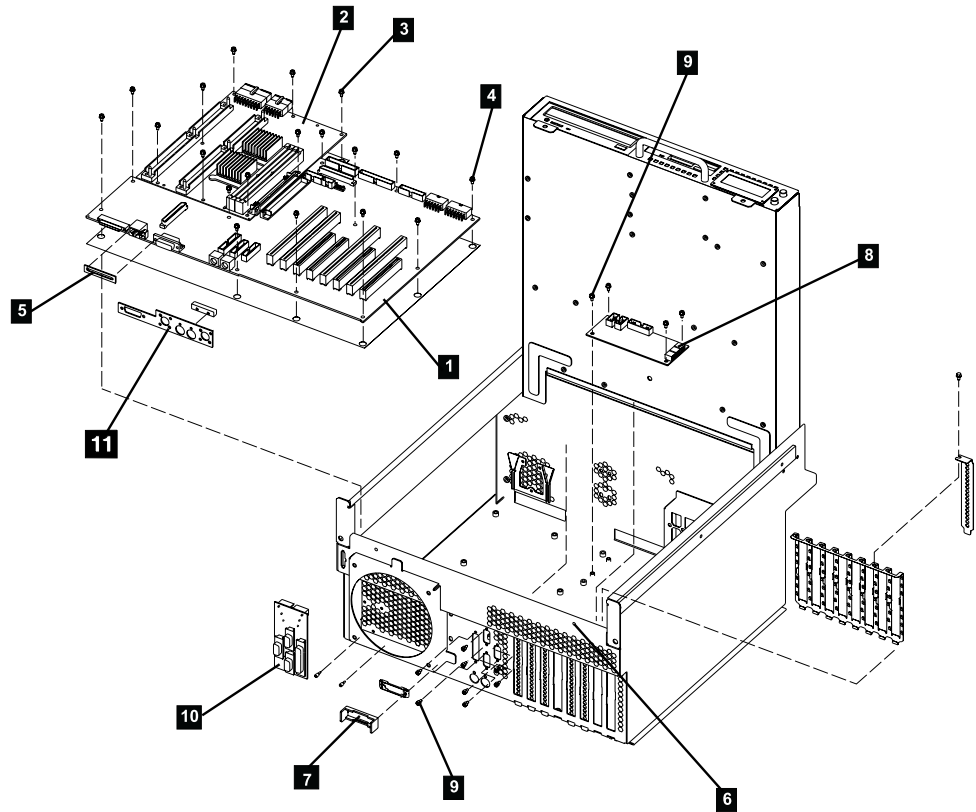


Figure 94. A60 Controller Inside Top View

A6000004

## Removal and Replace of the Planar Boards

ESD controls are to be adhered to at all times.

### Removal of the Planar Boards

- \_\_\_ Step 1. Go to “Prepare the A60 Controller for Service” on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 95 on page 337 **2**.
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end) Refer to Figure 95 on page 337 **4**
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. Remove two shelf chassis housing screws, refer to Figure 95 on page 337 **7**
- \_\_\_ Step 7. Grasp handle below diskette drive and lift and rotate upwards until upper housing locks into the opened position

**Attention:** Before a Planar Board can be removed the removal process for each card at “Removal and Replace of the Card Assembly” on page 332 and “Removal and Replace of the Microprocessor Card or Memory Card” on page 329 must be completed. When the removal procedure for these have been completed continue below.

- \_\_\_ Step 8. Remove cables seven ( 7) from I/O Planar, refer to Figure 94 on page 335 **1** and 2 from system planar **2** .
- \_\_\_ Step 9. Remove 19 screws, refer to Figure 94 on page 335. Eleven (11) from the I/O Planar, refer to Figure 94 on page 335 **4** and eight screws, from the system planar, refer to Figure 94 on page 335 (8) **3**
- \_\_\_ Step 10. Slide interconnected planar boards to the rear.
- \_\_\_ Step 11. Lift boards **1** and **2** gently out of RISC.  
**CAUTION:**  
**Gently removing the boards will alleviate any potential problems at a later time.**
- \_\_\_ Step 12. Remove the board, to be replaced, from common connector.

## Replacing the Planar Boards

The following replacement procedure varies slightly from the removal procedure. The procedures below are structured for ease of replacement and to ensure all items removed have been successfully replaced.

- \_\_\_ Step 1. Slide the I/O planar, refer to Figure 94 on page 335 **1** into position in the RISC frame. Ensure cables are cleared from beneath the board.
- \_\_\_ Step 2. Slide the System Planar, refer to Figure 94 on page 335 **2** into the left (from the rear) side of the RISC frame.  
**Attention:** Ensure, refer to Figure 96 on page 338 **5** SCSI I/O gasket and **11** the I/O Connector gasket are in place on I/O planar.
- \_\_\_ Step 3. Boards **1** and **2** can be positioned for connection into the common holder.  
**CAUTION:**  
**Caution should be followed when connecting the two planar boards to the common holder. The holder can be bent if caution isn't observed.**  
 Connect the boards with a sliding motion into the common connector.
- \_\_\_ Step 4. Slide the interconnected planar boards forward to align with screw mounting holes.
- \_\_\_ Step 5. Replace the 19 screws, refer to Figure 96 on page 338 **3** and **4** removed in the removal.
- \_\_\_ Step 6. Replace the seven (7) cables into the I/O Planar, and the two (2) cables removed earlier from the system planar.
- \_\_\_ Step 7. Install Memory and Processor cards, removed at "Removal and Replace of the Microprocessor Card or Memory Card" on page 329.
- \_\_\_ Step 8. Install Cards removed at "Removal and Replace of the Card Assembly" on page 332.
- \_\_\_ Step 9. Grasp handle on the shelf housing, refer to Figure 96 on page 338 and pull up to release the latch. Lower the shelf housing back down on the A60 Controller
- \_\_\_ Step 10. Replace the two shelf chassis housing screws, refer to Figure 95 on page 337 **7**
- \_\_\_ Step 11. Grasp Handle below the diskette drive and push drawer completely into the chassis
- \_\_\_ Step 12. Replace the two chasis housing screws, refer to Figure 95 on page 337 **2**
- \_\_\_ Step 13. Plug the power supply cords back into the power supplies, refer to Figure 95 on page 337 **4** .

- \_\_\_ Step 14. Press the **White** button on the Operator panel to power on the A60 Controller
- \_\_\_ Step 15. Go to “Prepare the A60 Controller for Service” on page 380 to return the A60 Controller Online.
- \_\_\_ Step 16. Go to “End of Call” on page 354

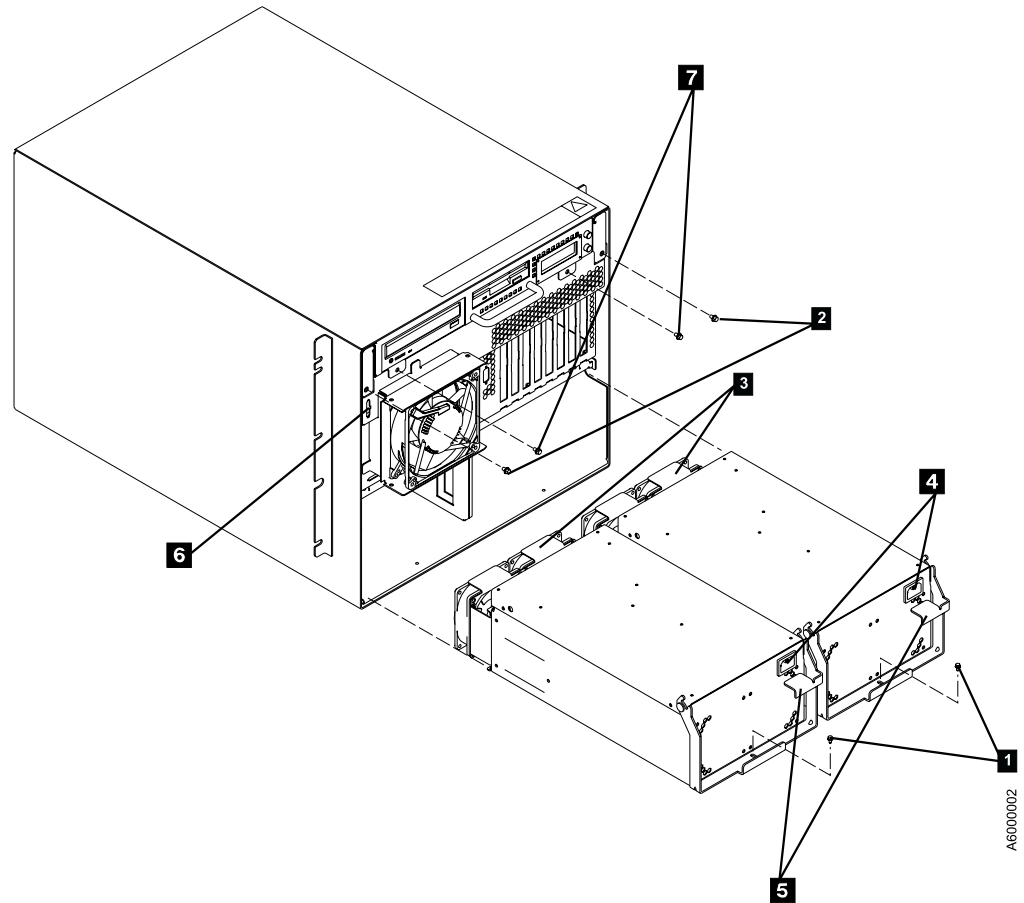
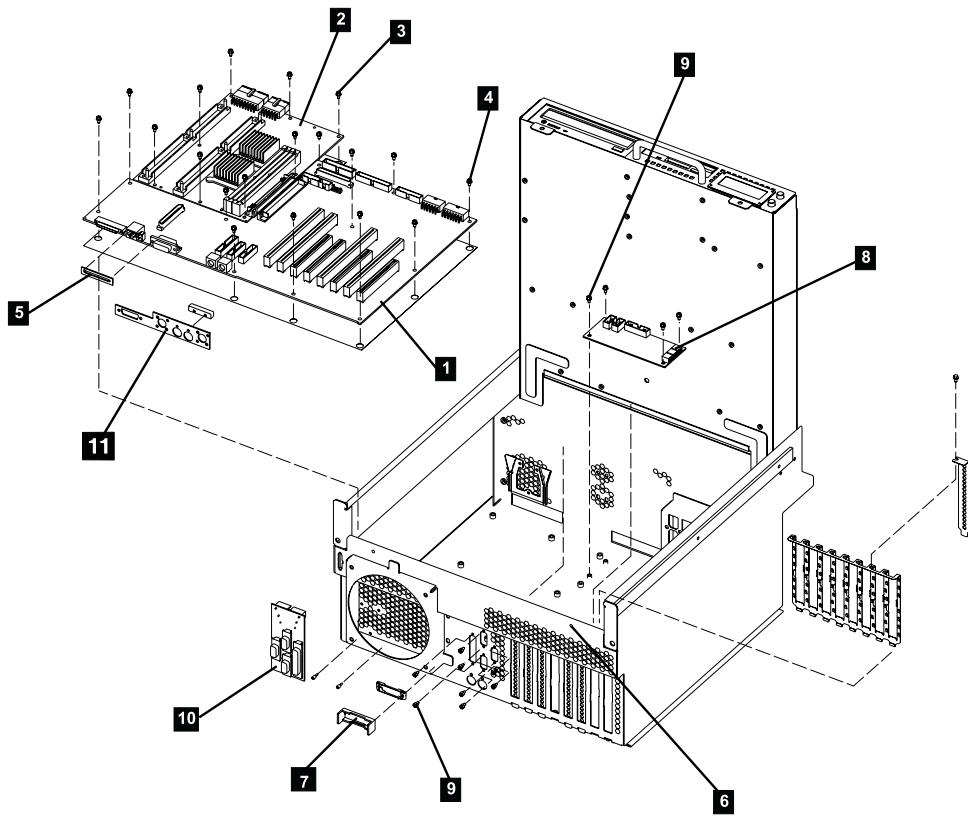


Figure 95. A60 Controller Rear View



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Figure 96. A60 Controller Planar Boards

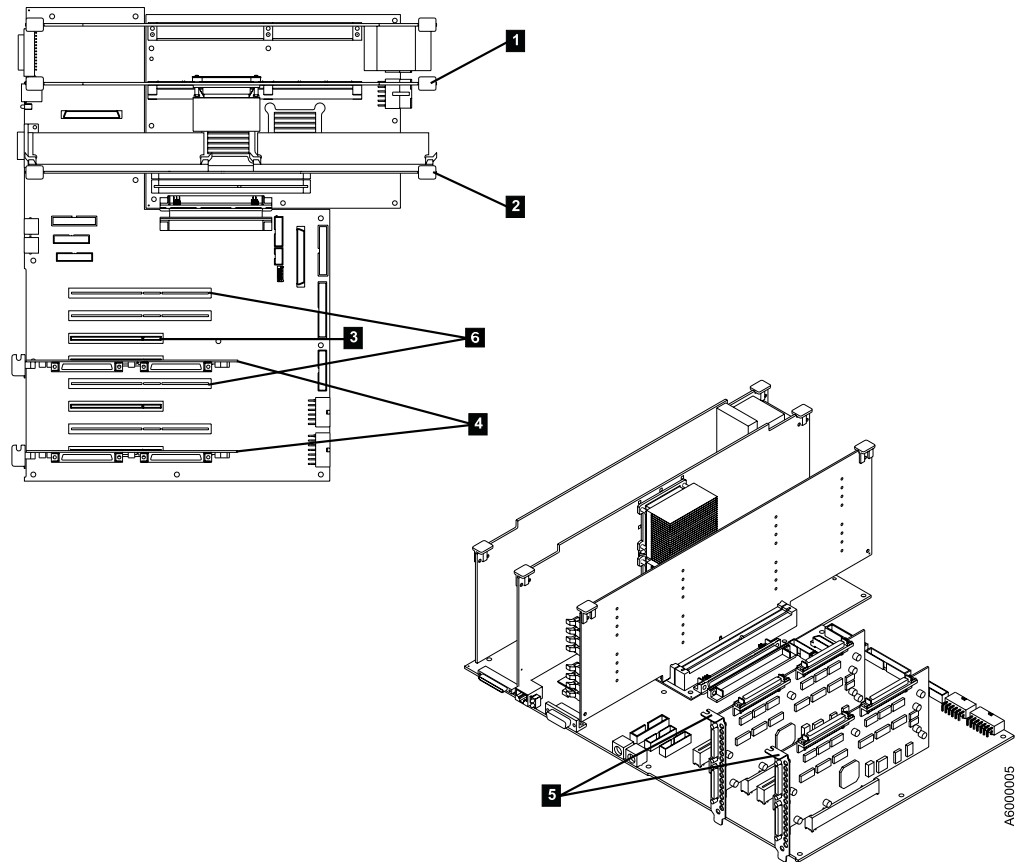


Figure 97. A60 Controller Card Locations

## Removal and Replace of the Internal SCSI Drive's Disk Cable

### Removal

This procedure will remove the SCSI cables attached to the hard drive, CD-ROM drive and the Diskette Drive.

The ESCON card from slot **1**, refer to Figure 98 on page 340 for reference, has to be removed in order to accomplish the removal and replace of the internal SCSI cable.

- \_\_\_ Step 1. Go to "Prepare the A60 Controller for Service" on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 95 on page 337 **2**.
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end) Refer to Figure 95 on page 337 **4**
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. Remove two shelf chassis housing screws, refer to Figure 95 on page 337 **7**
- \_\_\_ Step 7. Grasp handle below diskette drive and lift and rotate upwards until upper housing locks into the opened position

- \_\_\_ Step 8. Go to “Removal and Replace of the Card Assembly” on page 332 to remove the ESCON card in slot 1, return here when the removal of the card is complete.
- \_\_\_ Step 9. Go to “Removal and Replace of the Rear Fan Assembly” on page 315 to remove the rear fan assembly to allow access to the back of the card chassis. Return here when the removal of the rear fan assembly is complete
- \_\_\_ Step 10. Cut the cable ties securing cables to grill in rear and top of card chassis.
- \_\_\_ Step 11. Disconnect APC-P12 from the J12 connector on the I/O planar board.
- \_\_\_ Step 12. Pull cable through the opening between card chassis and the top opened chassis top
- \_\_\_ Step 13. Disconnect APC-P13 from the J13 connector on the I/O planar board.
- \_\_\_ Step 14. Pull cable through opening to the top of the chassis
- \_\_\_ Step 15. Open cable restraint on top of chassis
- \_\_\_ Step 16. Disconnect hard disk connector HD-P1 and CD-ROM connector, CP-P2 and remove cable.
- \_\_\_ Step 17. Disconnect diskette drive connector FDD-J69.
- \_\_\_ Step 18. Remove Cables

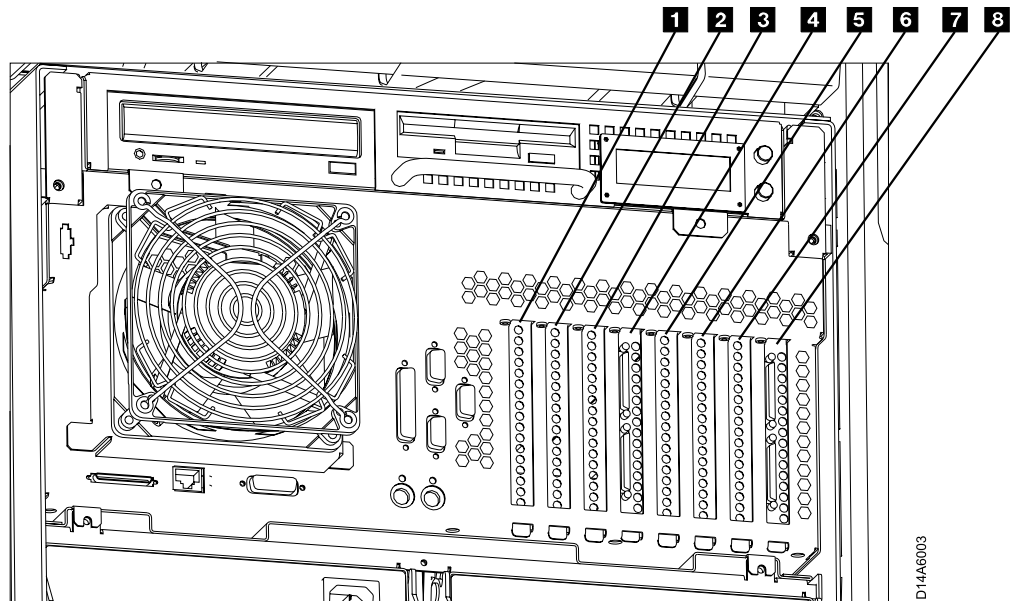


Figure 98. A60 Controller Rear View

## Replace

- \_\_\_ Step 1. Reverse the removal steps starting at 18 through 10 using the new cable
- \_\_\_ Step 2. Go to “Removal and Replace of the Rear Fan Assembly” on page 315 and replace the rear fan using the replace portion of this procedure
- \_\_\_ Step 3. Go to “Removal and Replace of the Card Assembly” on page 332 to replace the ESCON card in slot 1.

**Make sure and do the complete replace procedure to complete this SCSI cable replacement**

\_\_\_ Step 4. Continue to reverse the removal procedure from steps 7 on page 339 to step 1 on page 339, substituting the power off to power on, etc.

---

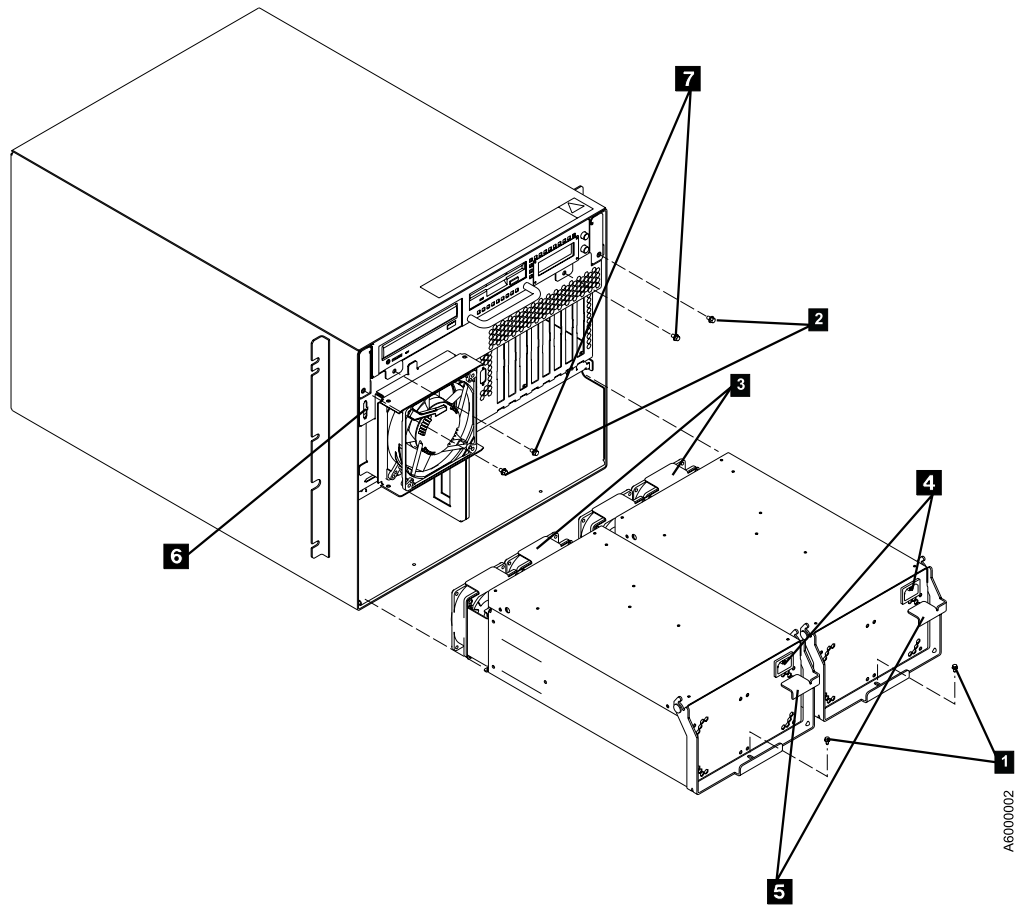
## Removal and Replace of the Fan Control Card

### Removal

The fan control card is attached at the bottom rear of the chassis, refer to Figure 99 on page 343 **1**.

