7030 Models 300 Series

Operator Guide

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Operator Guide

Second Edition (June 1995)

This edition notice applies to the *7030 Models 300 Series Operator Guide.*

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Communications Statements

The following statement applies to this product. The statement for other products intended for use with this product will appear in their accompanying manuals.

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.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Neither the provider nor the manufacturer are responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

United Kingdom Telecommunications Safety Requirements

This equipment is manufactured to the International Safety Standard EN60950 and as such is approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.

The network adapter interfaces housed within this equipment are approved separately, each one having its own independent approval number. These interface adapters, supplied by the manufacturer, do not use or contain excessive voltages. An excessive voltage is one which exceeds 70.7 V peak ac or 120 V dc. They interface with this equipment using Safe Extra Low Voltages only. In order to maintain the separate (independent) approval of the manufacturer's adapters, it is essential that other optional cards, not supplied by the manufacturer, do not use main voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by the manufacturer.

EC Council Directive

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Neither the provider nor the manufacturer can accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of option cards not supplied by the manufacturer.

International Electrotechnical Commission (IEC) Statement

This product has been designed and built to comply with IEC Standard 950.

Avis de conformité aux normes du ministère des Communications du Canada

Cet équipement ne dépasse pas les limites de Classe A d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Réglement sur le brouillage radioélectrique établi par le ministère des Communications du Canada. L'exploitation faite en milieu résidentiel peut entraîner le brouillage des réceptions radio et télé, ce qui obligerait le propriétaire ou l'opérateur à prendre les dispositions nécessaires pour en éliminer les causes.

Canadian Department of Communications Compliance Statement

This equipment does not exceed Class A limits for radio noise emissions for digital apparatus, set out in Radio Interference Regulation of the Canadian Department of Communications. Operation in a residential area may cause unacceptable interference to radio and TV reception requiring the owner or operator to take whatever steps necessary to correct the interference.

電波障害自主規制　届出装置の記述

```
　この装置は，第一種情報装置（商工業地域において使用されるべき情報装置）
で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協
議会（VCCI）基準に適合しております。
　従って，住宅地域またはその隣接した地域で使用すると，ラジオ，テレビジョ
ン受信機等に受信障害を与えることがあります。
　取扱説明書に従って正しい取り扱いをしてください。
```

VCCI Statement

The following is a summary of the VCCI Japanese statement in the box above.

This equipment is in the Class 1 category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council For Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in commercial and/or industrial areas.

Consequently, when used in a residential area or in an adjacent area thereto, radio interference may be caused to radios and TV receivers, etc.

Read the instructions for correct handling. VCCI-1.

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov 92 das EG-Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse A. Für diese Klasse von Geräten gilt folgende Bestimmung nach dem EMVG:

Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind.

(Auszug aus dem EMVG vom 9.Nov.92, Para.3, Abs.4)

Hinweis:

Dieses Genehmigungsverfahren ist von der Deutschen Bundespost noch nicht veröffentlicht worden.

Safety Notices

Note: For a translation of these notices, see *System Unit Safety Information.*

Definitions of Safety Notices

A *danger* notice indicates the presence of a hazard that has the potential of causing death or serious personal injury.

Danger notices appear on the following pages:

1-5
8-1

A *caution* notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury.

Caution notices appear on the following pages:

1-5
8-1

Observe the following safety instructions any time you are connecting or disconnecting devices attached to the system unit.

Safety Notices for Installing, Relocating, or Servicing

For safety checks when relocating, refer to Chapter 8 "Moving the System Unit."

Lithium Battery

CAUTION:
A lithium battery can cause fire, explosion, or a severe burn. Do not recharge, disassemble, heat above 100°C (212°F), solder directly to cell, incinerate, or expose cell contents to water. Keep away from children. Replace only with the part number specified for your system. Use of another battery may present a risk of fire or explosion.

The battery connector is polarized; do not attempt to reverse the polarity.

Dispose of the battery according to local regulations.

Power Cables

Note: If you should need a different power cable, use this figure and the following table to assist you when ordering.
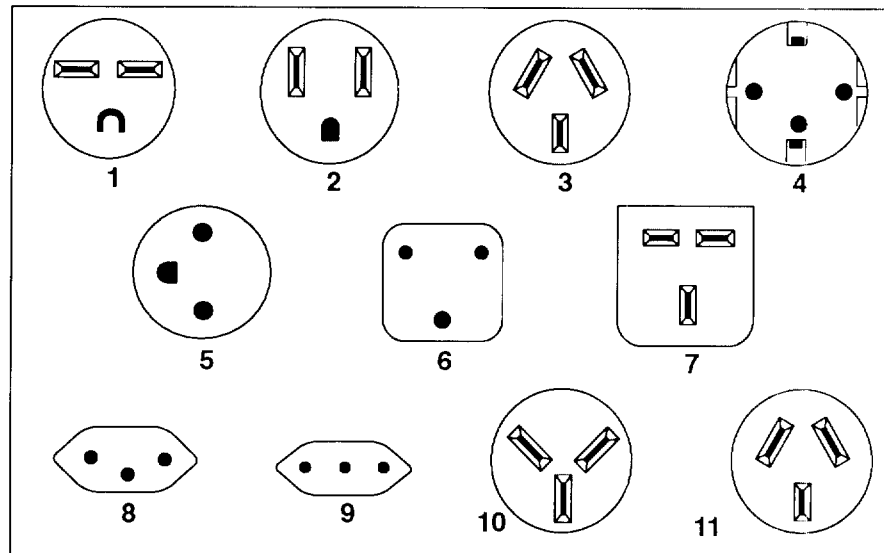
Index	Part Number	Country
1	1838574	Bahamas, Barbados, Bolivia, Brazil, Canada, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Netherlands Antilles, Panama, Peru, Philippines, Taiwan, Thailand, Trinidad, Tobago, U.S.A. (except Chicago), Venezuela
2	6952300	Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Puerto Rico, Saudi Arabia, Suriname, Trinidad, Taiwan, U.S.A. (except Chicago), Venezuela
2	62X1045	Chicago, U.S.A.
3	6952311	Argentina, Australia, New Zealand
4	13F9979	Abu Dhabi, Austria, Belgium, Bulgaria, Botswana, Egypt, Finland, France, Germany, Greece, Iceland, Indonesia, Korea (South), Lebanon, Luxembourg, Macau, Netherlands, Norway, Portugal, Saudi Arabia, Spain, Sudan, Sweden, Turkey, Yugoslavia
5	13F9997	Denmark
6	14F0015	Bangladesh, Burma, Pakistan, South Africa, Sri Lanka
7	14F0033	Bahrain, Bermuda, Brunei, Channel Islands, Cyprus, Ghana, Hong Kong, India, Iraq, Ireland, Jordan, Kenya, Kuwait, Malawi, Malaysia, Nigeria, Oman, People's Republic of China, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Arab Emirates (Dubai), United Kingdom, Zambia
8	14F0051	Liechtenstein, Switzerland
9	14F0069	Chile, Ethiopia, Italy
10	14F0087	Israel
11	6952291	Paraguay, Colombia, Uruguay

About This Book

This book uses three-digit model numbers. You may have other documentation that uses 4-digit model numbers. For example, the model 32H in this book may be referred to as a model 320H in other documentation. They are the same system units.

This book provides information about the operator controls and the devices installed in the 7030 system unit.

Chapter 6 contains the hardware problem determination guide.

Related Information

The *AIX Version 4.1 Problem Solving Guide and Reference, Order* Number SC23-2606, is the first book you should use when you have a problem with the system unit. It contains the procedure for determining if the problem is hardware or software related.

If the problem is software related, use the *AIX Version 4.1 Problem Solving Guide and Reference*.

The *Site and Hardware Planning Information*, Order Number SA38-0508, contains hardware information for system units.

The *Adapters, Devices, and Cable Information* publication, Order Number SA23-2764, contains information about various hardware offerings.

System Unit Safety Information, Order Number SA23-2652, contains translated versions of the danger and caution notices.

The *Diskless Workstation Management Guide*, Order Number SC23-2433, contains information about diskless workstations.

Chapter 1. System Unit Description

This chapter contains information to help you become familiar with the 7030 system unit.

Typical Workstation Arrangement

Your system unit may have a display, keyboard, and mouse attached to it, plus a wide range of other available options such as a tape drive, printers, data communications, terminals, and plotters.

An illustration of a typical system unit office arrangement follows:

Tape Drive

Display

System Unit

Keyboard

3-Button Mouse
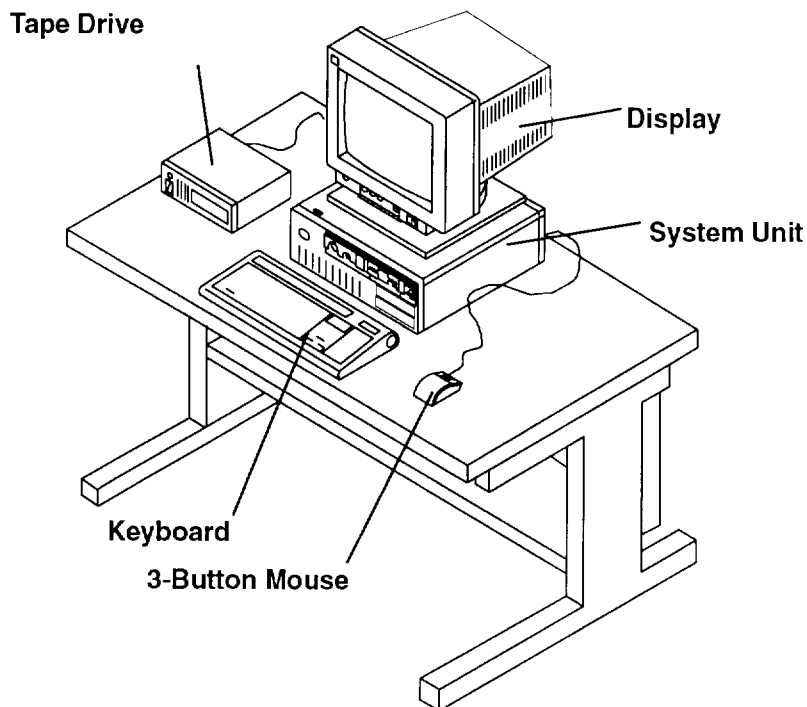
System Unit

The system unit processes data (input) from the keyboard, mouse, tablet, disk drives, diskettes, tape drives, and communications connections. It contains a 32-bit processor, input/output (I/O) adapters, memory, and media storage devices. The hardware is controlled by the operating system program.

Each model of the system unit has a standard memory size, but each can be configured with additional memory cards. See *Adapters, Devices, and Cable Information,* Order Number SA23–2764, for details.

The system unit provides slots for the installation of Micro Channel adapters. Internal hardware controls the 3.5-inch diskette drive, speaker, two serial ports, one parallel port, mouse, keyboard, tablet, and disk drives.

System Unit Features

Logo
Is located on the front and rear covers. These logos can be rotated in place when the base position is changed.

Key Mode Switch
Is a key-controlled mode switch with three positions labeled:

- Normal (**OK**)
- Secure (**🔒**)
- Service (**🔑**)

Warning: Pressing the Reset button with the key mode switch in the Normal or Service position and the operating system running can result in damaged or lost data.