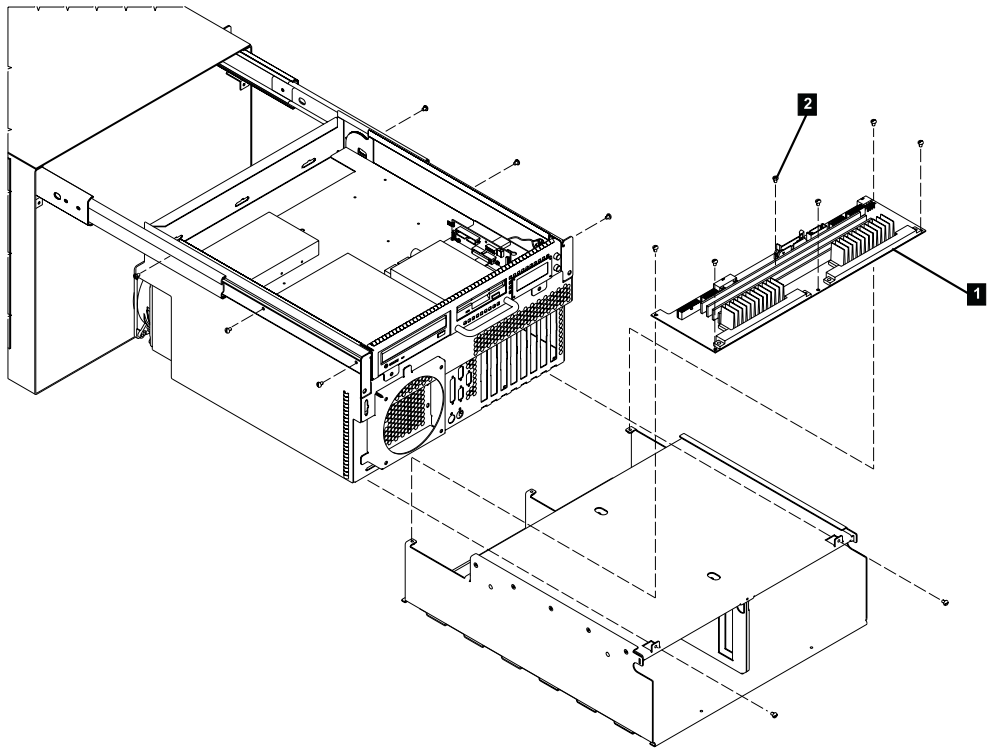
- \_\_\_ Step 1. Go to “Prepare the A60 Controller for Service” on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 95 on page 337 **2**.
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end) Refer to Figure 95 on page 337 **4**
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. Remove two shelf chassis housing screws, refer to Figure 95 on page 337 **7**
- \_\_\_ Step 7. Grasp handle below diskette drive and lift and rotate upwards until upper housing locks into the opened position
- \_\_\_ Step 8. The ESCON card in slot **1**, refer to Figure 101 on page 345, must be removed before the serial card assembly can be removed.
- \_\_\_ Step 9. Go to “Removal and Replace of the Card Assembly” on page 332 to remove the ESCON card in slot 1, return here when the removal of the card is complete.
- \_\_\_ Step 10. Disconnect the cables attached to the I/O planar board in J11, J12, and J23, refer to Figure 101 on page 345.
- \_\_\_ Step 11. Remove the ribbon cable that connects the fan control card to the I/O planar board at position J27.
- \_\_\_ Step 12. Disconnect the ribbon cable connected to the fan control card in the J5 position.
- \_\_\_ Step 13. Remove 4 screws securing card to the chassis.
- \_\_\_ Step 14. Lift and remove fan control cord.





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Figure 99. A60 Controller Rear View



A6000003

Figure 100. A60 Controller Fan Control Card

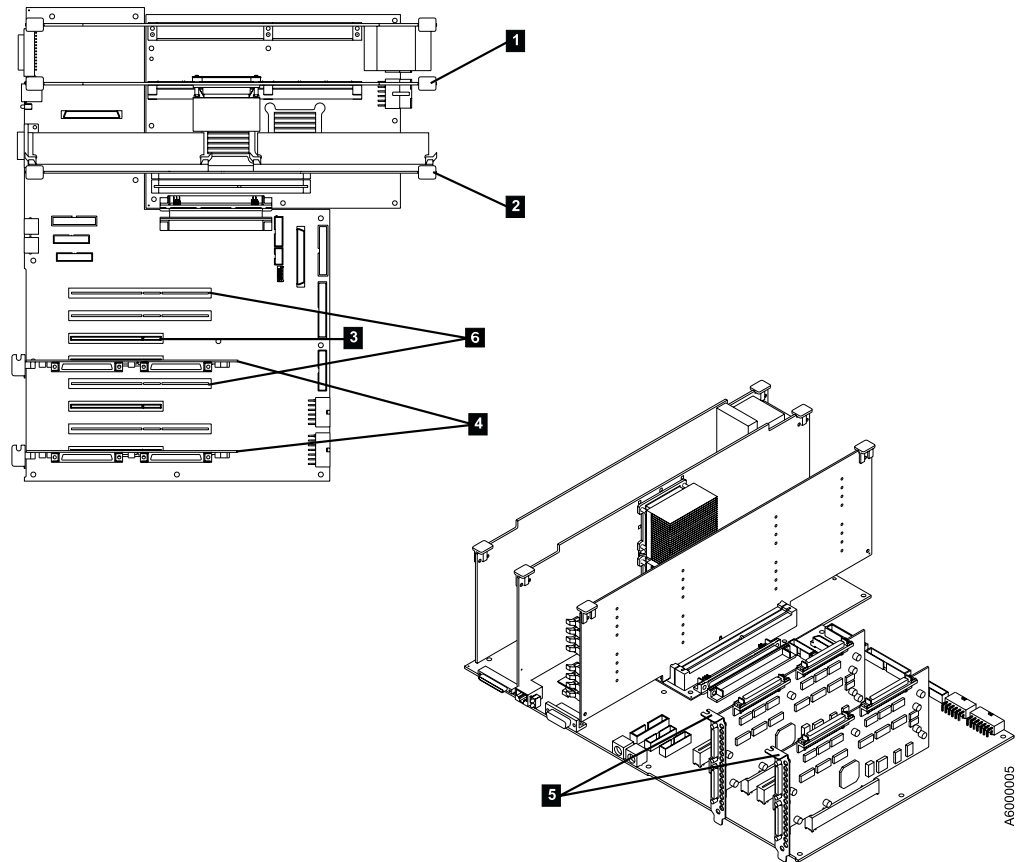


Figure 101. A60 Controller Card Location

## Replace

- \_\_\_ Step 1. Install the new fan control card back into position
- \_\_\_ Step 2. Reverse the removal steps starting at 13 on page 342 through 10 on page 342.
- \_\_\_ Step 3. Go to “Removal and Replace of the Card Assembly” on page 332 to replace the ESCON card in slot 1.

**Make sure and do the complete replace procedure to complete this serial adapter card replacement**

- \_\_\_ Step 4. Continue to reverse the removal procedure from steps 7 on page 342 to step 1 on page 342, substituting the power off to power on, etc.

---

## Removal and Replace of the Serial Adapter Card Assembly

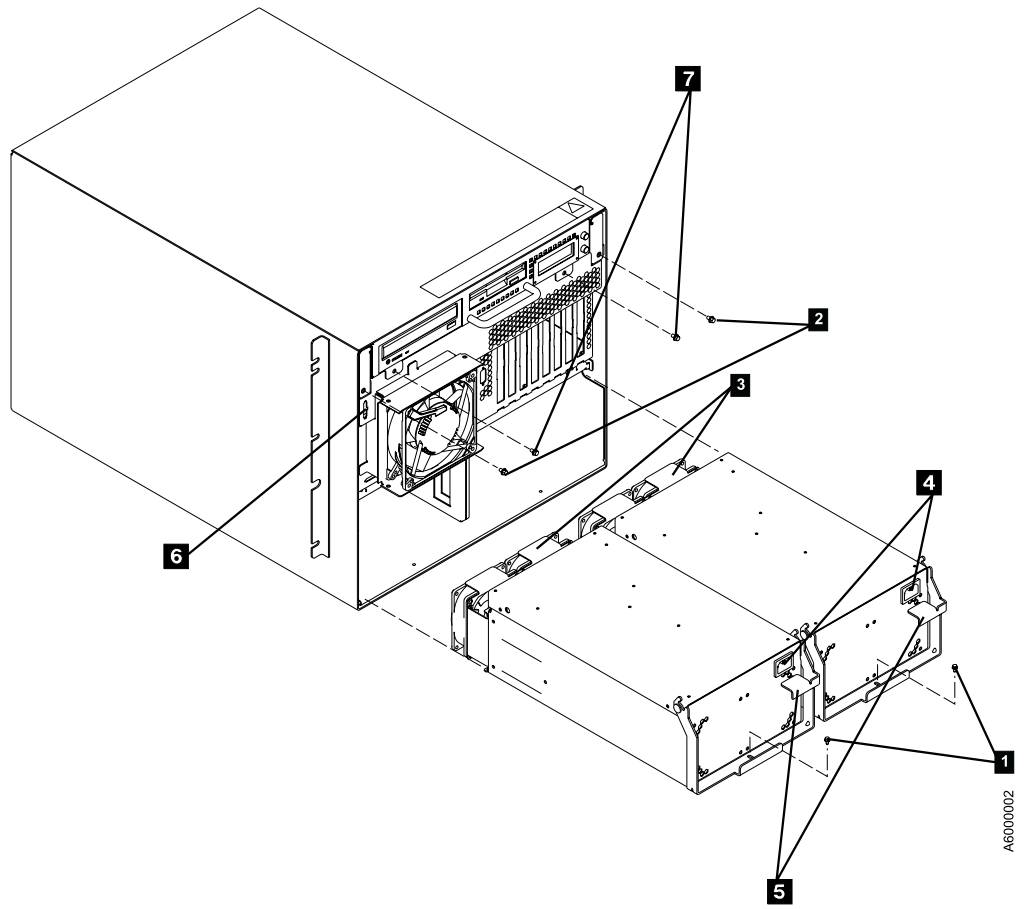
### Removal

The serial card is located on the inside of the card chassis. The card is attached to the front wall of the chassis. Refer to Figure 102 on page 347

- \_\_\_ Step 1. Go to "Prepare the A60 Controller for Service" on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 102 on page 347 **2**.
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end) Refer to Figure 95 on page 337 **4**
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. Remove two shelf chassis housing screws, refer to Figure 95 on page 337 **7**
- \_\_\_ Step 7. Grasp handle below diskette drive and lift and rotate upwards until upper housing locks into the opened position
- \_\_\_ Step 8. If any external cables are located to this card, refer to Figure 104 on page 349 **6**, **7**, **8**, and **11** disconnect these before starting.

The ESCON card in slot **1**, refer to Figure 104 on page 349, must be removed before the serial card assembly can be removed.

- \_\_\_ Step 9. Go to "Removal and Replace of the Card Assembly" on page 332 to remove the ESCON card in slot 1, return here when the removal of the card is complete.
- \_\_\_ Step 10. Disconnect the three (3) ribbon cables from the serial card.
- \_\_\_ Step 11. Remove 8 screws locks and lock washers holding the serial card.
- \_\_\_ Step 12. Remove the Serial card from the chassis.



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Figure 102. A60 Controller Rear View

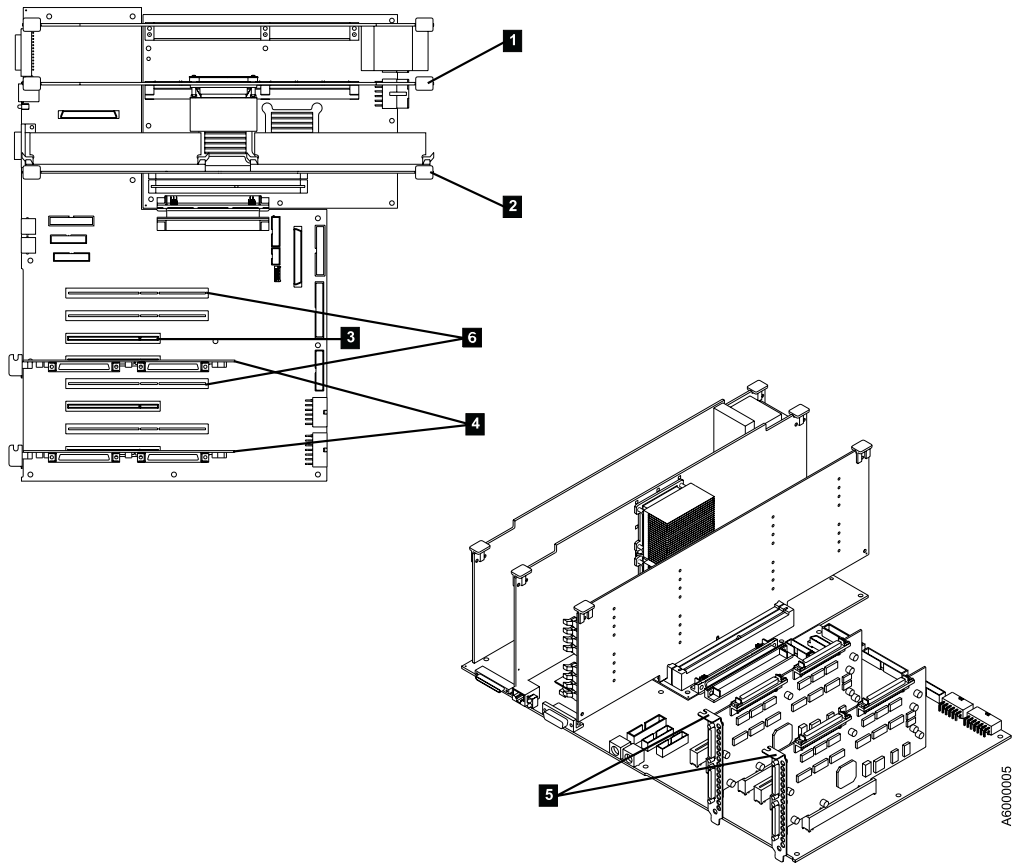


Figure 103. A60 Controller Serial Card

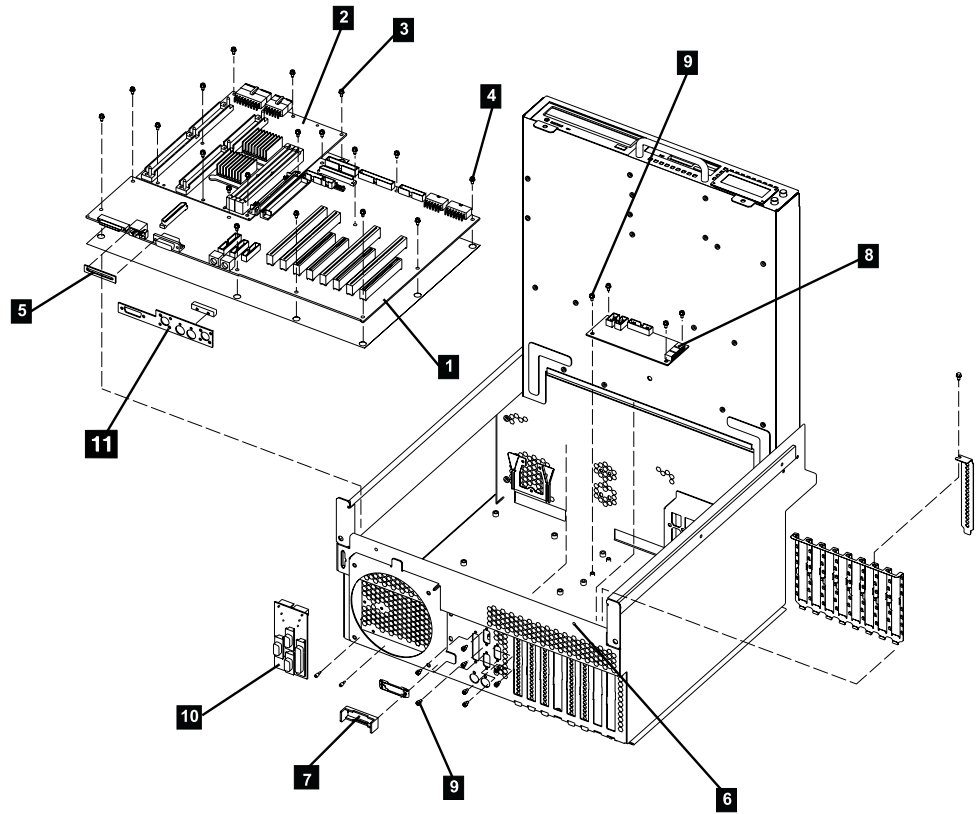


Figure 104. A60 Controller Serial Card

## Replace

— Step 1. Reverse the removal steps starting at 12 on page 346 through 10 on page 346.

— Step 2. Go to “Removal and Replace of the Card Assembly” on page 332 to replace the ESCON card in slot 1.

**Make sure and do the complete replace procedure to complete this serial adapter card replacement**

— Step 3. Continue to reverse the removal procedure from steps 7 on page 346 to step 1 on page 346, substituting the power off to power on, etc.

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## Removal of the Fan Cable

**Removal**

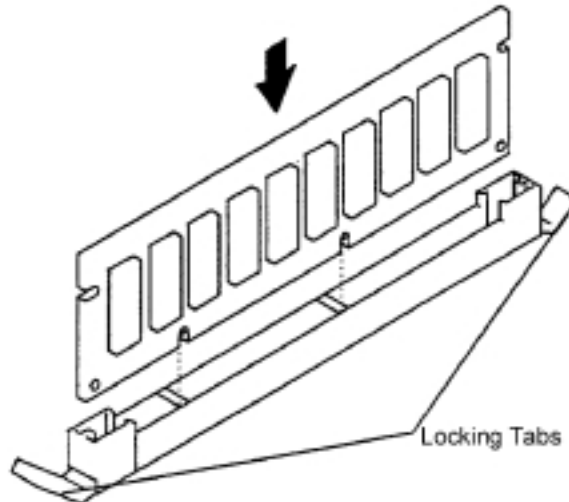
**Replace**

---

## Remove and Replace of the Memory modules

**Removal**

- \_\_\_ Step 1. Go to “Prepare the A60 Controller for Service” on page 380 and return here when the A60 Controller is **Offline**
- \_\_\_ Step 2. Press the **White** button on the operator panel to remove power from the Model A60 Controller
- \_\_\_ Step 3. Remove two chassis housing screws, refer to Figure 80 on page 320 **2**
- \_\_\_ Step 4. Unplug the two power cords from the power supply connectors (power supply end) Figure 80 on page 320 **4**.
- \_\_\_ Step 5. Grasp handle below the diskette drive and pull drawer completely out from the chassis.
- \_\_\_ Step 6. Locate the memory cards and determine which one you want to remove.
- \_\_\_ Step 7. Lift both camming latch mechanisms at the same time that holds the memory card in position.



*Figure 105. Camming Latch Mechanisms for Memory Cards*

- \_\_\_ Step 8. Carefully lift the memory card out of the slot
- \_\_\_ Step 9. Remove the memory module by pushing the tabs out on the memory module connector.



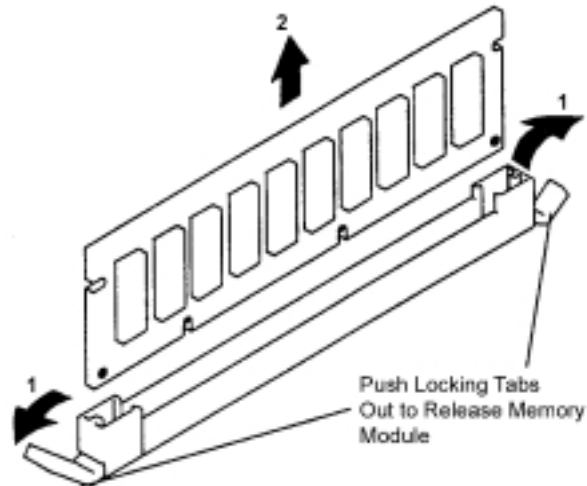


Figure 106. Memory Module Locking Tabs

## Replace

**Note:** Memory modules must be installed in identical pairs (size and speed). They may be replaced individually, provided the replacement module is identical in size and speed.

- \_\_\_ Step 1. With one hand, touch and metal surface of the chassis to minimize static electrical charges, and then pick up a memory module and locate the desired memory module connector on the memory card.
- \_\_\_ Step 2. Install the new memory module by pushing down on the memory module until the locking tabs lock it into the connector. (Do not move the locking tabs yourself, They lock automatically when you fully insert the module.)

**Attention:** Inserting the memory module crooked could damage the

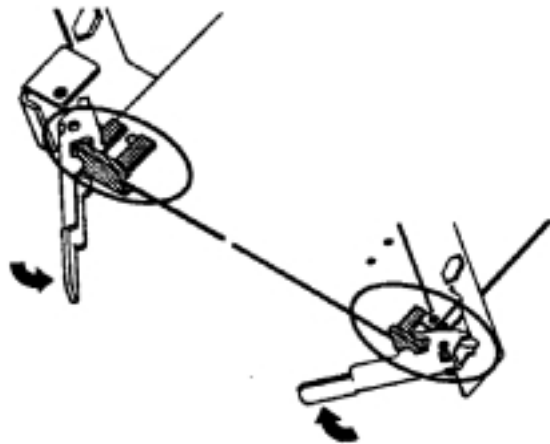


Figure 107. Installing the Memory Module

memory module.

- \_\_\_ Step 3. Store any memory modules you are not longer using in a static-protective package. Carefully place the memory card into the card guide rails.

- \_\_\_ Step 4. Slide the memory card in, making sure that the tabs on each end of the card are captured in both of the camming latches.

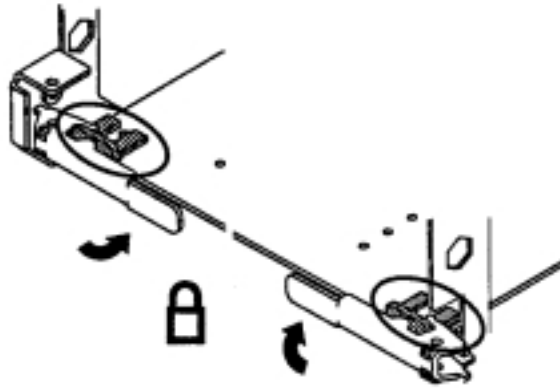


Figure 108. Memory Card Latching

- \_\_\_ Step 5. Align the card with the card connector on the system board.
- \_\_\_ Step 6. Close and firmly press both of the camming latches at the same time to insert and seat the memory card.

**Attention:** If you do not close both latches at the same time, you may damage the card or the card connector.

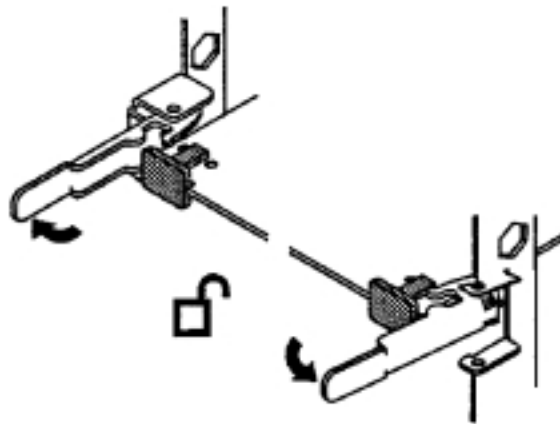


Figure 109. Latching the Memory Card in the Card Connector

- \_\_\_ Step 7. If you have not more removal and replacement procedure to perform, continue to step 8, if you need to replace additional memory modules, return to step 1 on page 351 and repeat the procedure.
- \_\_\_ Step 8. Reverse the remove procedure from step 5 on page 350 to step 1 on page 350.

## Chapter 14. Common Procedures

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3590 A60 Subsystem Microcode Addition or Activation . . . . .	358	A60: Reset Set Error Match Codes . . . . .	383
Adding new Code Images to the A60 . . . . .	358	Reset ALL Error Match Codes . . . . .	383
Microcode Activation in the A60 Controller . . . . .	358	Reset Individual Error Match Codes . . . . .	383
Adding New 3590 Drive Microcode . . . . .	359	A60: View SIMs in the 3590 CU SIM Log: . . . . .	384
Configuring the LAN for the A60 Controller . . . . .	359	View SIMs in the 3590 CU SIM Log: . . . . .	384
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### Contents

The  symbol identifies an ESD-sensitive part.

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## End of Call

Table 44. End of Call Table for all 3590 Models

&3590 Models	Procedure
3590 Axx Control Unit Problem	Close SIMs at the Control Unit, See "A60: View SIMs in the 3590 CU SIM Log:" on page 384 <b>Note:</b> Ensure the &trisc 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 "A60: View SIMs in the 3590 CU SIM Log:" on page 384

---

## Installing AIX in the A60 Control Unit Environment

**Attention:** If you are installing the Control Unit code in a 3494 Dataserver Library, and the code is at level 1.10.3.251 or higher, you also need to install AIX 4.3.2 or higher, all control units within the 3494 library **MUST** be updated to the same AIX and Microcode level. This includes both A60 Controller, A00, and A50 control units.

**Attention:** Unless the code or instructions explicitly provide other options, if the process fails at ANYpoint in the install (including microcode activation or fixpack install), restart from step 1 of the instructions. Not doing so may result in the fixpack not being installed on the machine. If the failure repeats itself, contact support.

The following steps should be performed in the order indicated:

1. If Control Unit is on, skip to step 3
2. Power on the A60 Control Unit and wait for the power on / IML sequence to complete.
3. Insert AIX 4.3.2 (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.
4. Insert 3590-A60 Bosdisk into the floppy drive.
5. Attach Service Terminal to connector S1 (see "A60 Service Terminal Connection and Menu" on page 304) on the front of the A60 Controller control unit.
  - a. Use the Service Menus to select the Control Unit shutdown and Restart Menu. "Shutting Down the A60 Controller" on page 386
  - 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 (green dot in lower left hand corner of the terminal turns red if using NetTerm). Re-connect **IMMEDIATELY** to be ready for the next step.

6. Wait for the display shown in Figure 110 on page 355 to appear.

- 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 111 on page 356, comes up on the Service Terminal before entering the 5 on the Service Terminal keyboard, you will have to restart from the beginning of this procedure.

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Memory Keyboard SCSI
```

Figure 110. First Screen Shown After Reset or Power On



15. Remove CD disk and diskette.

**Note:** In 3494 Library configurations you need to repeat the code/copy activation for each A60 in the library.. 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.

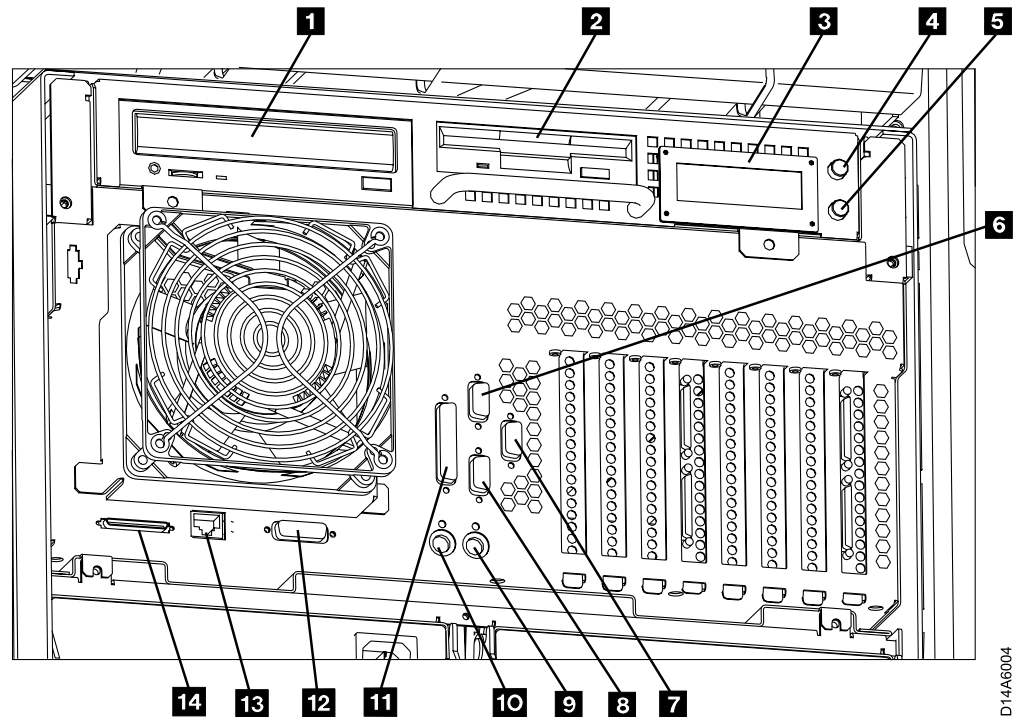


Figure 112. A60 Controller Connection and Device Locations

- **1** — CD-ROM Drive
- **2** — Floppy Disk Drive
- **3** — LED Display
- **4** — Power ON/OFF Switch
- **5** — Reset Switch
- **6** — Service Terminal or Remote EBTERM connection to WTI switch (S1 Port)
- **7** — Remote Service connection for SLIP to WTI switch (S3 Port)
- **8** — Library Manager Connection for RS422, (FC 9061) attach (S2 Port)
- **9** — Mouse (Not Used)
- **10** — Keyboard (Not Used)
- **11** — Parallel Port
- **12** — Ethernet (Not Used)
- **13** — LAN Connection
- **14** — SCSI Bus

---

## 3590 A60 Subsystem Microcode Addition or Activation

### Adding new Code Images to the A60

**Attention:** If you are installing the Control Unit code in a 3494 Dataserver Library, and the code is at level **1.10.3.251** or higher, you also need to install AIX **4.3.2** or higher, all control units within the 3494 library **MUST** be updated to the same AIX and Microcode level. This includes both A60 Controller, A00, and A50 control units.

**Attention:** If any errors are encountered, retry copy. If problem persists, try with another CD or run hardware problem determination procedures, if a hardware problem is suspected.

The following procedures need to be followed to add new microcode to become one of the two microcode levels that is stored within the A60.

**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 directions for the code load deletion.

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**.
2. Select **Copy Code Image From Source Media**.

**Note:** You will be asked if you are using diskettes as the source and if so, continue with the procedure. If you are using CD ROM as the source, insert the CD and follow the instructions that you will be shown on the terminal.

Select **Copy 3590 Subsystem Code from Source Media**,

3. Insert code diskettes or CD as requested.
4. Remove last diskette or CD and depress **Enter**

### Microcode Activation in the A60 Controller

**Attention:** If code activation fails, retry. If failure persists, contact support.

The following procedures need to be followed to activate one of the two microcode levels that is stored within the A60 Controller.

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 A60 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 A60 Controller that is part of a 3494 subsystem, you must make sure that the VPD has been set up to make the connection between the A60 Controller and the Library. You will be making this connection using the ARTIC RS422 or the LAN. The feature code shipped with your system will tell you which way to connect your 3494 attachment. FC 9060 is a LAN connection and FC 9061 is the ARTIC RS422 connection.

## Adding New 3590 Drive Microcode

If you receive new drive code via diskette, use SMIT menus to load code and activate. Do **NOT** use TAPEUTIL to load or active when loading from diskette.

---

## Configuring the LAN for the A60 Controller

1. Bring up EBTERM go to "Installing EBTERM or Terminal Emulator in a 3494 Library Manager" on page 368. Go to the 3590 Maintenance screen (see Figure 113).

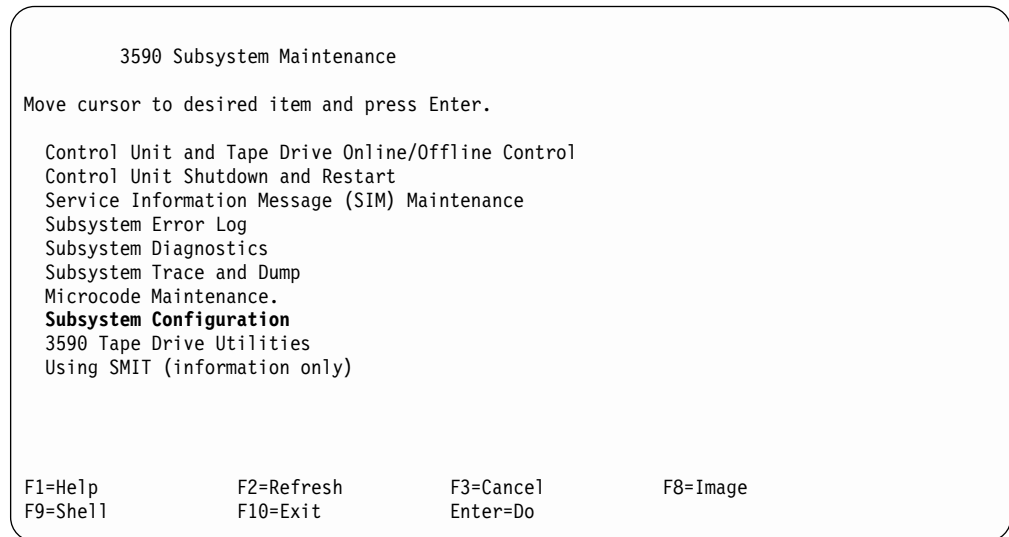


Figure 113. A60 Controller Maintenance Screen

2. Select **Subsystem Configuration**. Press **ENTER**. Figure 159 on page 412 displays.

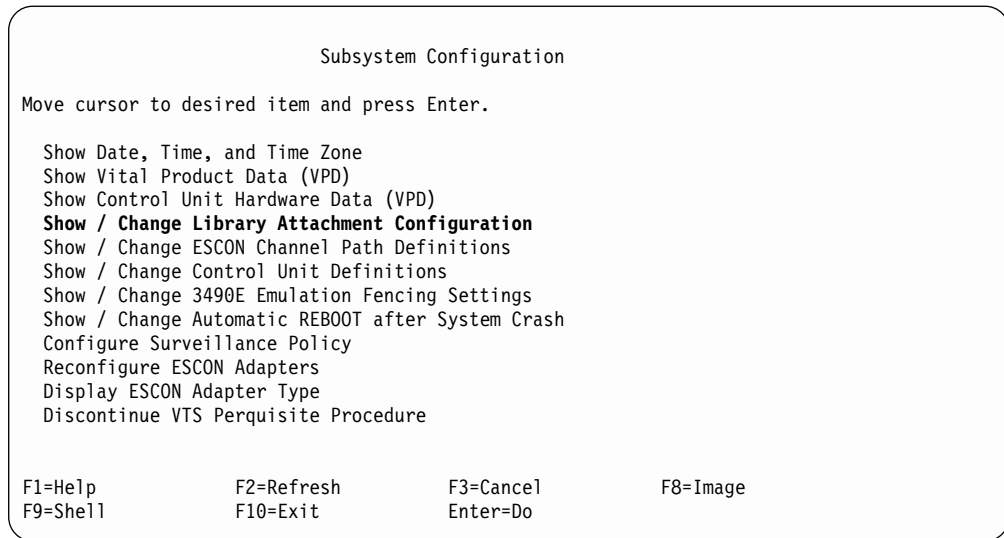


Figure 114. System Configuration Screen

3. Select **Show/Change Library Attachment Configuration**. Press **ENTER**.  
 Figure 160 on page 412 displays.

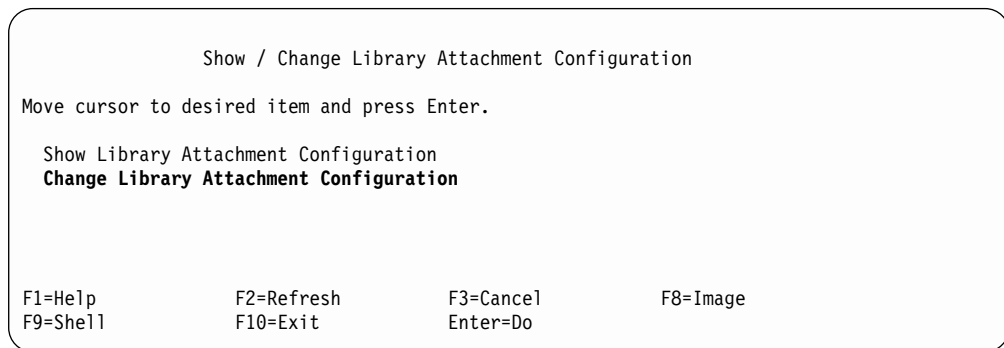


Figure 115. Show / Change Library Attachment Configuration Screen

4. Select **Change Library Attachment Configuration**. Press **ENTER**. Figure 161 on page 413 displays.

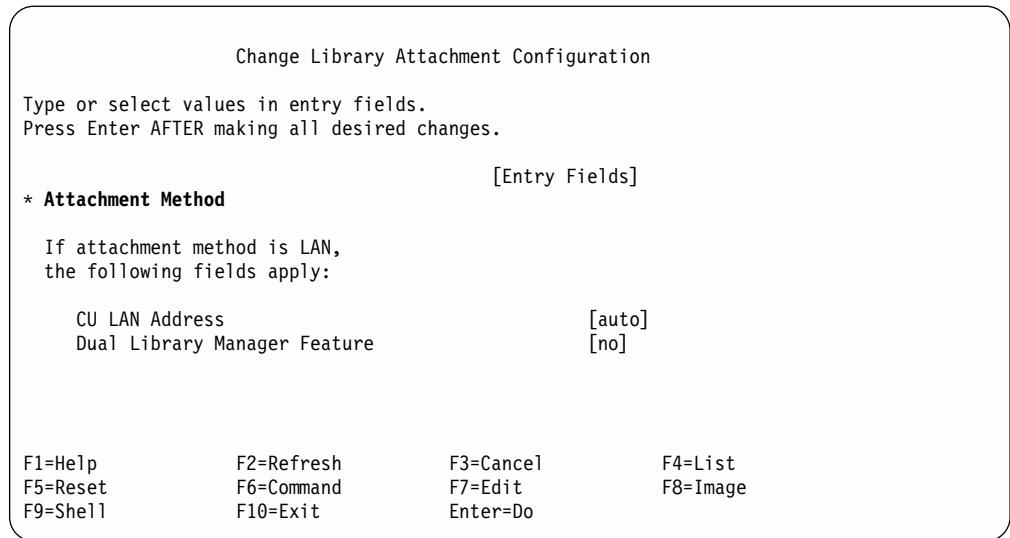


Figure 116. Change Library Attachment Configuration Screen

**Note:** If you are installing an HA subsystem, select **Dual Library Manager Feature**. Press **F4**. Select **yes**. Press **ENTER**.

5. Figure 117 displays.

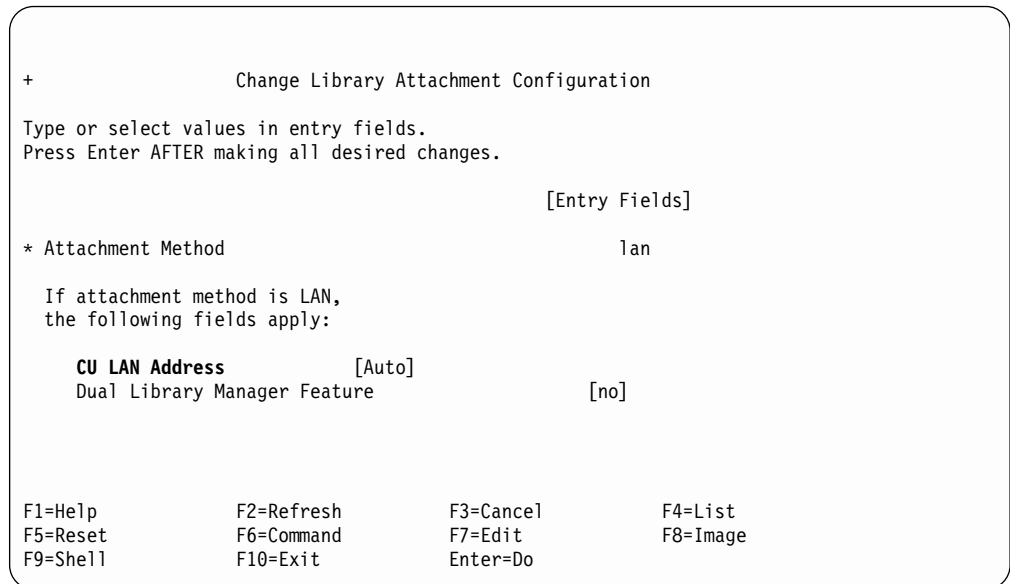


Figure 117. Change Library Attachment Configuration Screen

6. Select **CU LAN Address** Press **F4**. Figure 118 on page 362 displays.





---

## 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:

<b>Field</b>	<b>Entry</b>
Name	3590-A60 & 3494-Axx 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 Communications Setup window modify the following fields to the values listed:

<b>Field</b>	<b>Entry</b>
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(&check) 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(&check) 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 & 3494-Axx 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:

<b>Field</b>	<b>Entry</b>
Name	3590-A60 & 3494-Axx Subsystem Service at 38400 BAUD
Emulation	IBM-3151
Keys	IBM_3151

26. From the Phone Directory window verify that the *Connection* field has **Modems** selected
27. From the Phone Directory window click on **Modem Settings**. This will bring up a communication Setup Window.
28. From the Communication Setup window click on the **Modems** 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:

<b>Field</b>	<b>Entry</b>
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 (&check) 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(&check) 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 **3590 & 3494-Axx 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 A60 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 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-A60 & 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. Select "Setup" from the toolbar across the top of the window.



12. Select "Dialing Profiles" 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 Modem Initialization	3590-A60 Tape Controller Modem Setup AT&FQ1E0\Q1*E1%U1\$B9600&D0*W0&Y0laptope all are the number zero(0)> alpha characters are upper/lower case sensitive
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	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.

15. Select "Setup" from the tool bar across the top of the window.
16. Select "Save as..." from the pop-up list.
17. Press "Enter" to save changes just made.
18. Select "Setup" from the toolbar across the top of the window
19. Select "Dialing Profiles" from the pop-up list
20. Select "Add Profile" from the pop-up list
21. 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 elected.
22. Ser the fields fo the following window as shown

Field Name	Set to Value
Host location Description Modem Initialization	3590 AXX Virtual Tape Server Modem Setup AT&F*E1%U1\$B384000&D0*W0&Y0laptope all are the number zero(0)> alpha characters are upper/lower case sensitive
Number to Dial	leave blank>
Long Distance Prefix	leave blank>
Response to Connect	Clear this field-should be blank>
Serial Port Speed	38400 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 OFF 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

23. Select "Setup" from the toolbar across the top of the window
24. Select "Dialing Profiles" from the pop-up list.
25. Select "Add Profile" from the pop-up list.
26. 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 elected.
27. Select "Setup" from the toolbar across the top of the window.
28. Select "Add Profile" from the pop-up list.
29. Point and click on Enter at bottom of the window, after setting fields.
30. Select "Setup" from the toolbar across the top of the window.
31. Select "Configuration/Modem" from the pop-up list.
32. Clear the field "Modem Dial Prefix3". Leave all other fields unchanged. Point and click on "Enter" at bottom of window after clearing field.
33. Select "Setup" from the toolbar across the top of the window.
34. Select "SAVE AS..." from the pop-up list.
35. Press Enter to save changes just made.

---

## 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 A60 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

---

## Modem Initialization

**Note:** Machines in the USA and Canada may come already configured with factory defaults. If the modem works, **do not** attempt to initialize it. If this does not work, perform the initialization described in the section. Ensure **all modem switches are down when you have completed initialization.**

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 366 and "Installing EBTERM or Terminal Emulator in a 3494 Library Manager", and "Setting up NetTerm Terminal Emulator (Windows 95/98 Platforms)" on page 364.)

- \_\_\_ 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. 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.

**Note:** If using NetTerm go to step 6a. If using EBTERM go to step 7.

- \_\_\_ 6. 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 **Modem Test**
  - d. 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.

- e. 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.
- f. Type in **AT&F\*E1%U1\$B3400&D0\*W0&Y0** and then 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**
- \_\_\_ 7. If using 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. Point and click on "**Direct Connect Mode**" if it needs to be changed, i.e. remove the Check mark (✓).

- d. In the pop-up list displayed, select "**Dial Prefix Selections**"
  - e. Select "**External Prefix 2**" from the pop-up list.
- Note:** there should be a check mark (✓) next to "External Prefix2".
- f. Select "**Connect**" from the toolbar across the top of the window.
  - g. Select "**3494-B16 Virtual Tape Server Modem Setup**" from the pop-up list.
  - h. 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 the displays specified are not correct;

- 1) Check the switch settings in step 4 on page 369.
- 2) Return to "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page 366 and make sure that EBTERM was set up correctly.
- 3) If the problem persists, contact your next level of support.
- 4) Select "**Disconnect**" from the tool bar across the top of the EBTERM window.

- \_\_\_ 8. Turn modem power "**Off**"
- \_\_\_ 9. Reset the switches on the modem (see step 4 on page 369).

D D D D 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:

- a. Start at step
  - b. 1 on page 369. If the problem persists, contact your next level of support.
- \_\_\_ 11. Reinstall the panel removed in step 3 on page 369.

## 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 122 on page 371).

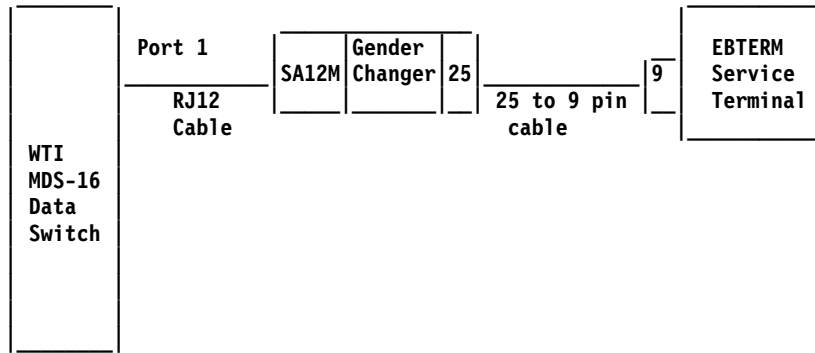


Figure 122. Local Setup and Test of MDS Switch

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 123).

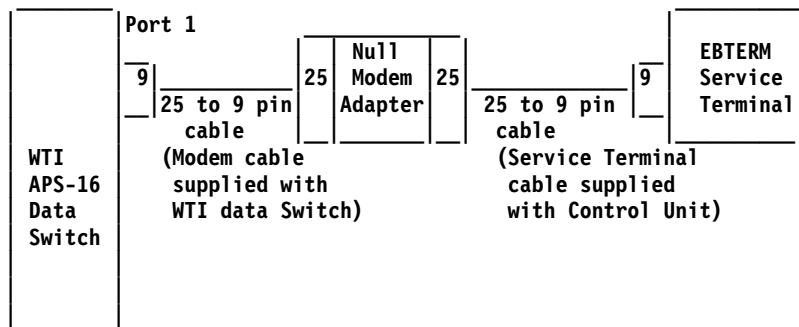


Figure 123. Local Setup and Test of APS Switch

4. Change the EBTERM baud rate to match the speed to the WTI switch port 1.
  - 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-A60 & 3494-B16 Subsystem Service**" from the pop-up list
  - f. Change the **Serial Port Speed** from 9600 to 38400
  - g. 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.

5. 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.

6. From EBTERM select "**Connect**" from the tool bar across the top of the window. In the pop-up window select "**3590-A60 & 3494-B16 Subsystem Service**".
7. 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]:**.
8. 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.

Table 45. WTI Error Correction Table.

Condition	Procedure to Correct
WTI switch in error state because the "E" key was held down to long in <b>Wake Port</b> command sequence ( 8)	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 "APS>" or "MDS>" prompt is displayed but will not accept the "/H" or "/S" commands. Use the procedure in the next entry of this table 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 ( 8) 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 6 through 8 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.	Issue the Disconnect Sequence to the WTI switch. On you Service Terminal press "Enter", then press "+" three times, the press "Enter" <b>Note:</b> The sequence above is (Enter + + + Enter)
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 4 on page 371.
WTI setup switches not set correctly.	Refer to table on Table 46 on page 379 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.

9. 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 [n]   Who - displays port parameters
/C laptopn> [n]   Connect - local [remote]
/D laptopn | ... | *> Disconnect
/E laptopn | ... | *> Erase Buffer
/I       Initialize / test unit
/F       Enter Site ID
/J       Read Site ID
/P [n]   Set Port Parameters
/U       Read Port Parameters
/L-laptopN>   Load Port Parameters
/G-00    Reinitialize All Ports
  