3-Digit Display
Displays up to three 7-segment characters. The display has a hinged lens through which the characters can be seen. The hinged lens allows access to the character holder, which can be turned 90 degrees for correct viewing when the system unit is in the horizontal or vertical position.

Diskette Drive
Contains a standard 1.44M-byte 3.5-inch diskette drive that has an in-use light and a diskette-eject button.

Power Switch
Has the international symbols (I) for On and (O) for Off. The Power switch also has a power-on light.

Base
Is removable and can be attached to the left side or the bottom for vertical or horizontal positioning of the system unit. See Chapter 7 for instructions.

Serial Number
Is located on the front cover for easy access. It also is located on the rear bar code label.

Top Cover
Can be removed by a service technician.

Front Cover
Can be removed by a service technician.

Rear Fan
Provides cooling for the electronics located inside the system unit.

Power Supply Fan
Provides cooling for the power supply. It is located inside the power supply.

Reset Button
Is located next to the 3-digit display and is labeled Reset.

Media Bays
The two media bays are optional.

System Illustration

Power LED   Diskette LED

Key Mode   Reset   3-Digit   Power   Diskette
Switch   Button   Display   Button   Drive

Logo   Diskette Eject
                                                   Button

Front Cover

                                                   Optional
                                                   Media Bays

Base

Serial Number

Power   Ethernet

Adapter Positions

1 2 3 4

S 1   S2   P

Serial 1

Serial 2   Parallel Port   Tablet   Mouse

SCSI-2 Port   Keyboard
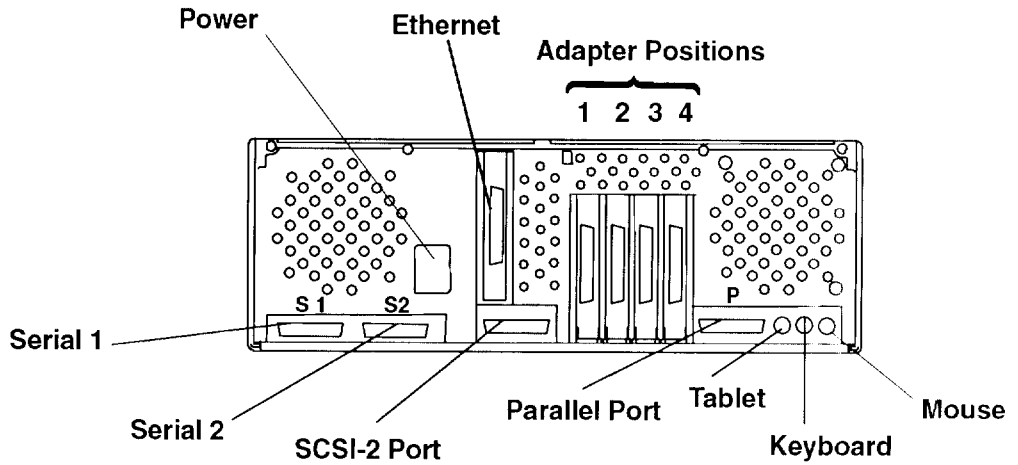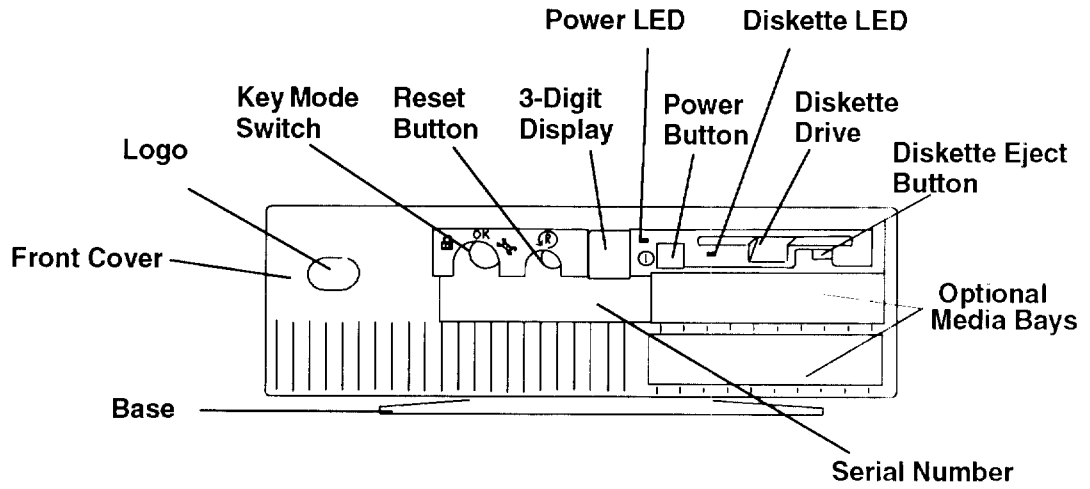
Base Positioning

In the typical workstation arrangement shown on page 1-1, the system unit is in the horizontal position. You can use the system unit in either the horizontal or vertical position as shown in this illustration. The unit has a removable base for stabilizing when the unit is in the vertical position. The base is attached to the bottom of the system unit when the system unit is in the horizontal position. See Chapter 7 for instructions on changing the base position.