```

+-----+	
n	Port # or name
N	Port #
	"or"
*	"all"
+-----+	
laptop>	Required entry
[ ]	Optional entry
+-----+	

/D, /E, /I commands: add /Y to bypass "Are you sure (y/n)?"

APS> -

Figure 124. WTI Command Menu Screen.

10. Display the WTI switch status screen:
  - a. From the WTI "MDS>" or "APS>" prompt on the Service Terminal type: "/s" then press "ENTER".
  - b. 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 125. WTI Switch System Status Screen.

11. 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:           A11
9. LOGOFF CHAR:        +
10. SEQUENCE DISC:     On
11. TIMEOUT DISC:     15 Min
12. MESSAGE TYPE:     Verbose
13. ECHO:              On

```

Enter: "laptop" previous port,



">" next port,  
 "##" change parameter,  
 laptopCTRL-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	A60_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>

- 12. 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: "laptop" previous port,  
">" next port,  
"##" change parameter,  
laptopCTRL-X> exit ...

Figure 126. 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.
13. 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.
14. Configure WTI ports that have a 3590-A60 connected:
- a. From the WTI "MDS>" or "APS>" prompt on the Service Terminal type: "/p n" ("n" is the port number that has the A60 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 A60 then press "ENTER"

**Note:** Perform steps 14d on page 377 through 11i on page 374 only on WTI ports connected to the 3590-A60 **serial port 1**. Leave the BAUD Rate

- and Handshake settings to the WTI default (38200 BAUD and RTS/CTS) for the WTI ports connected to the 359–A60 **serial port 3**.
- 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. Repeat from 14 on page 376 for each A60 connected to the WTI data switch.
15. 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 note 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 A60 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 15 for each B16 connected to the WTI data switch.
  16. Verify connections to A60 controls units.

**Note:** These steps will work with only with the 3590–A60 Serial Port 1 connection.

- a. To connect the switch port 1 to an A60 enter "/c n" ("n" is the port number of the A60 you want to connect to) then press "ENTER".
- b. The following screen will be displayed when the A60 is connected through the WTI switch (May need to press "ENTER" a second time to display screen).

IBM 3590 ESCON CONTROL UNIT  
Service Terminal

Available menus:

Service	Service Menu
Extended	Extended Service Menu (password required)

Please enter a menu name:

Figure 127. 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, the press "Enter"

**Note:** The sequence above is (Enter + + + Enter)

The screen should now display the "APS>" or the "MDS>" prompt.

- f. Repeat from 16 on page 377 for each A60 attached to the WTI switch.
17. 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.
18. Disconnect your Service Terminal from port 1 of the WTI switch and reconnect the modem to port 1.
19. 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-A60 & 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.
20. Contact your support center and have them call the modem to verify the modem to WTI switch connection.

Table 46. Matrix for WTI Switch Settings for 3590–Axx and B3494–Bxx Controllers

	One A60 Controller directly attached to modem, with no WTI Switch	Only Bxx's on WTI Switch	Only Bxx's on WTI Switch	Mixed Axx's and Bxx's on WTI Switch
Modem Settings	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-Bxx set up string (38400 baud).  LCD display on modem will show 28.8.	Use 3494-Bxx 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 266	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 266	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 Port 1 (S10 connection to a baud rate of 9600 and handshake to xon.	None required	Use WTI /p command to change ONLY the Axx Port 1 (S10 connection to a baud rate of 9600 and handshake to xon.

## ESCON System Interface Checkout.

- \_\_\_ 1. Refer to your host operating system and host hardware checkout procedures for a system level test of the A60 Controller interface.
- \_\_\_ 2. When you are satisfied that everything is working, turn the product over to the customer.

## Adapter Plugging (ESCON and SCSI) for the A60 Controller

In the field there are two type of SCSI adapter cards used for the A60 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 Table 47 and Table 48

P/N 05H3090 is the new type with the heat sink, adapter plugging is shown in Table 50 and Table 49

*Table 47. A60 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)

*Table 48. A60 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

*Table 49. A60 With FC 3311 (Single SCSI, Single ESCON)*

Adapter Slot	Adapter Plug
1	ESCON
2	(unused)
3	SCSI - SCSI Card P/N 05H3090
4	(unused)

*Table 50. A60 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 A60 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 354 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 A60 Controller

There are two ways to set service mode in the A60.

1. is called Service Mode Boot used if you are going to run the RISC diagnostics from the diagnostic CD-ROM, see "Boot Problems and Concerns" on page 69.
2. The other called Service Mode from the Custom Boot List, this does not require a disk, see "Booting 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.

### Booting 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

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## 3590 A60: Retrieving Engineering and Dump Data

---

### 3590 A60 Retrieving Engineering and Dump Data

The 3590 A60 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 A60 will also automatically gather device dumps and store them internally so that they can be retrieved through the 3590 A60 Service interface.

To retrieve Engineering and Dump Data (including device dumps):

1. Connect the Service Terminal to the 3590 A60 (Refer to "Getting Started" on page 304)
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:**

a.

- 1.44 MB (or greater) diskettes are required.
  - DISKETTES MUST BE INSERTED IN THE A60 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.

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## 3590 A60: Show/Change SIM and MIM Reporting Level

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### 3590 A60: Show/Change SIM and MIM Reporting Level

The 3590 A60 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 304).
2. At the "3590 Subsystem Maintenance" panel, select "Service Information Message (SIM) Maintenance".
3. Select Show/Change SIM & MIM Presentation Control
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 A60: 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 304)
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 Error ID:



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 Data:

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.

---

## A60: Reset Set Error Match Codes

### Reset ALL Error Match Codes

1. Connect the Service Terminal to the 3590 CU (see "Getting Started" on page 304)
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 304)
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.

---

## **A60: 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 304)
2. At the "3590 Subsystem Maintenance" panel, select "Service Information Message (SIM) Maintenance"
3. Select the appropriate action and press ENTER
  - If you suspect that the source of the problem is the A60 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 A60 SIM Log:**

1. Connect the Service Terminal to the 3590 A60 (see "Getting Started" on page 304)
2. At the "3590 Subsystem Maintenance" panel, select "Service 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.

---

## Updating 3590 Device Microcode from A60 Using TAPEUTIL

You may require assistance from the customer during this process.

This procedure downloads microcode to the tape drive from a file or diskette. This diskette must be in AIX/UNIX format. The Microcode Load utility is only supported on the IBM 3590 tape drive.

1. On the drive operator panel, verify that the drive is Online.
2. Verify that the drive is unloaded.
3. Insert the diskette with the microcode load into the A60 Controller diskette reader.
4. Connect the Service Terminal and go to the main service menu.
5. From the main service menu select "Control Unit and Drive Online/Offline Control".
6. Select the "Display Control Unit, ESCON and Tape Device Status". Check the displayed status for the Control Unit to be online and the Tape Device you are wanting to install code on to be offline. If the control unit or tape drive are not in the correct online/offline status, select the appropriate menu selection from the "Control Unit and Drive Online/Offline Control" menu to vary on the control unit and/or vary off the tape device.
7. Press F3 twice to return to the initial main service menu.
8. Start the tape utility program by selecting "3590 Tape Drive Utilities".
9. Now go to *IBM 3590 Tape Subsystem, Maintenance Information, Models B11, B1A, E11 and E1A, Document number SA37-0301-0* Updating Microcode from RS/6000 by using TAPEUTIL.

---

## Varying On/Off 3590 drives from the A60 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 A60 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 A60 varied off at the host before proceeding to power off your control unit.
2. Before turning off the power on the A60 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 128, select the **Control Unit Shutdown and Restart** option.

```
3590 Subsystem Maintenance
Move cursor to desired item and press Enter.

Control Unit and Tape Drive Online/Offline Control
Control Unit Shutdown and Restart Menu
Service Information Message (SIM) Maintenance
Subsystem Error Log
Subsystem Diagnostics
Subsystem Trace and Dump
Microcode Maintenance
Subsystem Configuration
Run PFE/Support Center Provided Functions
3590 Tape Drive Utilities (tapeutil)
Using SMIT (information only)

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

*Figure 128. 3590 Subsystem Maintenance Screen*

When the **Control Unit Shutdown and Restart** option is selected, the following screen Figure 129 on page 387 will be shown.

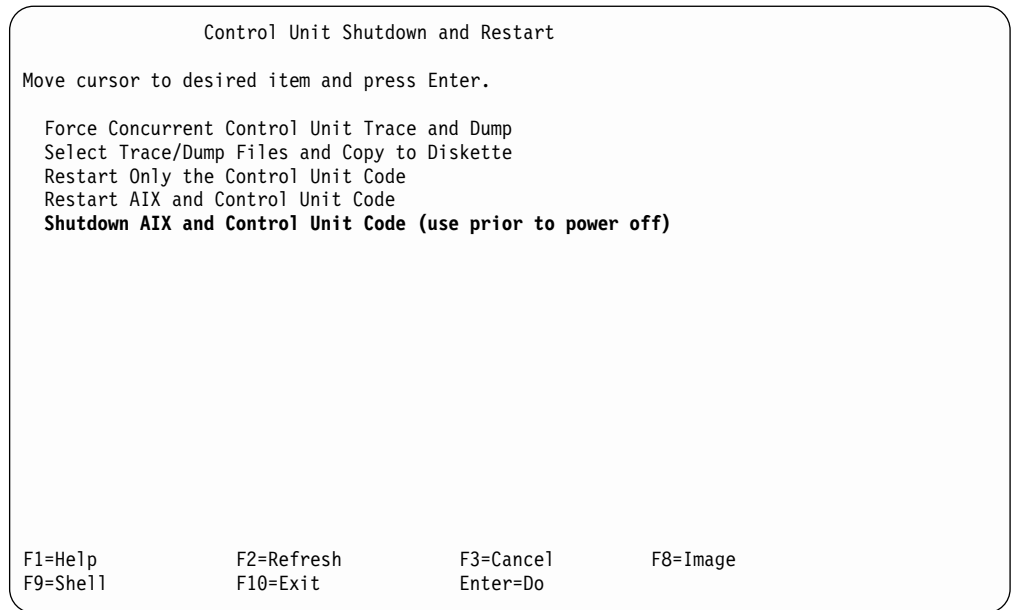


Figure 129. Control Unit Shutdown and Restart

When the **Shutdown AIX and Control Unit Code (use prior to power off)** is selected Figure 129 will be shown. This is a *Warning* to verify that the customer has quiesced all jobs on this control unit before proceeding.

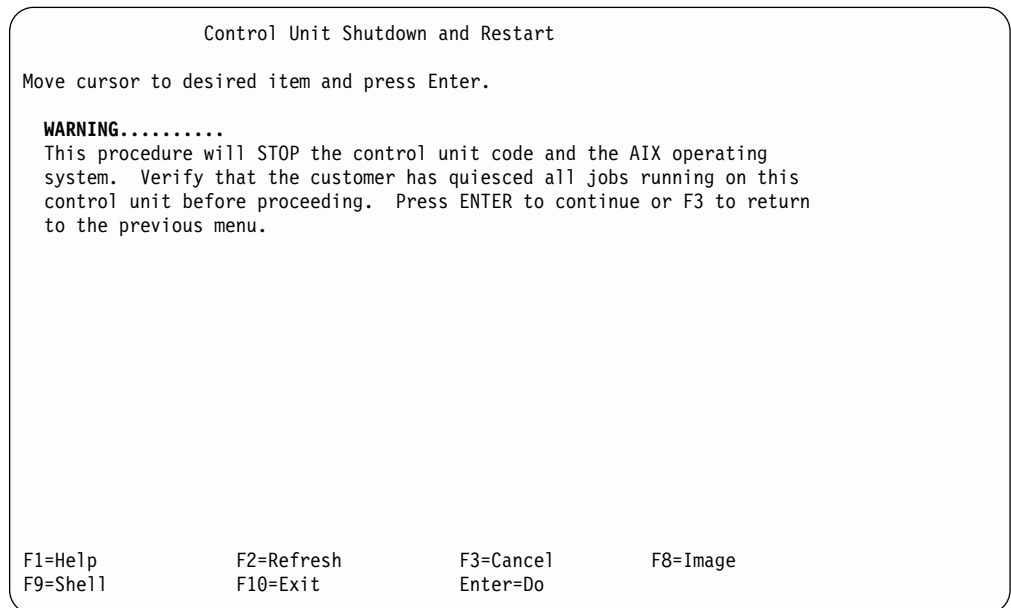


Figure 130. Control Unit Shutdown and Restart First Warning

When the **ENTER** is selected Figure 130 will be shown. This is a second *Warning* to give the CE a chance to exit before stopping the microcode in the control unit and AIX operating system.

```

Control Unit Shutdown and Restart

Move cursor to desired item and press Enter.

WARNING.....
This procedure will STOP the control unit code and the AIX operating
system. Verify that the customer has quiesced all jobs running on this
control unit before proceeding. Press ENTER to continue or F3 to return
to the previous menu.

* * * * *
*               ARE YOU SURE?               *
* * * * *
* Continuing may delete information you may want *
* to keep. This is your last chance to stop    *
* before continuing.                          *
* Press Enter to continue.                    *
* Press Cancel to return to the application.   *
* * * * *
F1=Help      F2=Refresh      F3=Cancel      F8=Image
F9=Shell     F10=Exit        Enter=Do

```

Figure 131. 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 A60 at the RS/6000 operator panel.

**Note:** To power on the A60 Controller go to “Powering on the A60 Controller”

---

## Powering on the A60 Controller

1. To power on the A60 controller press **4**. See Figure 132 on page 389.

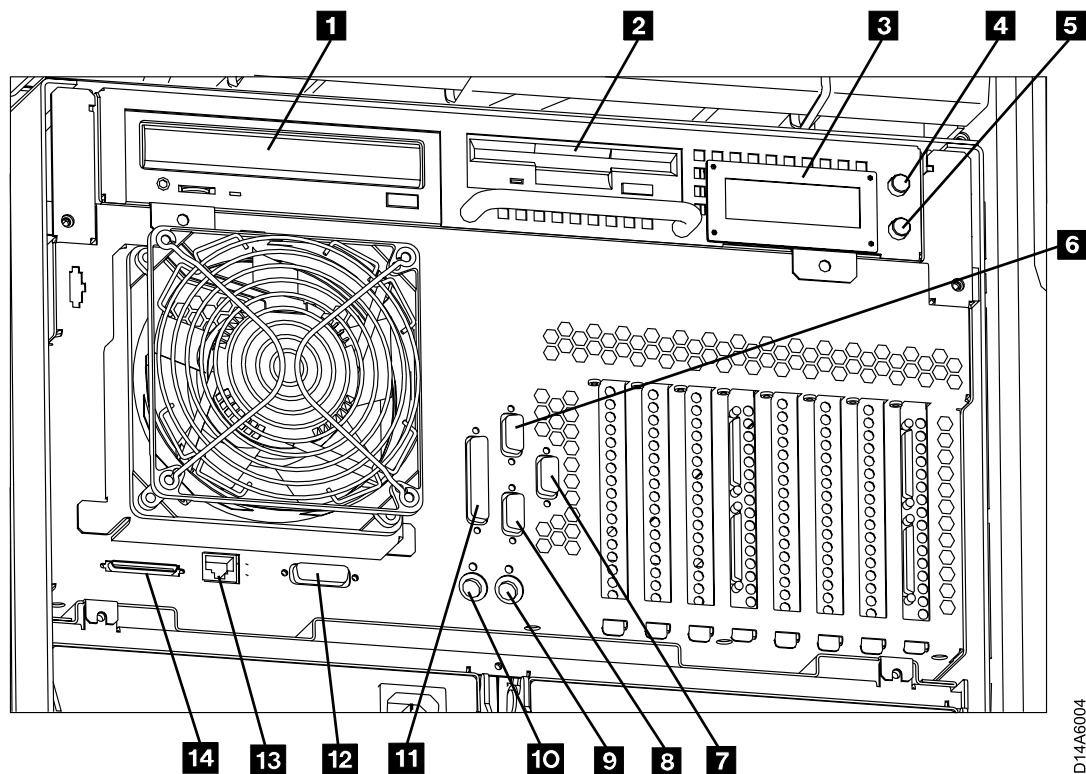


Figure 132. A60 Controller Controls and Connections

## Running Diagnostics from the A60 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. Move cursor to desired item and press **ENTER**

- ARTIC960 ESCON Adapter Diagnostics
  - All other Hardware Diagnostics
7. The following screen (see Figure 133) is displayed. Press the Enter key to continue.

```

DIAGNOSTIC OPERATING INSTRUCTIONS  VERSION 4.1.4                                801001

LICENSED MATERIAL and LICENSED INTERNAL CODE - PROPERTY OF IBM
(C) COPYRIGHTS BY IBM AND BY OTHERS 1982,1995.
ALL RIGHTS RESERVED.

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 133. Diagnostic Operating Instruction

8. The following screen (see Figure 134) 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.

```

FUNCTION SELECTION                                                                801002

Move cursor to selection, then press Enter.

Diagnostic Routines
  This selection will test the machine hardware.  A problem will
  be indicated by a SRN (Service Request Number).
Advanced Diagnostic Routines
  This selection will normally be used by the service representative.
Task Selection

Resource Selection

F3=Cancel          F10=Exit

```

Figure 134. Function Selection

9. Following screen (see Figure 135 on page 391) is displayed after selecting either the "Diagnostic Routines" or the "Advanced Diagnostic Routines".



Move cursor to selection, then press Enter.

System Verification

This selection will not analyze the error log. Use this option to verify that the machine is functioning correctly after completing a repair or an upgrade.

Problem Determination

This selection tests the system and analyzes the error log if one is available. Use this option when a problem is suspected on the machine.

F3=Cancel

F10=Exit

Figure 135. Diagnostic Mode Selection

- The following screen (see Figure 136) is displayed next if "**System Verification**" was selected. Move cursor to resource you want to test and press the enter key.

An \* in front of the resource shows that the test has been selected.

Choose the test that you want to run.

Base System	00-00	CPU, fpa, memory, I/O planar, op panel
fd0	00-00-0D-00	Diskette Drive
lp0	00-00-0P-00	Standard Parallel Port P
scsi0	00-00-0S	Standard SCSI I/O Controller
hdisk0	00-00-0S-0,0	1.1 GB SCSI Disk Drive
cd0	00-00-0S-5,0	SCSI Multimedia CD-ROM Drive (600 MB)
tty0	00-00-S1-00	Serial Port
tty1	00-00-S2-00	Serial Port
ascsi0	00-01	Wide SCSI I/O Controller Adapter
rmt0	00-01-01-0,0	IBM 3590 Tape Drive and Medium Changer
rmt1	00-01-01-1,0	IBM 3590 Tape Drive and Medium Changer
rmt2	00-01-01-2,0	IBM 3590 Tape Drive and Medium Changer
rmt3	00-01-01-3,0	IBM 3590 Tape Drive and Medium Changer
escon0	00-02	ESCON Channel Adapter
tok0	00-04	Token-Ring High-Performance Adapter (8fa2)

F3=Cancel

F10=Exit

Figure 136. Diagnostic Selection

- The following screen (see Figure 137 on page 392) is displayed next if "**Problem Determination**" 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.

An \* in front of the resource shows that the test has been selected.

Choose the test that you want to run.

Base System	00-00	CPU, fpa, memory, I/O planar, op panel
fd0	00-00-0D-00	Diskette Drive
lp0	00-00-0P-00	Standard Parallel Port P
scsi0	00-00-0S	Standard SCSI I/O Controller
hdisk0	00-00-0S-0,0	1.1 GB SCSI Disk Drive
cd0	00-00-0S-5,0	SCSI Multimedia CD-ROM Drive (600 MB)
tty0	00-00-S1-00	Serial Port
tty1	00-00-S2-00	Serial Port
ascsi0	00-01	Wide SCSI I/O Controller Adapter
rmt0	00-01-01-0,0	IBM 3590 Tape Drive and Medium Changer
rmt1	00-01-01-1,0	IBM 3590 Tape Drive and Medium Changer
rmt2	00-01-01-2,0	IBM 3590 Tape Drive and Medium Changer
rmt3	00-01-01-3,0	IBM 3590 Tape Drive and Medium Changer
escon0	00-02	ESCON Channel Adapter
tok0	00-04	Token-Ring High-Performance Adapter (8fa2)

F3=Cancel

F10=Exit

Figure 137. Advanced Diagnostic Selection

## Setting the Correct time on the A60

This procedure shows you how to set up the clock on A60 using the Service Terminal menus.

1. Connect the Service Terminal (MoST) (see "Getting Started" on page 304) and go to the &3590 Subsystem Maintenance menu
2. From the main service menu select "Subsystem Configuration" (see Figure 138 on page 393)
3. From the next menu to appear, Select the "Show / Change Date, Time, and Time Zone" (see Figure 139 on page 393)
4. A pop-up menu will appear on the screen (see Figure 140 on page 394)
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 141 on page 394)
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 142 on page 395)

**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.

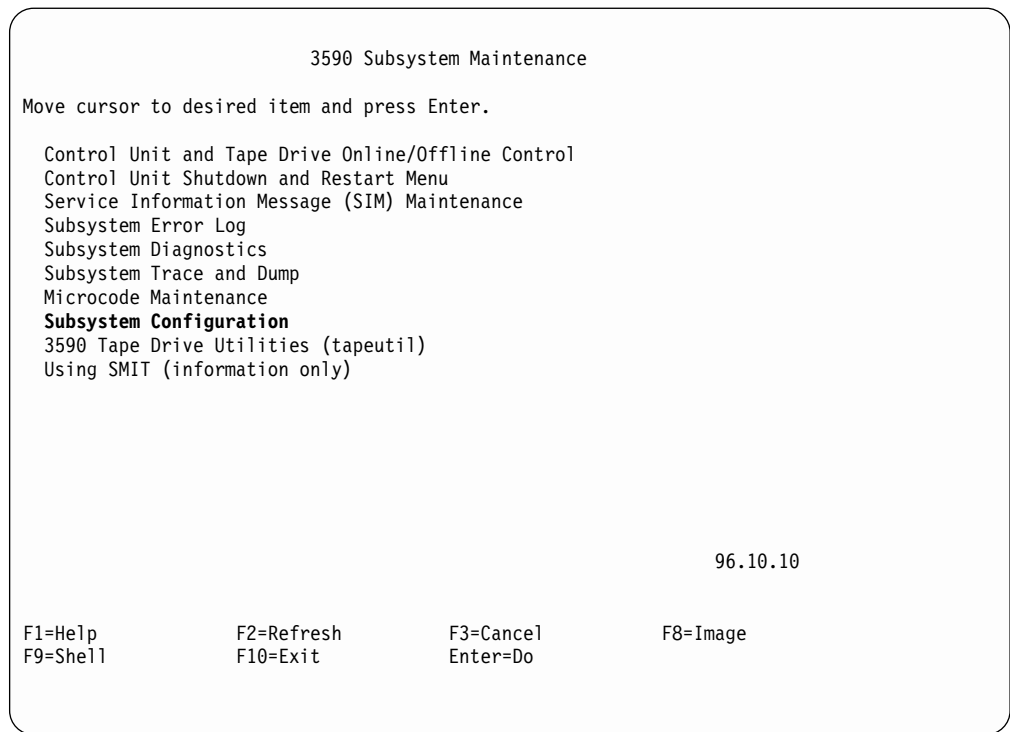


Figure 138. &3590 Subsystem Maintenance Screen

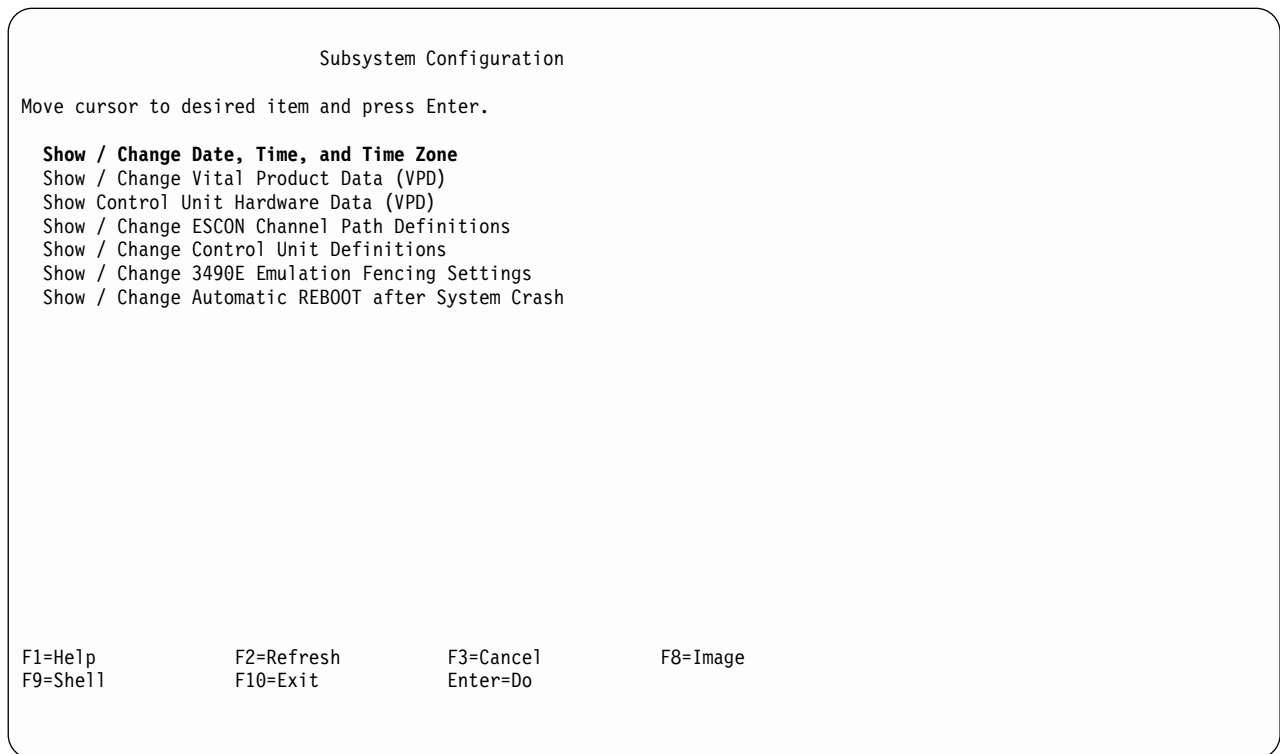


Figure 139. Subsystem Configuration

```

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 Control Unit Definitions
Show / Change 3490E Emulation Fencing Settings
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 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 x x

```

Figure 140. 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 x
x                               CUT (Coordinated Universal Time) Time Zone x
x                                                                    x
x Move cursor to desired item and press Enter.                    x
x                                                                    x
x [TOP]                                                            x
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                                                                    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 x x

```

Figure 141. 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]
                        MST7
Time zone               [MST7]
Does this time zone go on daylight savings time?  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 142. 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 A60 Control Unit in 3490E Emulation Mode

**WARNING: Only perform this procedure if the customer has requested that the A60 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 A60 is part of a 3494 Dataserver) and get to the **3590 Subsystem Maintenance** screen. See Figure 143. and select **Subsystem Configuration**, the highlighted entry shown in Figure 143, the **Subsystem Configuration** screen shown in Figure 144 on page 397, will be on the screen.

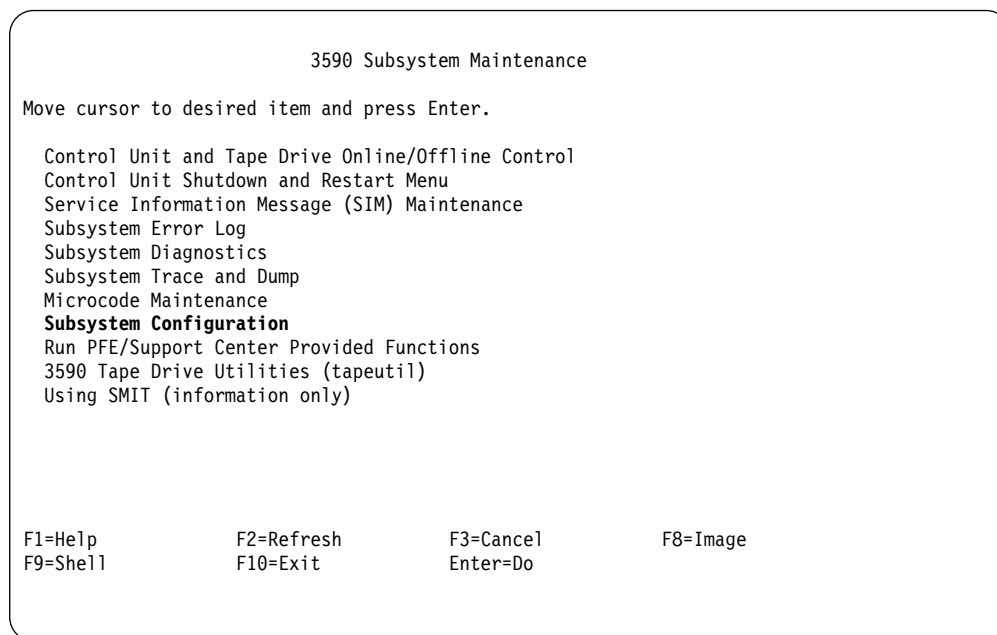


Figure 143. &3590 Subsystem Maintenance Screen

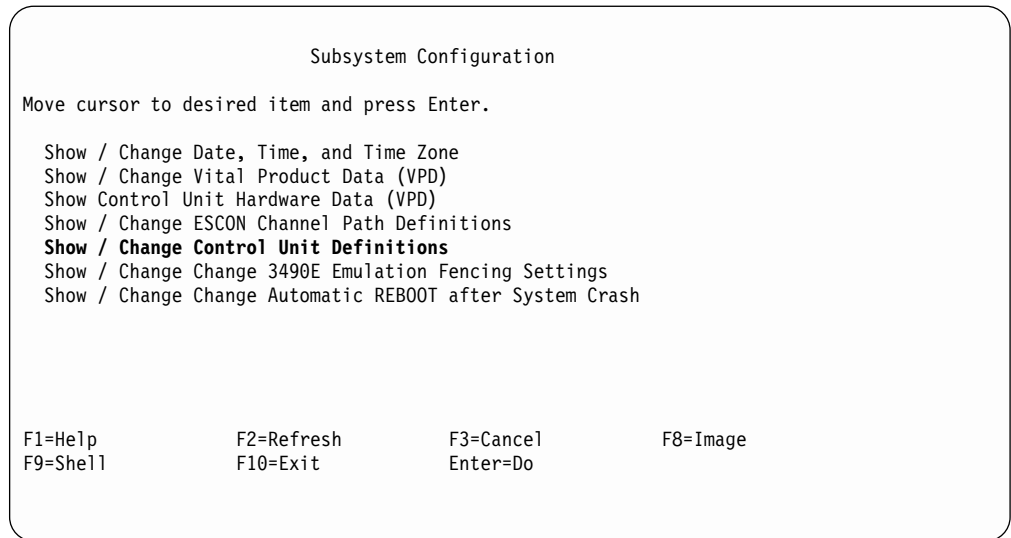


Figure 144. Subsystem Configuration Screen

Select the **Show / Change Control Unit Definitions** shown in Figure 144. Press Enter and the pop-up window shown in Figure 145 will be shown.

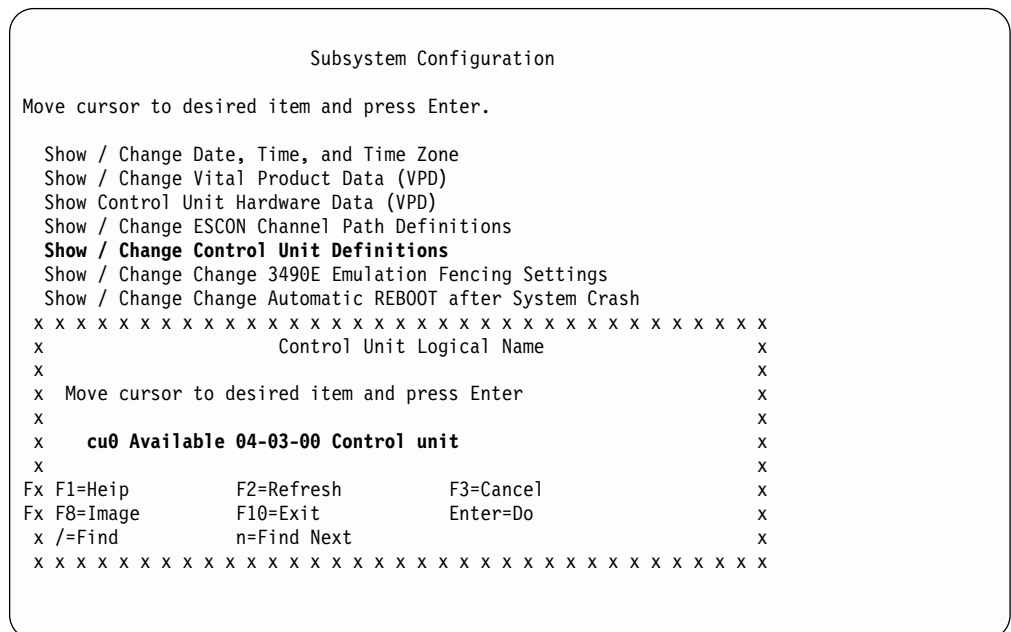
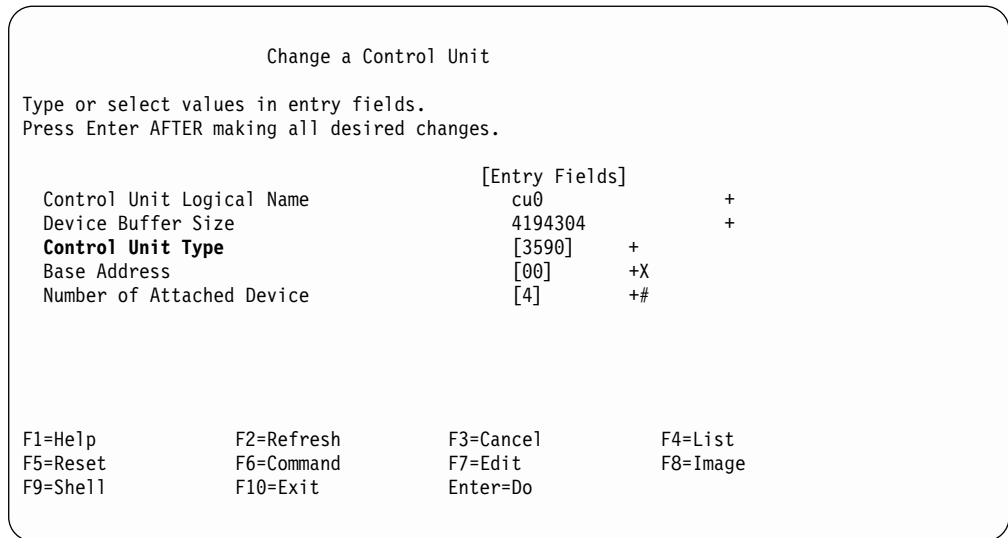


Figure 145. Control Unit Logical Name Screen

Select the desired Available Control unit, see Figure 145 and press Enter. The **Change a Control Unit** screen will be shown, see Figure 146 on page 398.