Vertical Position

Horizontal Position
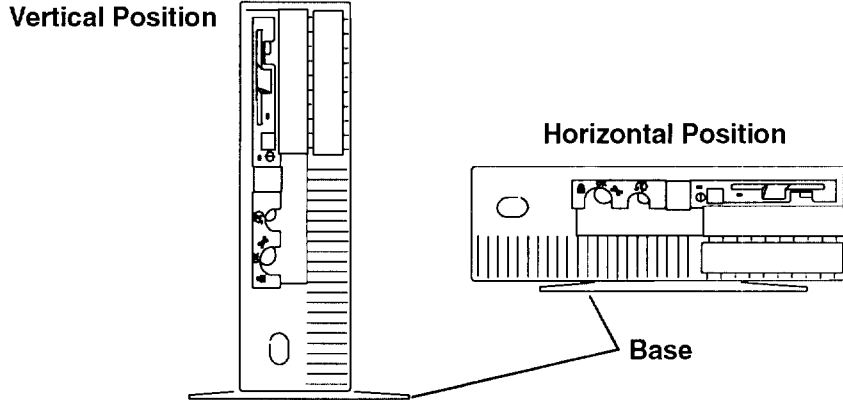
Base

Warning: Do not operate the system unit when it is on the side that does not have base screw mounting holes. This may result in damaged or lost data.

Disk Drives

The system unit has disk drive positions inside the system unit. There are no operator controls on these internal disk drives.

The disk is a permanent part of the drive and is sometimes called a *fixed-disk*.

Sometimes data is lost because of user action, accident, or equipment trouble, so you should back up disk data at regular intervals. See your operating system documentation for information about using diskettes or tape drives to back up files.

Disk Drive Positons
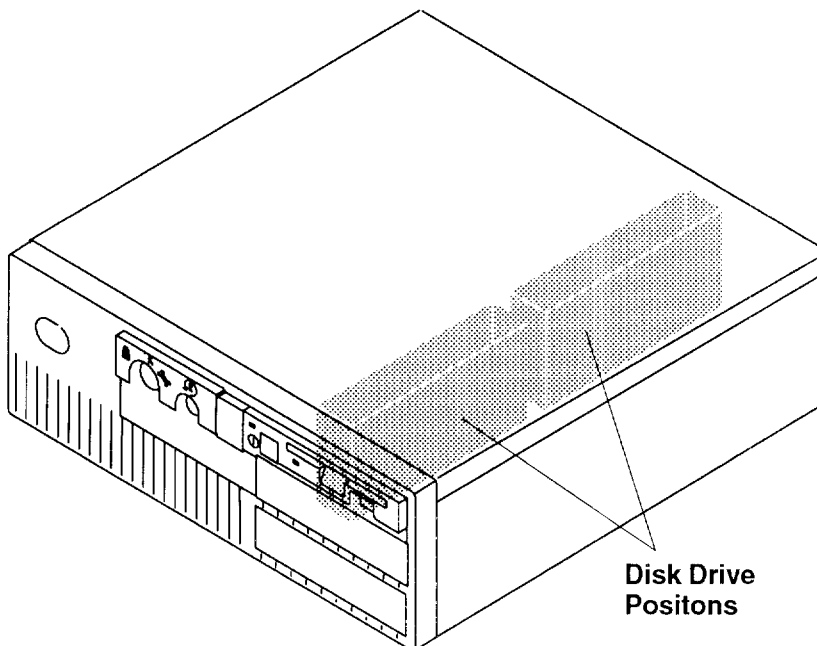
External Device Connectors

When the rear cover is removed, the system unit connectors and ports are accessible. These connectors and ports, shown in the following illustrations, are used to attach external devices.

Note: For a translation of these notices, see System Unit Safety Information.

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 cables 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 cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables 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 communications lines.**

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

DANGER

> **To prevent shock hazard, disconnect the power cable from the electrical outlet before relocating the system.**

Location Codes

Because the same diagnostic programs are used on all of the system units, a location code is used to physically locate a failing device or unit. The location code is displayed along with the service request number (SRN) when the diagnostic programs isolate a failure. If the location code is not known, you can run the Display Previous Diagnostic Results service aid to display the results of the last time the diagnostic programs were run.

The rack-type system unit has several labels on the drawers and devices. These help the operator and service person identify various drawers and devices. The drawer ID should match the slot location of the adapter that drives it. The SCSI devices may be labeled with a number that identifies the SCSI address the device is set to. See Appendix A to determine the physical location of a device.

Location Code Format for 7135, and 9334

The location code formats for the 7135 and 9334 are described in the publications for the 7135 and 9334.

Location Code Format for Non-SCSI Devices

The following example is for non-SCSI devices. These include planars, memory cards, adapters, and async distribution boxes.

Use the example to determine the physical location of a device.

Note: The G and H fields each can contain one, two, or three characters.

AB - CD - EF - GH

Async port number or FRU location on a card or planar.

Connector number on an adapter or planar.

Slot number of the adapter, memory card, or adapter for the identified device.

Always 0 on workstations. Drawer ID or slot number of the adapter that drives the drawer in a rack-type system unit.

Always 0.
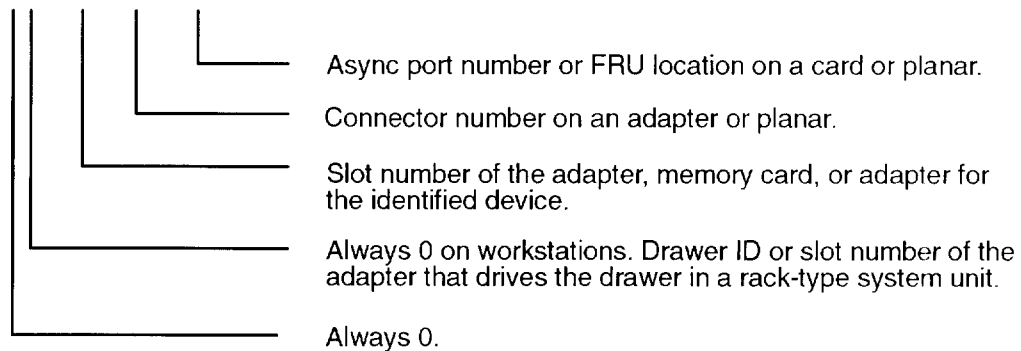
Location Code Format for SCSI Devices

Use Appendix A to determine the physical location of a SCSI device.