*Figure 146. Change a Control Unit Screen*

**Note:** Where a + is displayed to the right on the screen, pressing **F4** will display a list of all the possible items.

Select **Control Unit Type** and press Enter. A pop-up window will be shown, see Figure 147 on page 399 that allows you to select either a **3590** or **3490** control unit type. Move cursor to CU type and press **F4**.

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.

**Note:** Warning Message! Any changes made will not take effect until CU goes online, then CU 0 will be changed.



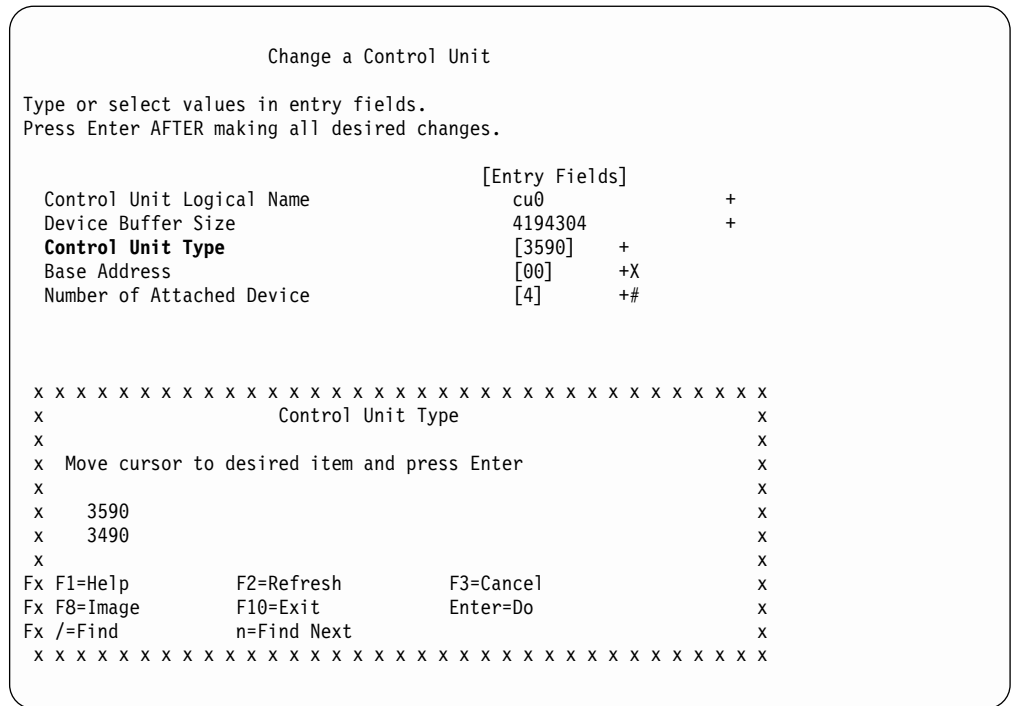


Figure 147. Select Control Unit Type Screen

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 148

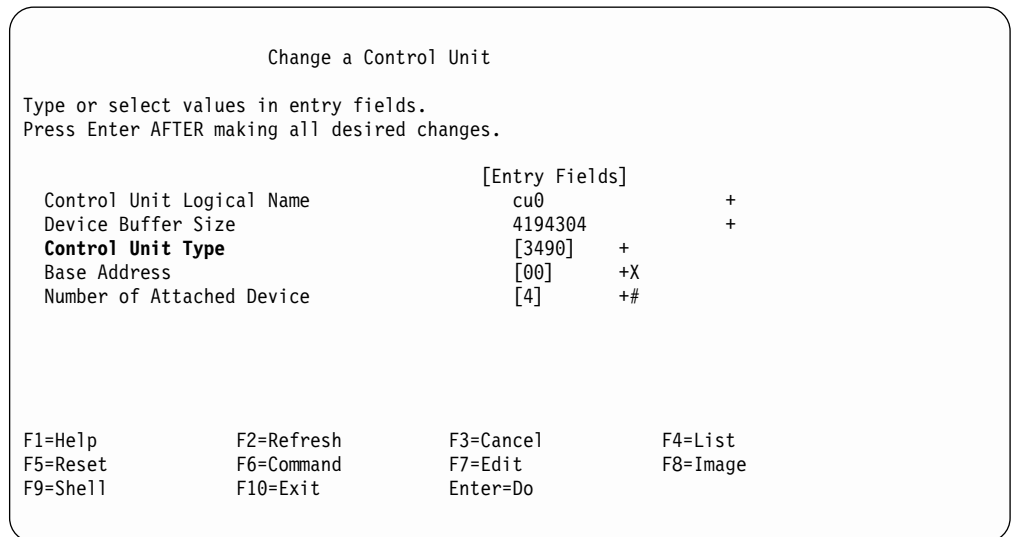


Figure 148. Change a Control Unit Screen

## Setting Up EBTERM or Terminal Emulator for Setting Modem Password

**Note:** The modem password should **only** be used for configurations where the A60 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 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	A60 Modem Setup with Password
Modem Initialization	AT&FQ1E0\Q1*E1%U1\$B9600&
D0&M2\N2*W0&Y0laptope;	all are the number zero(0)> alpha characters are upper/lower case sensitive>
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	IBM 3151
Host Codepage	ASCII 437 U.S. English
Host Script	None

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 Axx
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
&V0     make setup the default

```

---

## Modem Initialization with Password

**Note:** The Modem password should **only** be used for configurations where the A60 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 400.

- \_\_\_ 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-A60 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. 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-A60 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.
- b. Return to "Setting Up EBTERM or Terminal Emulator for Setting Modem Password" on page 400 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 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 402.
  - b. If the problem persists, contact your next level of support.
- \_\_\_ 23. Reinstall the panel removed in step 3 on page 402

## LAN Port Activate Procedure

**Attention:** You must set up the MoST or LM with EBTERM or the Terminal Emulator before you can continue with the following initialization procedure. See "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page 366 or "Setting up NetTerm Terminal Emulator (Windows 95/98 Platforms)" on page 364.

- If you are using the MoST terminal:

**CAUTION:**

**If the subsystem is being used by the customer care MUST be taken to prevent power drops, which can occur when the LMA PC is pulled to far to gain access to the COM or Serial Ports. The same care should be taken with HUB box removal and setup.**

1. Using the existing cables to the service platform and those items supplied with the install hardware connect the cable from Com Port A P/N 05H3299 (for PC models valuepoint and 7585), Serial Port (for PC Model 7588) see

IBM 3494 Tape Library Dataserver Maintenance Information (loc pages), between and the gender changer and Com Port A at the rear of the PC.

2. A spare 9-to-25-pin cable (P/N 05H3299) is included to use with this procedure:
  - a. Connect the 9-pin connector to the MoST terminal.
  - b. Connect the 25-pin connector to the gender changer (P/N 05H7939).
  - c. Connect the null modem (P/N 05H7876) to the gender changer.
  - d. Connect the spare cable (P/N 05H3299) to the null modem, then connect the 9-pin connector to the 9-pin connector of the hub assembly (P/N 86H2797). The connector is located at the rear of the hub assembly.

- If you are using the Library Manager:

**CAUTION:**

**If the subsystem is being used by the customer care MUST be taken to prevent power drops, which can occur when the LMA PC is pulled to far to gain access to the COM or Serial Ports. The same care should be taken with HUB box removal and setup.**

1. Using the existing cables to the service platform and those items supplied with the install hardware connect the cable from Com Port A P/N 05H3299 (for PC models valuepoint and 7585), Serial Port (for PC Model 7588) see IBM 3494 Tape Library Dataserver Maintenance Information (loc pages), between and the gender changer and Com Port A at the rear of the PC.
2. Disconnect the cable P/N 05H9744 and Gender Changer P/N 05H7939.
3. Connect the null modem (P/N 05H7876) to Gender Changer P/N 05H7939.
4. Connect the 25-pin connector of the spare cable (P/N 05H3299) to Gender Changer P/N 05H7939, then connect the 9-pin connector to the rear of the hub assembly (P/N 86H2797).

**To initialize the LAN port activate procedure:**

**Note:** Remove the LAN Hub assembly from its platform to facilitate the following procedure. To remove the assembly, remove the 4 screws (2 on each side) holding the assembly to the platform.

1. Start EBTERM.
2. Turn on the power to the LAN Hub.
3. Select **Connect**:
  - If the 3590 AXX LAN Hub Setup is not in a profile, continue with Step 4.
  - If the 3590 AXX LAN Hub Setup is in a profile, go to Step 13 on page 405.
4. Select **Setup** from the tool bar.
5. Select **Dialing Profiles**.
6. Select **Add Profile** from the pop-up list.
7. Select the first unused profile number from the pop-up list. A window appears with the title EBTERM[a] Dialing Directory: Profile X (where X is the profile number just selected).
8. Set the fields as follows:

Field Name	Set To Value
Host Location Description	3590 AXX LAN HUB Setup
Modem Initialization	laptopClear this field; should be blank>
Number to Dial	laptopClear this field; should be blank>
Long Distance Prefix	laptopClear this field; should be blank>
Response to Connect	laptopClear this field; should be blank>

Serial Port Speed	9600 laptop	Click on the arrows to scroll through the choic
Bits Setting	8/N/1	
Serial Port Buffer	Auto	
Display Buffer	Checkmark OFF in box laptop	Click on the box to change>
Flow Control XON/XOFF	Checkmark ON 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	

9. After setting the fields, Press **ENTER** .
10. Select **Setup** from the tool bar.
11. From the pop-up list, select **Save As...**
12. Press **ENTER** to save the changes.
13. To determine the correct items are active for the EBTERM session, select **Modify** from the tool bar. The pop-up window has a check (✓) by each of the active items. If the following items are not active, select them to make them active:
  - Alt. Key CUA Mode
  - Direct Connect
  - PCTERM Draw Detect (normally active)
14. Select **Connect** from the tool bar.
15. Select **3590 AXX LAN HUB Setup**.

**Attention:** There are two models the 712, and the newer F12, of the Ethernet LAN switch. Each model has its' own setup procedure. It is important to identify which LAN you have to be able to select the correct LAN Activate, setup, procedure. The following list of items identifies the differences:

- Model 712
  - Model Type (712) on front panel of LAN
  - Has twelve ports, three sets of four ports across front
  - At **3590 AXX LAN HUB Setup** when **ENTER** is pressed TWICE Figure 149 on page 406 will be displayed.
  - Follow the Figure 149 on page 406 screen sequence through the LOGOFF step to complete the Procedure for the Model 712 Ethernet LAN.
- Models F12 and F24
  - Model Types F12 (12 ports) or F24 (24 ports) on front panel of LAN
  - If you have an F12 of F24 Ethernet Lan Hub go to “LAN Port Activate F12 and F24 Model LAN” on page 409.
  - If you do not have an F12 continue at Figure 149 on page 406.

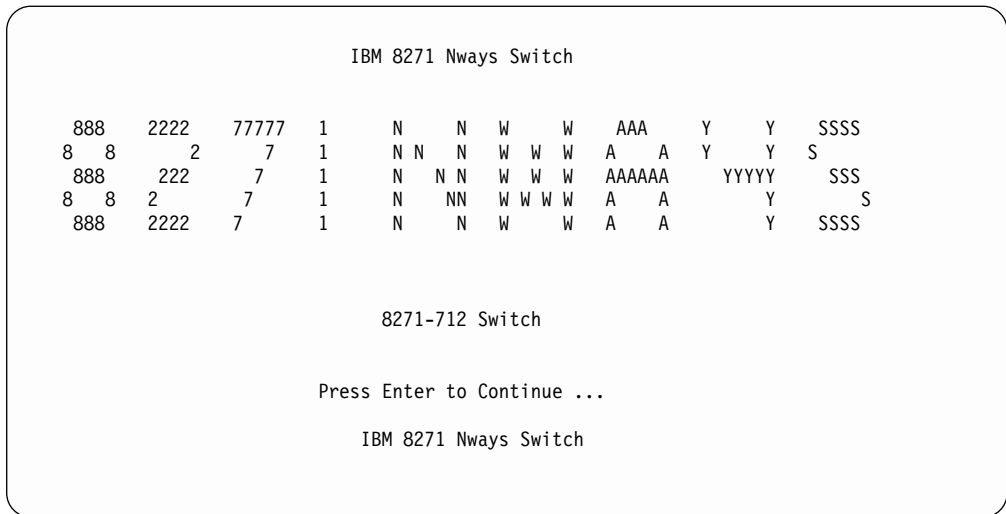


Figure 149. LAN Switch Screen

16. Press **ENTER** to continue. Figure 150 Displays.

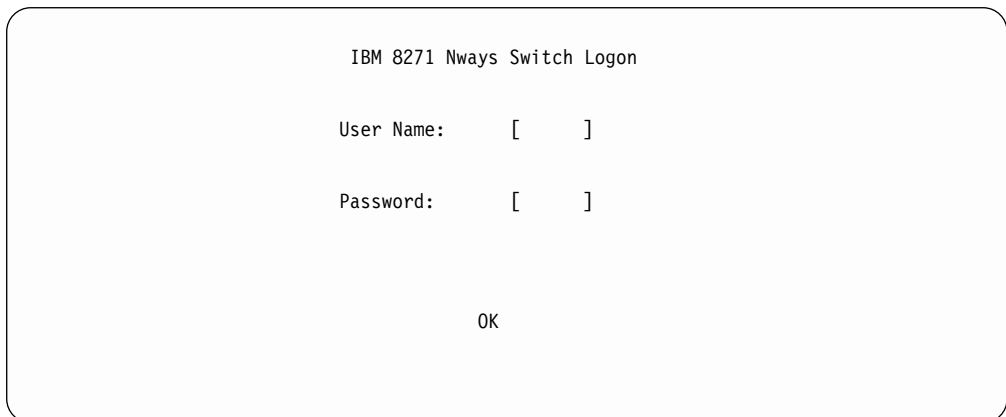


Figure 150. LAN Switch Logon

17. In both the **User Name** and **Password** fields, type **security** (the Password field is case sensitive). With the down arrow key, move the cursor to **OK** Press **ENTER**. Figure 151 on page 407 Displays.



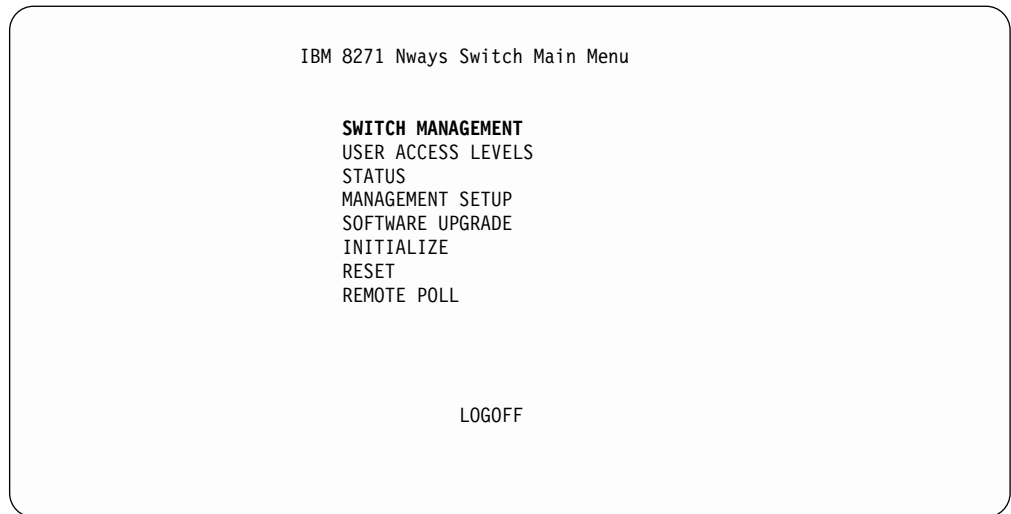


Figure 151. Nways Switch Main Menu

18. Select **SWITCH MANAGEMENT**. Press **ENTER**. Figure 152 Displays.

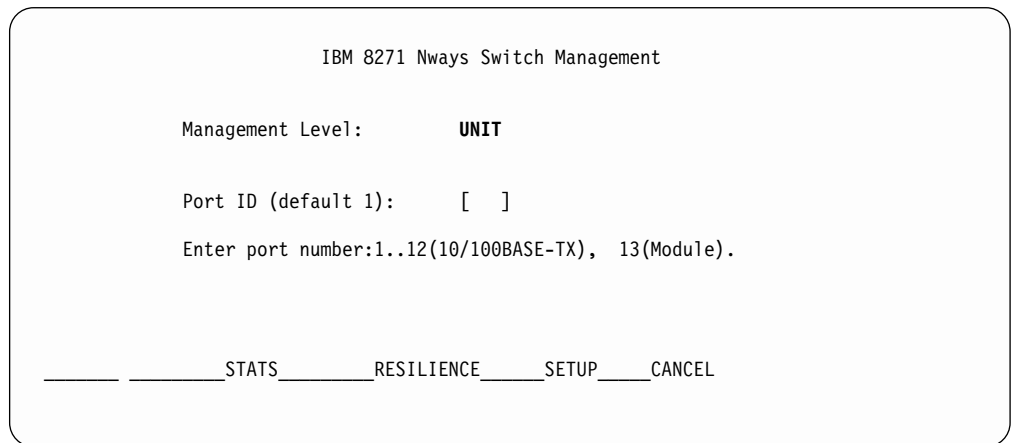


Figure 152. Nways Switch Management Menu

19. Press the space key until **UNIT** displays. With the down arrow key, move the cursor to **SETUP**. Press **ENTER**. Figure 153 on page 408 Displays.

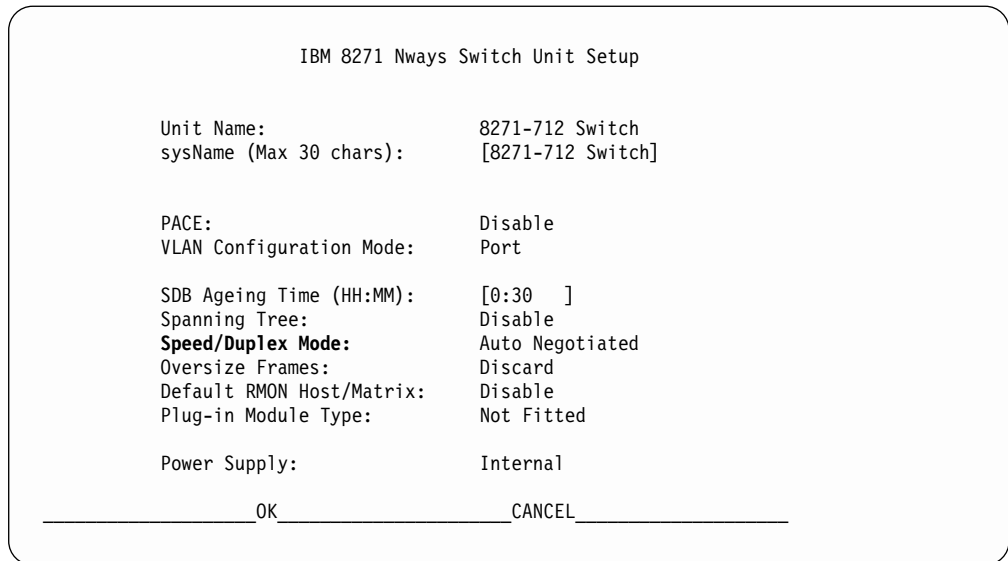


Figure 153. Nways Switch Unit Setup Menu

20. With the down arrow key, move the cursor to **Speed/Duplex Mode**. Press **ENTER**. Press the space bar to select **100Mbps Full Duplex**. Figure 154 Displays.

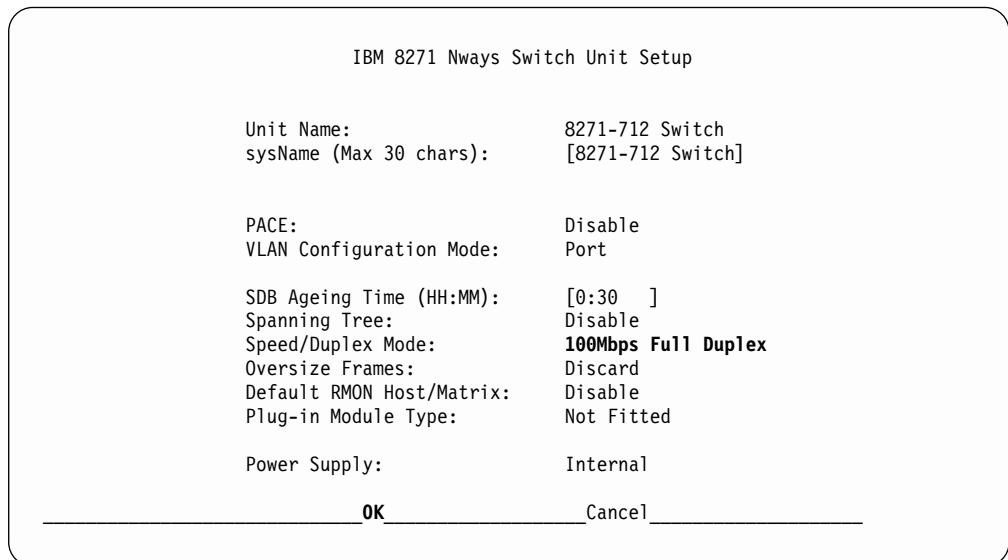


Figure 154. Nways Switch Unit Setup Menu with 100Mbps Full Duplex Selected

21. With the down arrow key, move the cursor to **OK**. Press **ENTER**. Figure 156 on page 409 Displays.

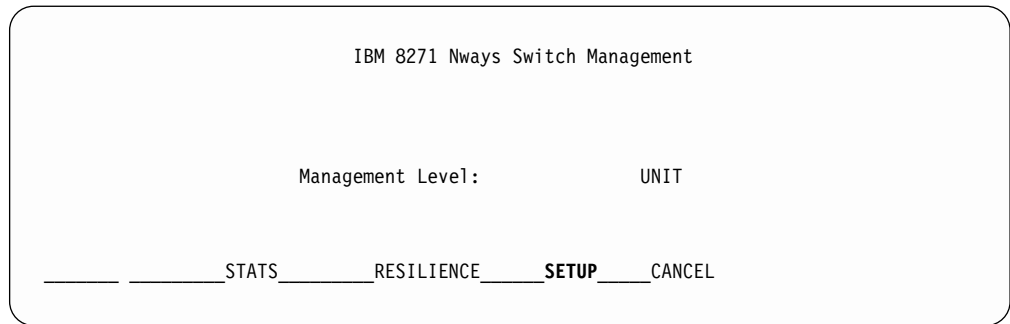


Figure 155. Nways Switch Management Menu with SETUP Selected

22. With the down arrow key, move the cursor to **CANCEL**. Press **ENTER** . Figure 156 displays.

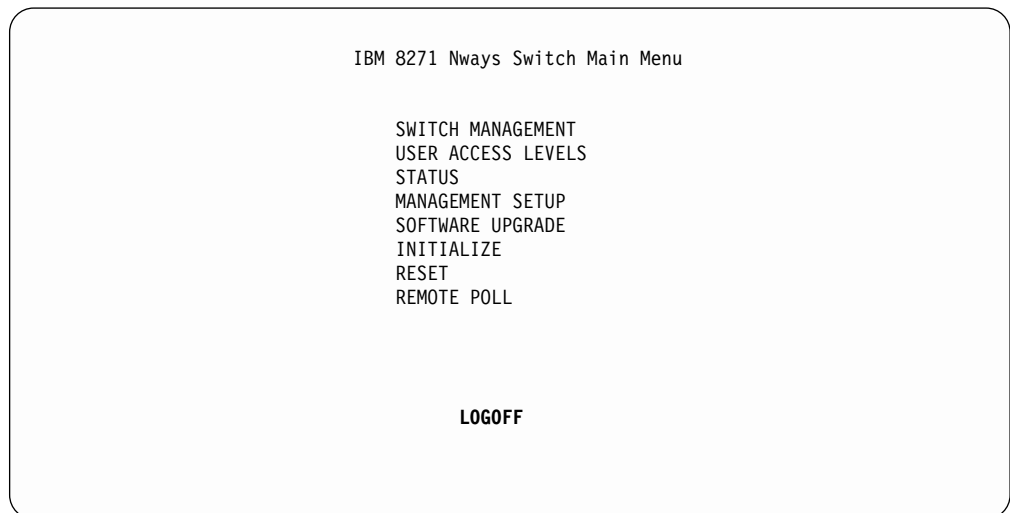


Figure 156. Logging Off the Nways Switch Main Menu

23. If this procedure was part of a repair action return to the procedure that sent you here.
24. With the down arrow key, move the cursor to **LOGOFF**. Press **ENTER** .

---

## LAN Port Activate F12 and F24 Model LAN

**Attention:** You are here as a result of the isolation decision from the “LAN Port Activate Procedure” on page 403 procedure, and you have an F12 model Ethernet LAN

**Attention:** This Procedure incorporates the verify of the TCPIP address.

**Note:** Remove the LAN Hub assembly from its platform to facilitate the following procedure. To remove the assembly, remove the 4 screws (2 on each side) holding the assembly to the platform.

**CAUTION:**

The power cord for the Lan Hub is not long enough to reach past the platform . The platform must be removed to facilitate setup.

1. If not selected select **3590 AXX LAN HUB Setup**, If you are not at Figure 157, Press **ENTER** twice.
2. A popup screen will display **Login:**. Type **security** (case sensitive). Press **ENTER** .
3. A popup screen will display **Password:**. Type **security** (case sensitive). Press **ENTER** .
4. "LAN Port Activate F12 and F24 Model LAN" on page 409 will be displayed. At **Select menu option:** Type **e**. Press **ENTER** .