AB - CD - EF - GH

H is the logical unit number of the device.
HH is the logical unit number of the device shown in hexadecimal.
,HHH is the logical unit number of the device shown in decimal.

SCSI address of the device.

00 - Internal SCSI bus connector.
01 - External SCSI bus connector of a non-integrated
    SCSI controller.
0S - External bus connector of an integrated SCSI
    controller,

Slot number of the SCSI controller.

Always 0.

Always 00.

To aid the operator and service person, the rack-type system unit has several identification labels on drawers and devices. The drawer ID should match the slot location of the adapter that drives it. SCSI devices may be labeled with a number that identifies the SCSI address to which the device is set.

Location Code Table

Use the following table to determine the physical location of a device or unit.

Note: The location code format for 9333 devices is described in the 9333 documentation.

Use the following example to identify the two-character pairs.

```
AB-CD-EF-GH
```

Pair	Value	Description
AB	00	Workstation-type system unit
CD	00	A device attached to the planar
	01 02 03 04 05	Adapter in slot 1 of the system board Adapter in slot 2 of the system board Adapter in slot 3 of the system board Adapter in slot 4 of the system board Adapter in slot 5 of the system board
	0J	Graphics adapter slot
	0A 0B 0C	CPU Card in slot A on the system board Memory Card in slot B on the system board Memory Card in slot C on the system board
EF	00	Does not have a connector or software was not able to identify the connector number
	01 02 03 04	The number of the connector on an adapter card, distribution box, or planar.
	0D 0E 0K 0M 0P 0S 0T	Internal diskette connector on the system board Built-in Ethernet adapter Keyboard connector on the system board Mouse connector on the system board Parallel printer connector on the system board Built-in SCSI adapter Tablet connector on the system board
	S1 S2	Serial port 1 connector on the system board Serial port 2 connector on the system board
(Continued on Next Page)		

Pair	Value	Description
GH or GHH or G,HHH	0 0	For devices other than those listed here
	0 0 thru 15	Port addresses for 8-port async, 16-port async, and 16-port concentrator distribution boxes.
	0 1	Diskette drive 1
		Memory SIMM (J12) on the system board Memory SIMM (J13) on the system board Memory SIMM (J17) on the system board Memory SIMM (J18) on the system board
	0 0 thru FF	SCSI address and logical unit number of the device.
	0 0 0 thru FFF	SCSI address and logical unit number of the device shown in hexadecimal.
	0,000 thru F,255	SCSI address and logical unit number of the device shown in decimal. **Note:** When a comma appears between the G and H, digits appearing to the right of the comma are represented in decimal.
	Note: See the Appendix A to determine physical location.	

Chapter 2. Using the System Unit

This chapter explains how to use the operator panel and other devices for control, input, display, and data storage in the 7030 system unit.

Setting the Key Mode Switch

The key-controlled mode switch has three positions:

- Normal (**OK**)
- Secure (**🔒**)
- Service (**🔧**)

The switch is used to establish the initial program load (IPL) path. The IPL loads the system programs, checks the system hardware, and prepares the system for user operation.

Before starting the system unit for normal day-to-day operation, set the key mode switch to the Normal position. This permits the operating system to load after the power-on self-tests (POSTs) are completed.
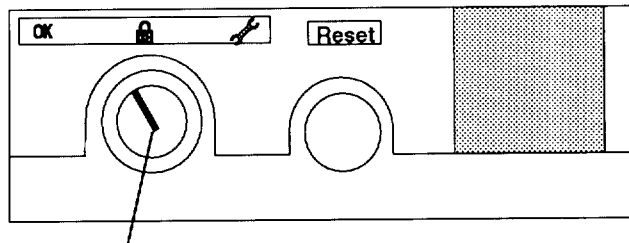
Key Mode Switch Shown in the Normal Position

The following table summarizes the operations possible for each key mode switch position.

	Key Mode Switch Position		
Operation	Normal	Secure	Service
Reset	Yes	No	Yes
Keyboard Active	Yes	Yes	Yes
Keyboard Debug/Dump/Loading Operating System	No	No	Yes
Normal IPL	Yes	No	No
Service IPL	No	No	Yes
Covers Locked	Yes	Yes	No

- The Normal position is used for attended operation, which is the usual or normal placement of the key mode switch when an operator is present and in control of the operation at the system unit. The Reset button is active. The IPL proceeds according to the list of devices established during the configuration of the operating system.

  Note: If an operating system has never been installed, use the Service position for initial installation.

  Warning: Pressing the Reset button (when the mode switch is in the Normal or Service position) can cause data to be damaged or lost if the operating system is still running. For a description of the Reset button operation, see the *AIX Version 4.1 Problem Solving Guide and Reference* before pressing it while the key mode switch is in the Normal position.

- The Secure position is used for unattended operation in an open environment. For example, the system unit can be used for process control in a manufacturing area where an operator, responsible for the system operation, is not located in the immediate area.

  In the Secure position, the Reset button is not active. The Secure position prevents any IPL. With the key mode switch in this position, someone cannot accidentally press the Reset button and cause a loss of data.

  Notes:

  1. If you start the system unit while the key mode switch is in the Secure position the IPL of the system unit stops and the three-digit display displays 200. The system does not perform any further operations until the key mode switch is set to the Normal or Service position.

  2. When the key mode switch is moved to the Secure position after IPL, all system functions continue to operate to allow data entry and retrieval.

- The Service position is used for attended operation when hardware or software service is conducted. The Service position activates operating system keyboard sequences that support error determination (debug) and storage printout (dump). In the Service position, the system unit attempts to perform an IPL from the diskette drive. If a diskette is not present in the diskette drive or if there is no IPL record on the diskette, the system attempts to perform an IPL from the predetermined list of IPL devices.

  Note: If the three-digit display displays 200, pressing the Reset button within 20 seconds will cause the Main Menu to display.

Warning: The Reset button is active when the key mode switch is in the Normal or Service position, and pressing the Reset button can cause data to be damaged or lost if the operating system is still running.

If there is a problem with the system unit, refer to the *AIX Version 4.1 Problem Solving Guide and Reference* before setting the key mode switch in the Service position or pressing the Reset button.

Starting the System Unit

The front of your system unit will look like one of the following illustrations.

See this illustration for starting the system unit.
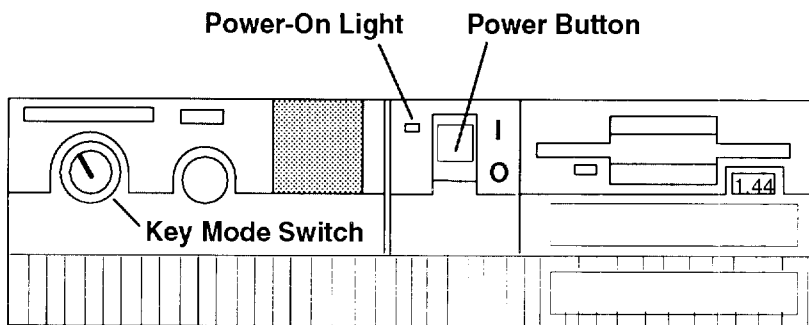
1. Set the key mode switch to the Normal position.

2. Set the power switches of the attached devices to On.

3. Start the system unit by setting the power switch to On (I).

4. If power does not come on when you set the power switch to On, ensure that the power cord, located at the back of the system unit, is plugged into a grounded electrical wall outlet. If this does not solve the problem, refer to the *AIX Version 4.1 Problem Solving Guide and Reference.*

When you set the power switch to On, the power-on light comes on and the system starts a power-on self-test (POST).

During POST, numbers are displayed in the three-digit display.

Stopping the System Unit

Warning: When using the shutdown procedure for your system, enter the correct command before you stop the system unit. Failure to do so may result in the loss of data. If you need information on the shutdown procedure for your operating system, see the shutdown procedure in your operating system information.

1. Before stopping the system unit, you must first perform a shutdown procedure of the operating system to prevent the loss of data.

2. After you shut down the operating system, set the power switches of the attached devices to Off.

3. Stop the system unit by setting the power switch to Off (O).

4. Set the key mode switch to the Secure position and remove the key.

Operating with Multiple Attached Systems

When you are operating a system that is attached to one or more other systems, consider how actions you take with your system can affect the attached systems, and how other systems can affect yours. Consult with the operator of an attached system whenever you think your operations might affect each other.

The following actions can affect or be affected by the operation of an attached system

- Starting and stopping communication with the other system
- Running diagnostics on the system
- Using wrap plugs with diagnostic programs
- Analyzing error log information.

Isolate a system unit from any attached systems before stopping the operating system or running diagnostic programs. Some system cabling changes (such as installing wrap plugs or removing a device from the configuration) may require action by the operator of the attached system before you make the cabling changes on your system.

Ordering Keys

For protection against unauthorized key duplication, the key mode switch is equipped with a Medeco® high security lock. Keys for this lock are a factory restricted series, and duplicate keys are not available through normal commercial channels. The metal code tag supplied with your original keys authorizes you to purchase additional keys directly from the Medeco factory. The additional key supplied and the metal tag should be stored in a secured area.

To obtain information or replacement keys, use the following list to contact the Medeco distributor most convenient to you. Complete a copy of the order form on the next page and mail it to the distributor. As a security precaution, Medeco will not honor orders that do not include both the code tag and the official order form.

Should the key mode switch become inoperative, contact your sales representative for replacement.

Code Tag
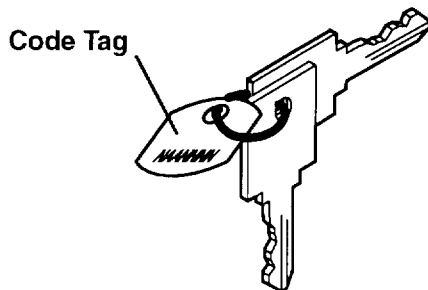
USA

Medeco
Department KLC
P.O. Box 3075
Salem, VA 24153
United States of America

Europe

Claus Clausen
89a Authur Road
Wimbledon Park, London
SW 19 7DP England
Tel: 011–44–81–946–2823
Fax: 011–44–81–946–2286

Far East

Sung Kim
Geoho Corporation
P. O. Box 519
Kwang Chan Bldg. 4th Floor
983–42 Bangbia-Dong
Seocho-Ku, Seoul
Korea
Tel: 011–82–02–521–2100
Fax: 011–82–02–521–2106

Australia

Neville Burr
ATM Lock A Safe Co. Pty. Ltd.
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Tweed Head, N.S.W. 2485
Australia
Tel: 011–61–075–36–1611
Fax: 011–61–075–36–1611

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Ricardo DeCastro
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Bogota, Colombia Sur America
Tel: 011–57–1–268–5827 or 6180
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Middle East

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Key Reorder Form

A copy of this form, when accompanied by the metal code tag supplied with the original keys, represents an authorized order for additional factory keys.

Please indicate the quantity required and enclose a check or money order for the appropriate amount.