```

-----IBM 8271 Nways LAN Ethernet Model xxx

ethernet      -Administer Ethernet ports
ip            -Administer IP
logout        -Logout of the Command Line Interface
system        -Administer system-level functions

Type ? for help.
-----xxxxxxxxxxx

Select menu option:

```

Figure 157. IBM 8271 Nways LAN Ethernet Model xxx

5. At the next display **Autonegotiation** is to be selected. Type an **a**. Press **ENTER** .
6. The following entries pertain to the Port settings. **All ports must be set to Disable**. Each port must be set one at a time starting from 1.
7. At the Autonegotiation display:
  - Type a **1** at the option menu. Press **ENTER** .
  - Type a **d** at the option menu. Press **ENTER** .
  - Select an **a**. Press **ENTER** .
  - Type a **2** at the option menu. Press **ENTER** .
  - Type a **d** at the option menu. Press **ENTER** .
  - Repeat the above process for ports 3 thru 12
  - Press **ENTER** when completed with ports 1–12 and "LAN Port Activate F12 and F24 Model LAN" on page 409 will be displayed.
8. Select **PortMode** by entering **portM** at the **Select menu option:**. Press **ENTER** .
  - Type a **1** at the option menu. Press **ENTER** .
  - Type **100full** at the option menu. Press **ENTER** .
  - Type **portM**. Press **ENTER** .
  - Type a **2** at the option menu. Press **ENTER** .
  - Type **100full** at the option menu. Press **ENTER** .
  - Type **portM**. Press **ENTER** .
  - Repeat the above process for ports 3–12.
  - Type a **q** when completed with ALL PORTS and Figure 149 on page 406 will be displayed.
9. Type **interface**. Press **ENTER** .
10. Type **define**. Press **ENTER** .

11. At **slip address**. Press **ENTER** .
12. At **subnet mask**. Press **ENTER** .
13. At **Enter IP address**: type **192.168.251.244**. Press **ENTER** .
14. At **Enter subnet mask**: type **255.255.255.0**. Press **ENTER** .
15. At **gateway**. Press **ENTER** .
16. At **slip**. Press **ENTER** .
17. Press **ENTER** to return to “LAN Port Activate F12 and F24 Model LAN” on page 409.
18. Select **logout**. Type **1**. Press **ENTER** .
19. With the down arrow key, move the cursor to **LOGOFF**. Press **ENTER** .
20. Return the Ethernet Lan to its platform in the LMA frame or garage frame if HA1. replace the screws removed at “LAN Port Activate Procedure” on page 403.
21. Return to the procedure that sent you here. Activate for the F12 Model Ethernet LAN is completed.

---

## Configuring the LAN for the A60 Controller

1. Bring up EBTERM go to “Setting up the EBTERM or Terminal Emulator (OS/2 Platform)” on page 366.

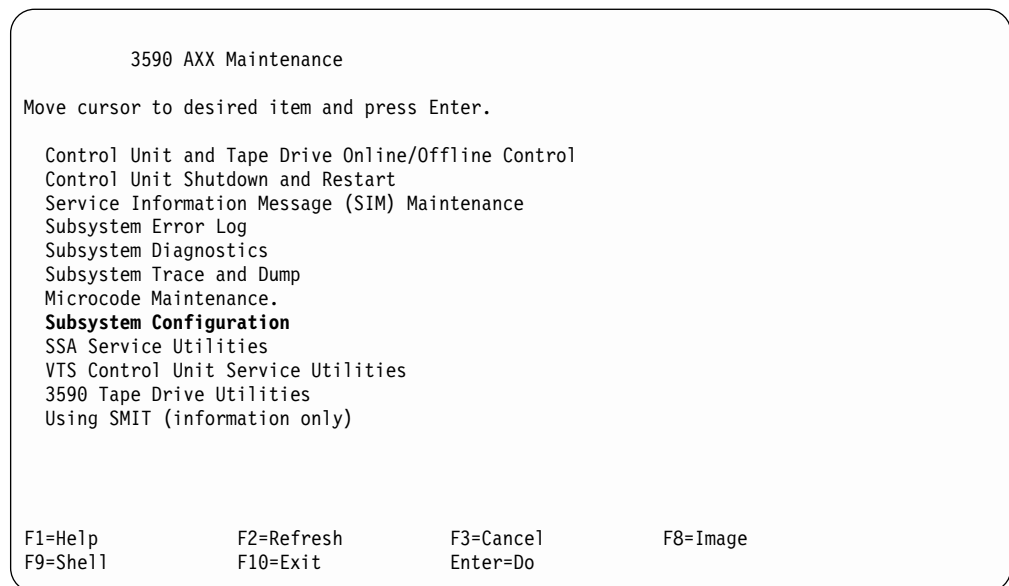


Figure 158. 3590 AXX Maintenance Screen

2. Select **Subsystem Configuration**. Press **ENTER** . Figure 159 on page 412 displays.

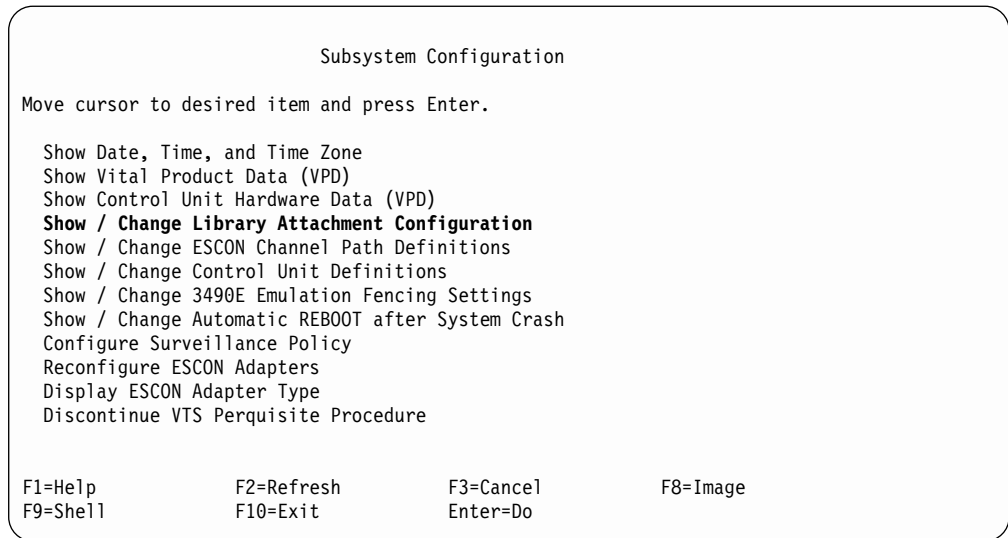


Figure 159. System Configuration Screen

3. Select **Show/Change Library Attachment Configuration**. Press **ENTER**.  
Figure 160 displays.

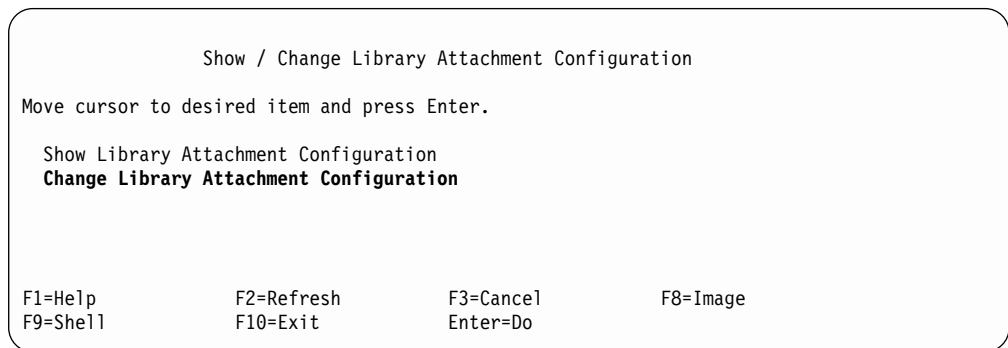


Figure 160. Show / Change Library Attachment Configuration Screen

4. Select **Change Library Attachment Configuration**. Press **ENTER**. Figure 161 on page 413 displays.

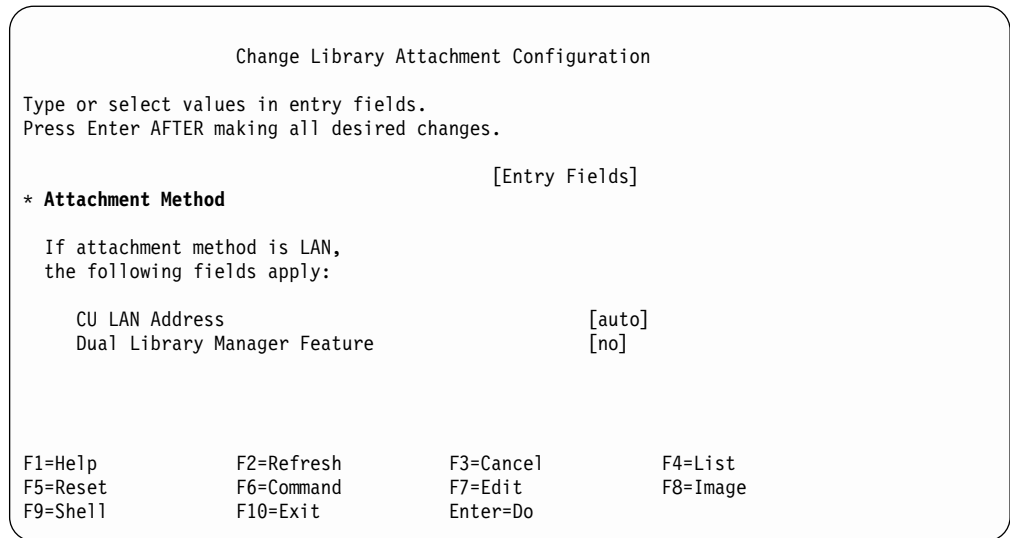


Figure 161. Change Library Attachment Configuration Screen

**Note:** If you are installing an HA subsystem, select **Dual Library Manager Feature**. Press **F4**. Select **yes**. Press **ENTER**.

5. Figure 117 on page 361 displays.

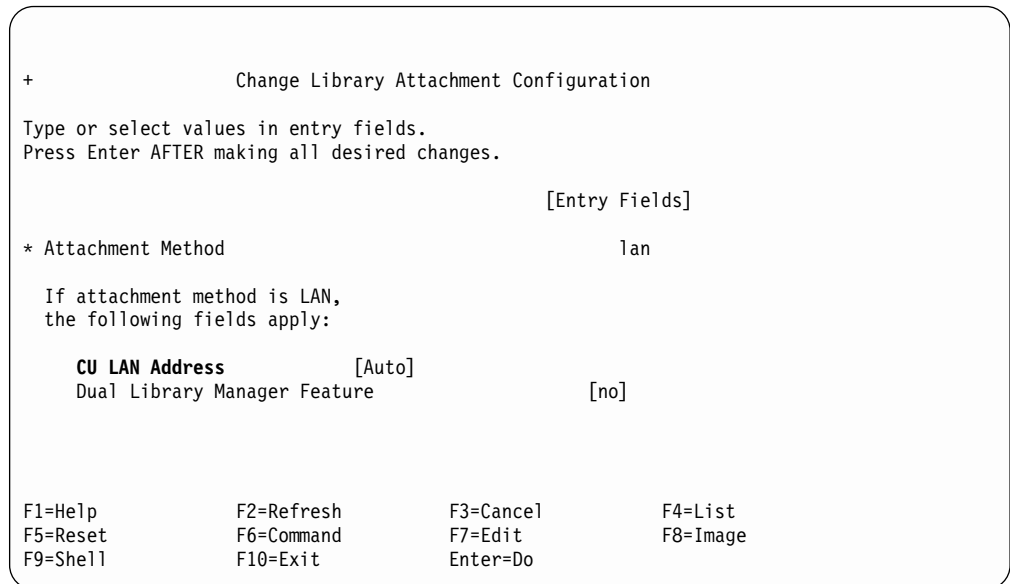


Figure 162. Change Library Attachment Configuration Screen

6. Select **CU LAN Address** Press **F4**. Figure 118 on page 362 displays.







---

## PING Hardware Test

**Note:** You are here to check the hardware connections between each of the subsystems' Ethernet connections. The following test displays frames 20 through 150 to correspond to the actual frame addressing where a VTS, LMA and, if HA1, LMB could reside.

1. Bring up EBTERM go to "Setting up the EBTERM or Terminal Emulator (OS/2 Platform)" on page 366. At the A60 Controller Maintenance screen Figure 167.

```

                                AXX Control Unit Maintenance

Move cursor to desired item and press Enter.

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

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

*Figure 167. Second Screen Shown at Power-On*

2. Select **VTS Control Unit Service Utilities**. Press **ENTER**. Figure 169 on page 418 displays.
3. Figure 168 on page 417, is a flow of the address and cabling scheme for the LAN setup for the Axx. If an error occurs use Figure 168 on page 417 to help to isolate the problem.

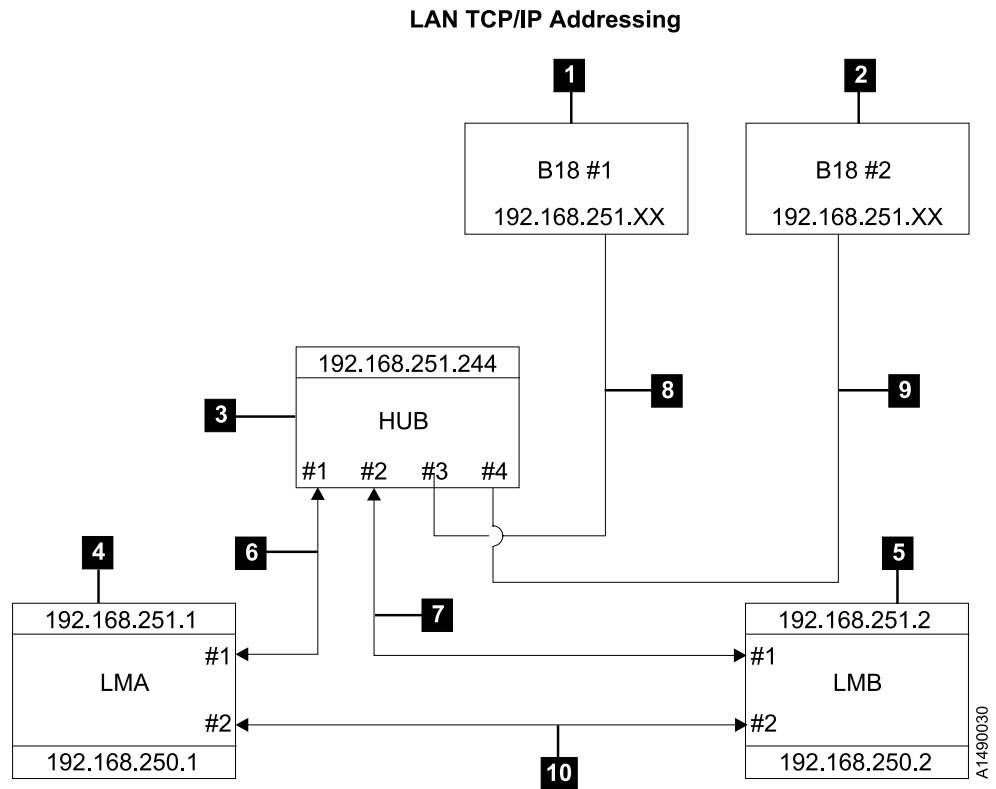


Figure 168. RS/6000 LAN TCPIP (TELNET) Addresses and Cable Layout

4. The following list refers to Figure 168.

- **1** Axx #1
  - **2** Axx #2
  - **3** Hub Box
  - **4** LMA
  - **5** LMB (HA1 ONLY)
  - **6** ETHERNET Card LMA #1 and HUB Port #1 (P/N 05H8712)
  - **7** ETHERNET Card LMA #1 and HUB Port #2 (P/N 05H8596)
  - **8** Axx #1 Position #5 to HUB Box Port #3 (P/N 05H8596)
  - **9** Axx #2 Position #5 to HUB Box Port #4 (P/N 05H8596)
  - **10** LMA ETHERNET Card #2 to LMB ETHERNET #2 (P/N 05H2914 Crosswired)
- The XX in the TCPIP addresses of the Axx #1 **1** and Axx #2 **2** are dependent on the D12 position in the frame string, as described above.
5. At Figure 169 on page 418, select **Issue Ping Command**. Press **ENTER**.  
Figure 170 on page 418 displays



```
COMMAND STATUS

Command: OK          stdout: yes          stderr: no

Before command completion, additional instructions may appear below.

PING 192.168.251.20: (192.168.251.20): 56 data bytes
64 bytes from 192.168.251.20: icmp_seq=0 ttl=255 time=0 ms

----192.168.251.20 PING Statistics----
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0/0/0 ms

F1=Help          F2=Refresh          F3=Cancel          F6=Command
F8=Image         F9=Shell            F10=Exit           /=Find
n=Find Next
```