Number of keys required_____

Please Type or Print Your Return Address

Name_____

Address_____

City_____

State_____Zip_____

Country_____

Select an address from the list provided on the previous page, and mail a copy of this form to that location.

Your key code tag will be returned with your new keys.

Note: No orders will be processed without both the key tag and a copy of this form.

Reading the Three-Digit Display

Warning: If you have a continuous flashing 888 in the three-digit display,this illustration,do not push the Reset button until you read "Reading Flashing 888 Numbers" on page 3-16 or obtain a Problem Reporting Form from the *AIX Version 4.1 Problem Solving Guide and Reference.*

The three-digit display on the operator panel is used to:

* Track the progress of the system unit self-tests and configuration program.

* Display codes when the operating system comes to an abnormal end.

* Display system messages.

* Display diagnostic program messages when the display console is not working correctly.

During POST, the numbers that are displayed indicate the progress of the testing. If an error is detected that requires attention, the system unit halts and a number is displayed in the three-digit display to identify the error.

For instance, if the number for the error were 888, the three-digit display would appear as shown in the following figure.

When the self-tests complete without error, the three-digit display screen is blank.

Three-Digit Display
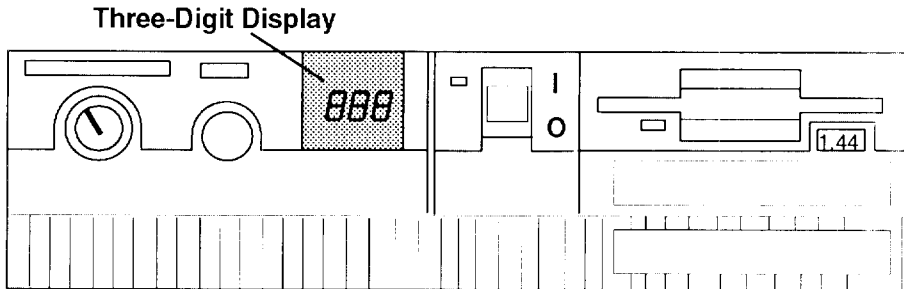
Using the Reset Button

Warning: When the key mode switch is in the Normal or Service position, pressing the Reset button causes the unit to reset and perform an IPL. Pressing the Reset button while the operating system is running can result in damaged or lost data.

The Reset button has four purposes:

- To cause an IPL of the system when the key mode switch is in the Normal or Service position.

- To read out codes or diagnostic messages after a continuous flashing 888 is displayed in the three-digit display.

- To access the Main Menu.

- To cause the Main Menu to display when the button is pressed within 20 seconds after IPL begins.

Note: Before pressing the Reset button in this situation, refer to "System Problem Determination" in the *AIX Version 4.1 Problem Solving Guide and Reference*.

When the key mode switch is in the Secure position, the Reset button is disabled and you cannot perform an IPL by pushing the Reset button.

Reset Button
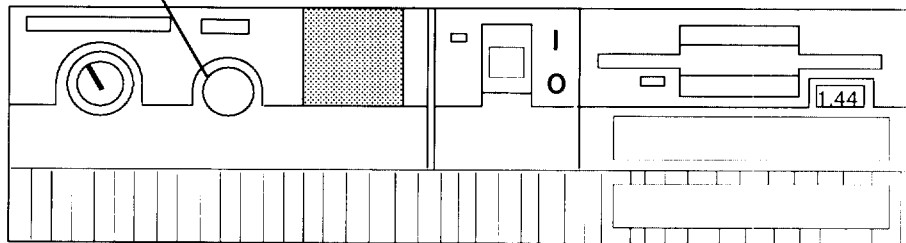
Using the Keyboards

There are several keyboards available with the system unit. The keyboards have various keys that enter data and control the cursor location. The keyboards can be engraved for the languages of different countries.

The functions of each keyboard depend on the software used. The character sets for the keyboards are contained and explained in the information for your operating system

Function Keys

Typewriter Keys **Control Keys** **Numeric Keypad**
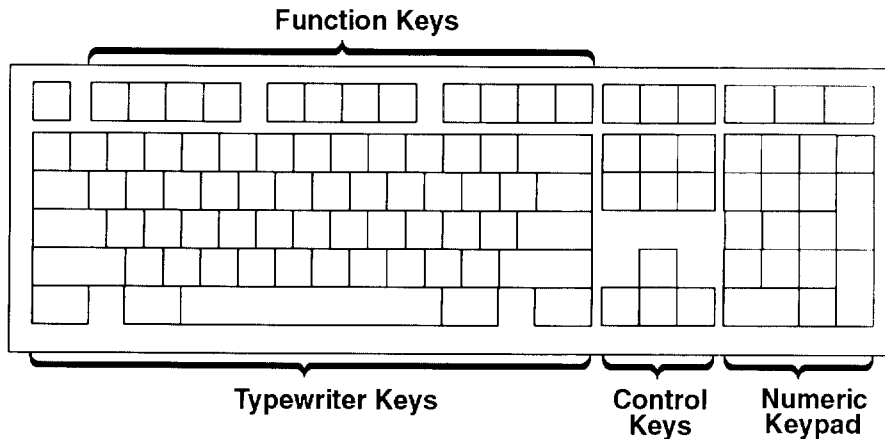
The keyboard is divided into four sections:

- The function keys are multipurpose keys and their function is controlled by the operating system.

- The typewriter keys are similar to a standard typewriter. Their function is controlled by the software.

- The control keys move the cursor on the screen and do programmed control functions. The movement and functions depend upon the application used.

- The numeric keypad is arranged like a calculator to help when typing numbers.