Figure 171. Second Screen Shown at Power-On

Figure 172 is an example of an improperly selected frame or failing Ethernet connection.

```
COMMAND STATUS

Command: failed      stdout: yes          stderr: no

Before command completion, additional instructions may appear below.

PING 192.168.251.30: (192.168.251.30): 56 data bytes

----192.168.251.30 PING Statistics----
1 packets transmitted, 0 packets received, 100% packet loss

F1=Help          F2=Refresh          F3=Cancel          F6=Command
F8=Image         F9=Shell            F10=Exit           /=Find
n=Find Next
```

Figure 172. Second Screen Shown at Power-On

**Note:** Failures can be caused by:

- Frame address selection where there is no Ethernet connection
- An open or missing Ethernet cable
- A defective Ethernet card
- A failing Ethernet HUB Assembly
- The Ethernet card in the RS/6000 (if you cannot connect to any connection)



---

## Chapter 15. Parts Catalog

---

### 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-Procurable) in the Units column indicates that the part is non-procurable and that the individual parts or the next higher assembly should be ordered.
- **NR:** (Not Recommended) in the Units column indicates that the part is procurable but not recommended for field replacement, and that the next higher assembly should be ordered.
- **R:** (Restricted) in the Units column indicates 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:

<b>Indenture</b>	<b>Relationship of Parts</b>
<b>(No dots)</b>	MAIN ASSEMBLY
<b>(One dot)</b>	• Detail parts of a main assembly
<b>(One dot)</b>	• Subassembly of the main assembly
<b>(Two dots)</b>	•• Detail part of a one-dot subassembly
<b>(Two dots)</b>	•• Subassembly of a one-dot subassembly
<b>(Three dots)</b>	••• Detail part of a two-dot subassembly

---

## Assembly 1: Cover Assembly (Sample)



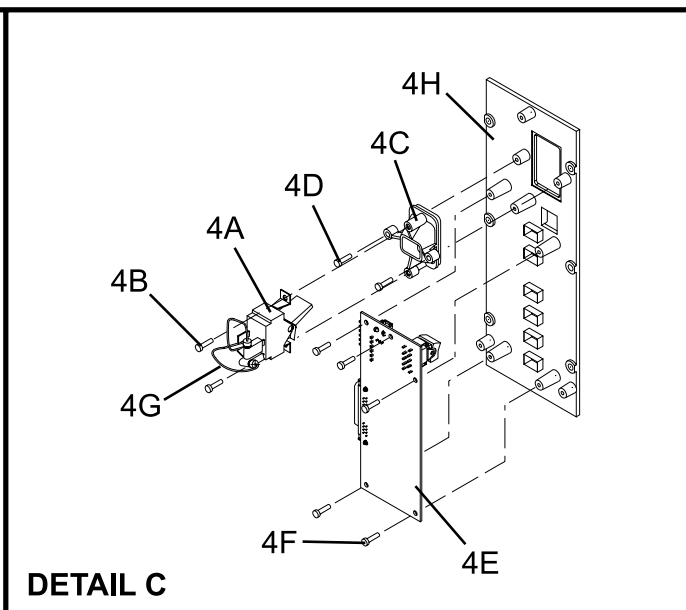
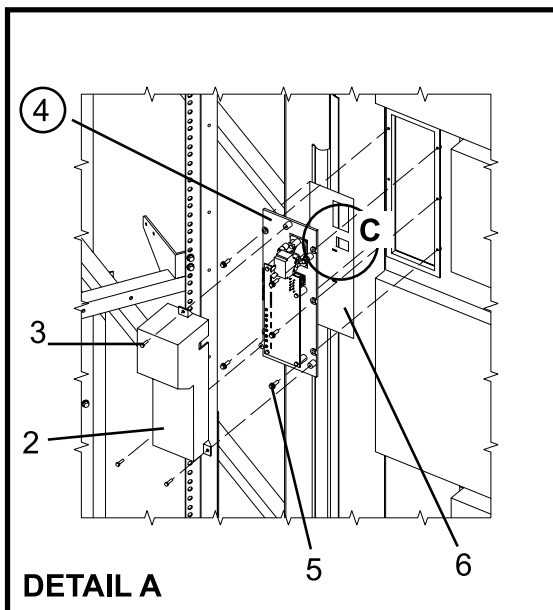
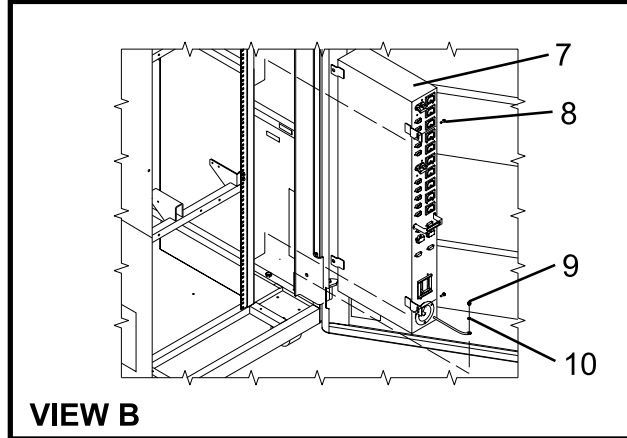
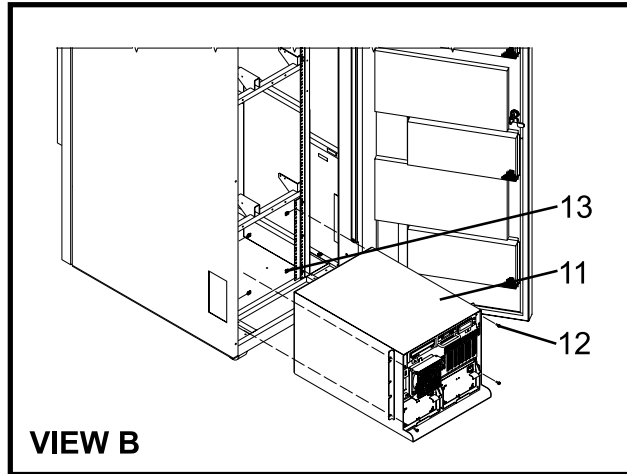
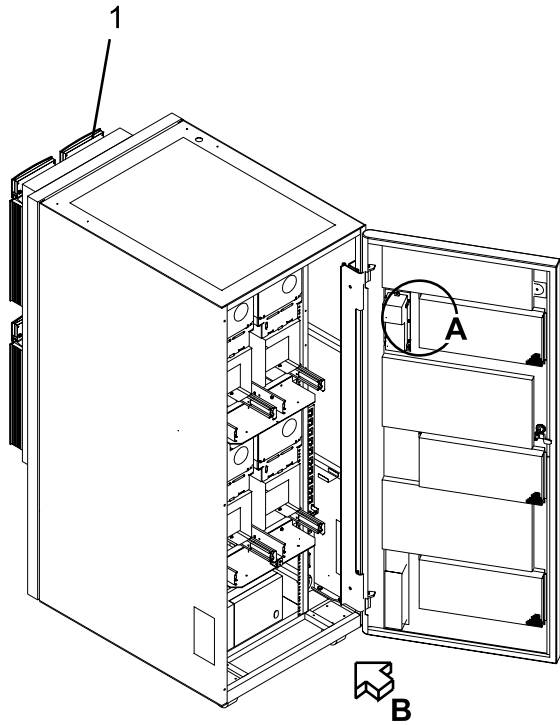
## Assembly 1: (continued)

Asm- Index	Part Number	Units	Description
1-	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

### Assemblies List

A14 Final Assembly	424
A60 Controller Parts List	430
C10 Final Assembly	426
Cable List	432
Cover Assembly (Sample)	422
Second A60 Controller in the C10 Frame	428
World Trade Modems	436

# Assembly 2: A14 Final Assembly

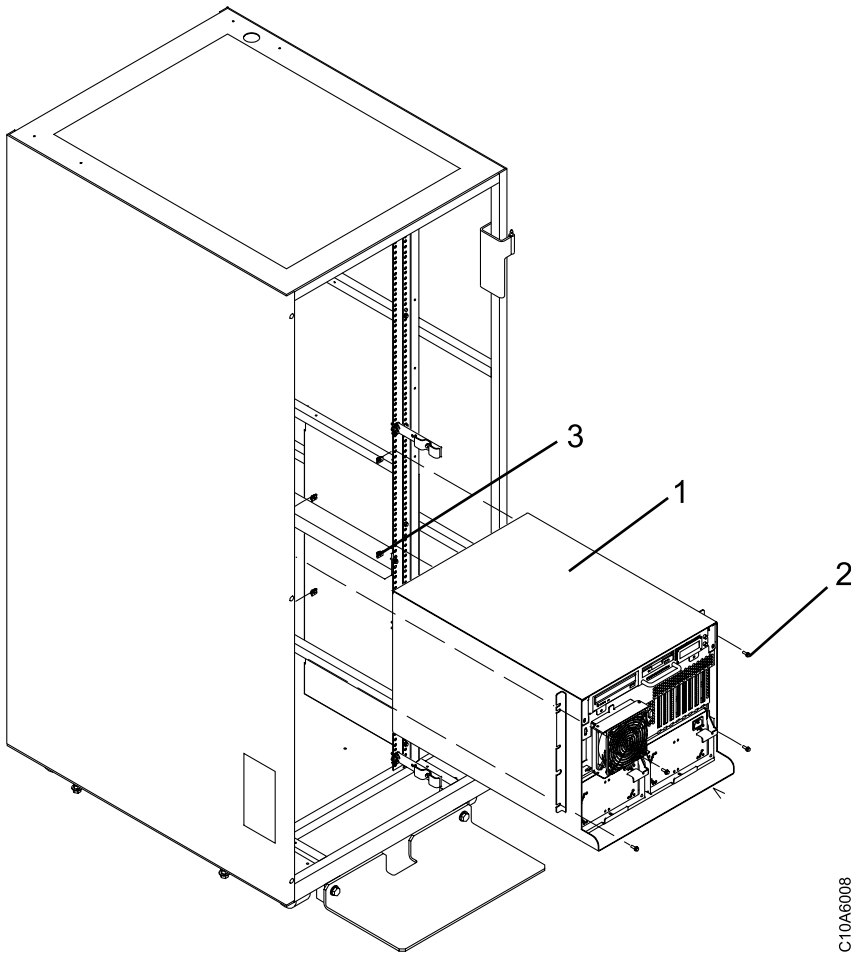


A14A6004

Assembly 2: (continued)

Asm- Index	Part Number	Units	Description
2-		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 Flng 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 Flng Hd M5 X 8 mm Long
-9	1624779	1	Screw, M5 X 14 Metric-Hex Flng Hd M5 X 14 mm Long
-10	1622347	1	Lock washer, Metric-Ext Tooth 5.3 ID X 10 OD
-11	05H8990	1	Bracket, RISC Retaining
-12	1624779	2	Screw, M5 X 14 Metric-Hex Flng Hd M5 X 14 mm Long
-13		1	RISC 6000 Model H70
-14	05H7821	1	Bracket Connector
-15	1624779	2	Screw, M5 X 14 Metric-Hex Flng Hd M5 X 14 mm Long
-16	74F1823	1	Nut Clip, M5

## Assembly 3: C10 Final Assembly



C10A6008

**Assembly 3: (continued)**

<b>Asm- Index</b>	<b>Part Number</b>	<b>Units</b>	<b>Description</b>
3-		NP	C10 Final from the Factory with one A60 Controller
-2	0375714	1	Right Bracket
-3	0375816	1	Left Bracket
-4	05H3160	1	Operator Panel
-4	05H4509	1	Operator Panel Cover
-4B	09L5069	1	Label
-4C	11J6152	2	IBM LOGO
-4D	1622346	1	Lock Washer
-4E	1622533	3	Screw
-4F	1624767	6	Screw
-4G	1624776	2	Screw
-4H	1624779	2	Screw
-5	21F9008	1	Box Assembly
-6	31F7453	1	Label
-6	31F7477	1	Label Assembly
-6	44F0924	1	Machine S/N Label
-7	50G1043	1	Warning Label
-8			RISC 6000 Model H70
-9	1624779	1	
-10	1622347	1	
-16	74F1823	1	

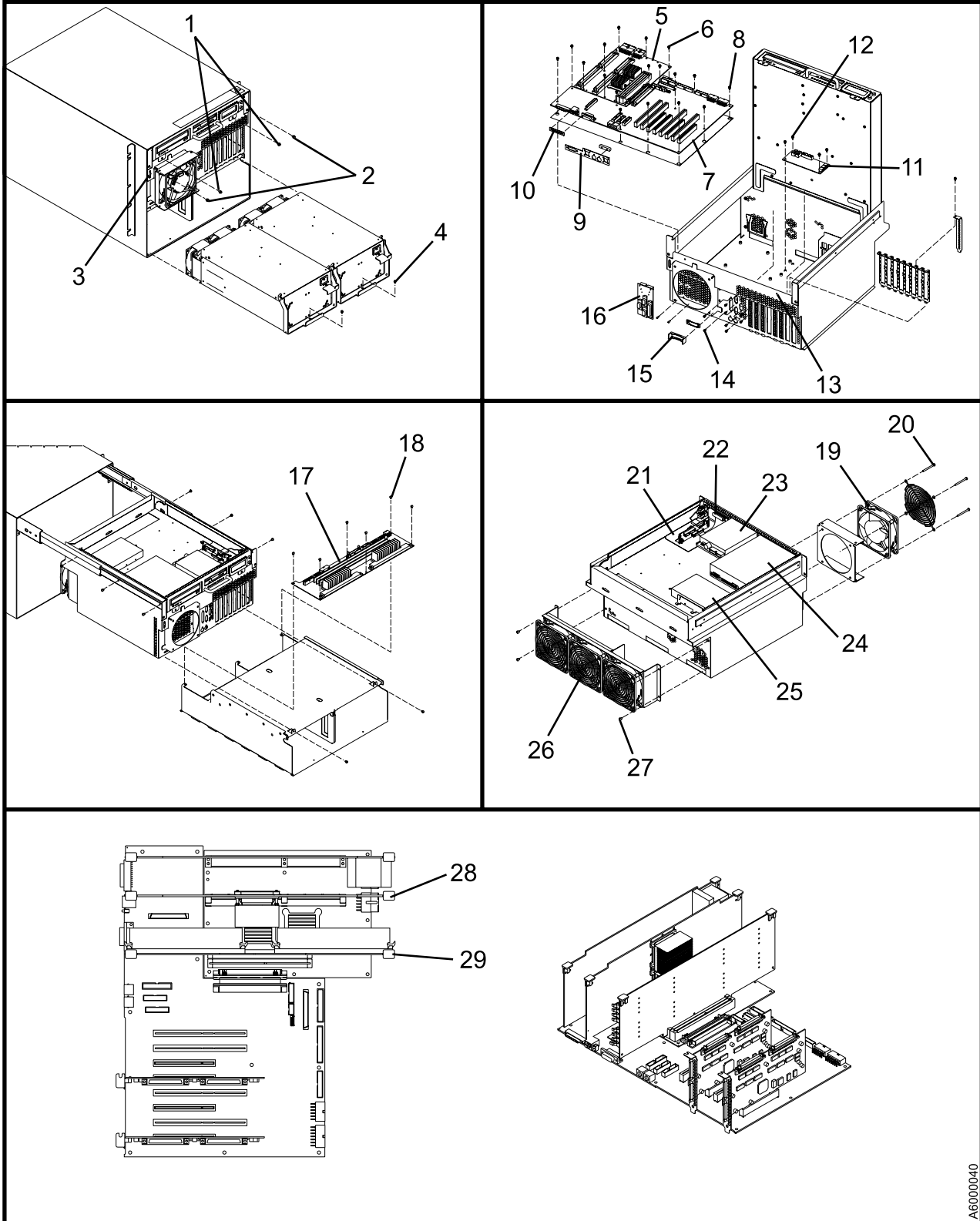
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## Assembly 4: Second A60 Controller in the C10 Frame

**Assembly 4: (continued)**

<b>Asm- Index</b>	<b>Part Number</b>	<b>Units</b>	<b>Description</b>
4-	05H2941	1	RS232 Cable Assembly
-	09L5111	1	Power Control Cable
-	2512669	1	RISC 6000 Model H70
-	1159519	6	Tie
-	1624779	16	Screw
-1	35L0333	1	Upper Support Bracket
-2	35L0334	2	Front and Rear Bracket

# Assembly 5: A60 Controller Parts List



A6000040



Assembly 5: (continued)

Asm- Index	Part Number	Units	Description
5-		NP	A60 Controller Assembly
-2	34L2883	1	I/O Planar Board
-3	93H5834	1	Serial Adapter Card
-4	34L2833	1	Microprocessor Card
-5	34L2835	1	Memory Card
-6	07L7729	X	32 MB Memory Module
-7	93H4702	X	128 MB Memory Module
-8	97H7610	1	Optical Disk Drive
-9	XXXXXXX	2	AC Power Supply
-10	34L2834	1	System Planar
-11	93H6010	1	Card Assembly
-12	09L4614	1	Op Panel
-13	XXXXXXX	1	Power Distribution Card
-14	93F2361	1	3.5" Diskette Drive
-15	09L4752	1	Rear Fan Assembly
-16	34L2870	1	Front Fan Assembly
-17	93H8868	1	Power Supply Fan
-18	06H7082	1	CE Panel Card
-19	03H9675	1	Fan Control Card
-20	59H6926	1	Hard Disk Drive
-21	05J8924	2	SCSI Adapter
-22	34L2836	2	ARTIC2/PENQUIN2
-23	09L4484	1	Disk Drive Cable
-24	09L4486	1	Disk Drive Cable
-25	09L8868	1	Power Supply Fan Cable
-26	09L4491	1	Internal SCSI Cable
-27	09L4492	1	Fan Control Cable
-28	09L4493	1	+5 Volt Cable
-29	09L4494	1	+3 Volt Cable
-30	094494	1	Power Signal Cable
-31	09L4496	1	+3 Volt Cable
-32	09L4497	1	+5 Volt Cable
-34	XXXXXXX	1	Parallel Port Cable
-35	09L4707	1	Operator Switch Cable
-36	93H8686	1	Control Card
-37	97H7610	1	Optical Disk Drive
-38	09L4502	1	Cable Assembly, IC Fan Control
-39	09L5383	1	Cable Assembly, Media Power
-40	09L5383	1	Cable Assembly, Fan
-41	34L3672	1	Cable Assembly, Signal
-42	34L2671	1	Cable Assembly, SCSI 4 Meter

---

## Assembly 6: Cable List

**Assembly 6: (continued)**

<b>Asm- Index</b>	<b>Part Number</b>	<b>Units</b>	<b>Description</b>
6-		NP	Cable List
-	05H8911	2	3590 Line cord, AC power
-	05H2941	AR	Cable Assembly, RS232 to Server
-	05H8891	AR	Cable Assembly, PCC to Operator Panel Card
-	05H2943	AR	Cable Assembly, RS232 to Server
-	05H3221	AR	Cable Assembly, SCSI 2.9 Meter
-	05H3299	AR	Cable Assembly, RS323 Interface
-	05H4645	AR	Cable Assembly, SCSI 3.4 Meter
-	05H4646	AR	Cable Assembly, SCSI 4.0 Meter
-	05HJ9576	AR	A60 Controller Power Cord
-	05H8981	AR	Cable Assembly, Dual Libaray Interface
-	05J9891	AR	Cable Assembly, SCSI 10 Meter
-	05J9892	AR	Cable Assembly, SCSI 20 Meter
-	09L0879	AR	Cable Assembly, SCSI 4.5 Meter
-	09L9881	AR	Cable Assembly, SCSI 10 Meter
-	09L5107	AR	Cable Assembly, SCSI 3.5 Meter
-	09L5110	AR	Cable Assembly, SCSI 18 Meter

**Assembly 6: (continued)**

<b>Asm- Index</b>	<b>Part Number</b>	<b>Units</b>	<b>Description</b>
6-		NP	Miscellaneous List
-	05H7876	AR	Connector, Null Modem
-	05H7939	AR	Connector, Gender Changer
-	35L0165	AR	Code Disketts, Axx and AIX
-	09L5177	AR	Cable support Bracket



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## Assembly 7: World Trade Modems

Assembly 7: (continued)

Asm-Index	Part Number	Units	Description
7-		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
-1	05H7057	1	Brazil, Microcom Deskporte FAST+ Modem
-1	05H7057	1	Chile, Microcom Deskporte FAST+ Modem
-1	05H7057	1	Greece, 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

**Assembly 7: (continued)**



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## Symbols

The following symbols are used in this manual:

### Symbol

### Description



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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### Federal Communications Commission (FCC) Statement

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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The United Kingdom Telecommunications Act 1984

This apparatus is approved under approval No. NS/G/1234/J/100003 for the indirect connections to the public telecommunications systems in the United Kingdom.

### Industry Canada Compliance Statement

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled: *Digital Apparatus*, ICES-003 of Industry Canada.

### Avis de conformité aux normes d'Industrie Canada

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouiller : *Appareils numériques*, NMB-003 édictée par Industrie Canada.

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1204

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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.

**overflow.** 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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Part Number: 35L0137



Printed in the United States of America  
on recycled paper containing 10%  
recovered post-consumer fiber.

EC Number F23320A

SA37-0421-01



35L0137