On all of the keyboards, you can adjust the tilt position for typing comfort. To tilt the keyboard, pull out on the keyboard legs. The legs snap into position. To decrease the tilt of the keyboard, rotate the keyboard legs until they snap into the bottom of the keyboard case.

The keyboard cable plugs into the connector, labeled "K" or "Keyboard," at the rear of the system unit.

Keyboard Leg
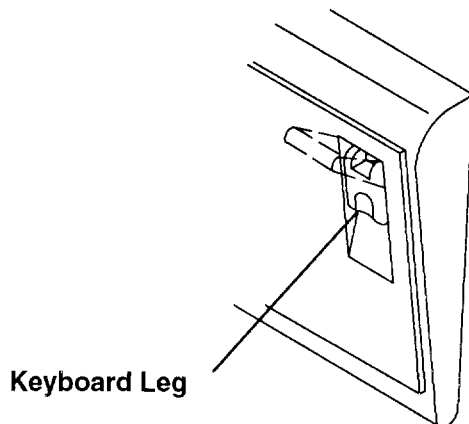
Using the 3-Button Mouse

The mouse is a hand-operated locating device. A 3-button mouse is available for use with the system unit.

Consult your application publication for the exact use of the 3-button mouse.
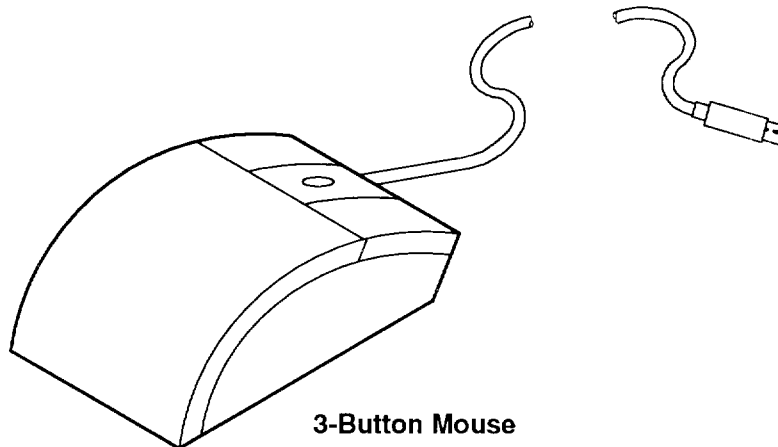
3-Button Mouse

You can use the mouse to perform such functions as positioning a cursor, selecting items from a menu, or moving around in your document much easier and faster than if you used only the keyboard. The cursor moves exactly as you move the mouse on a flat surface, such as a desktop.

When you move the mouse around on a flat surface as shown in this illustration, the cursor moves on the display screen; the movement changes the position of the cursor.
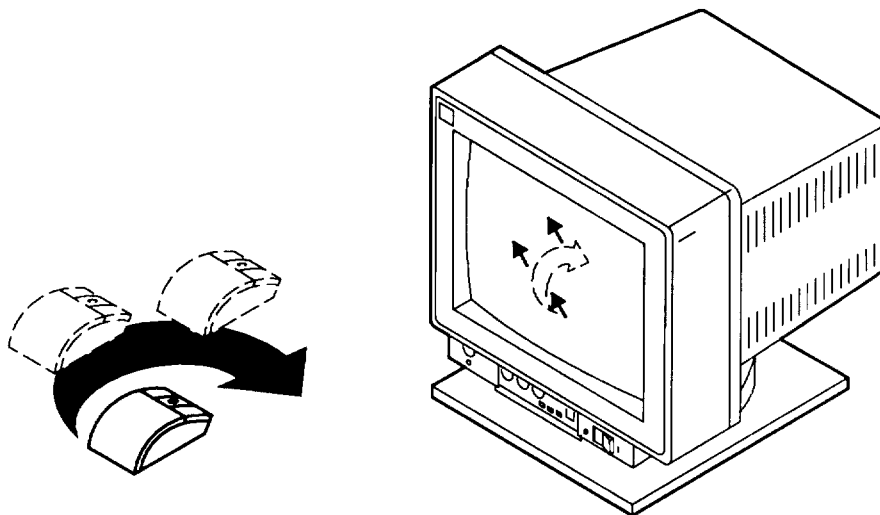
With the mouse buttons, you can perform functions such as selecting and deselecting options, extending your selection, or choosing a command. The precise function of your mouse depends on the software you are using.

The mouse has a cable that plugs into a connector, labeled M or Mouse, at the rear of the system unit.

Handling the Mouse Correctly

For best operation, handle the mouse with care. Incorrect handling can damage the mouse.

do not:

- Operate the mouse on cloth, unfinished wood, newspaper, or carpet.
- Drop or hit the mouse.
- Carry the mouse by holding onto the cable.
- Expose the mouse to extreme temperatures or direct sunlight.
- Place the mouse in liquid spills.

Care of the Mouse

The operating surface for the mouse should be smooth, clean, and flat. For example, you can operate the mouse on the following surfaces:

- Finished wood
- Glass
- Enamel
- Plastic
- Paper (except newspaper)
- Metal.

Rough surfaces collect contaminants that can be transferred to the interior of the mouse by the ball. The surface you use should be free from spills, dirt, dust, lint, wax, eraser dust, and other foreign matter. Rough surfaces can also cause the felt pads located on the bottom of the mouse to prematurely wear. A deeply pitted surface could cause erratic operation of the mouse.

Remember to:

- Inspect the work surface for spills or other contaminants.
- Dust the work surface.
- If you are using a paper pad, inspect it for wear and replace it if necessary.

Cleaning the Mouse

1. Remove the retaining ring by turning it counterclockwise, in the direction of the arrows as shown in the following illustration:

Open Arrows

Ball

Retaining Ring

Cavity

Open Slots
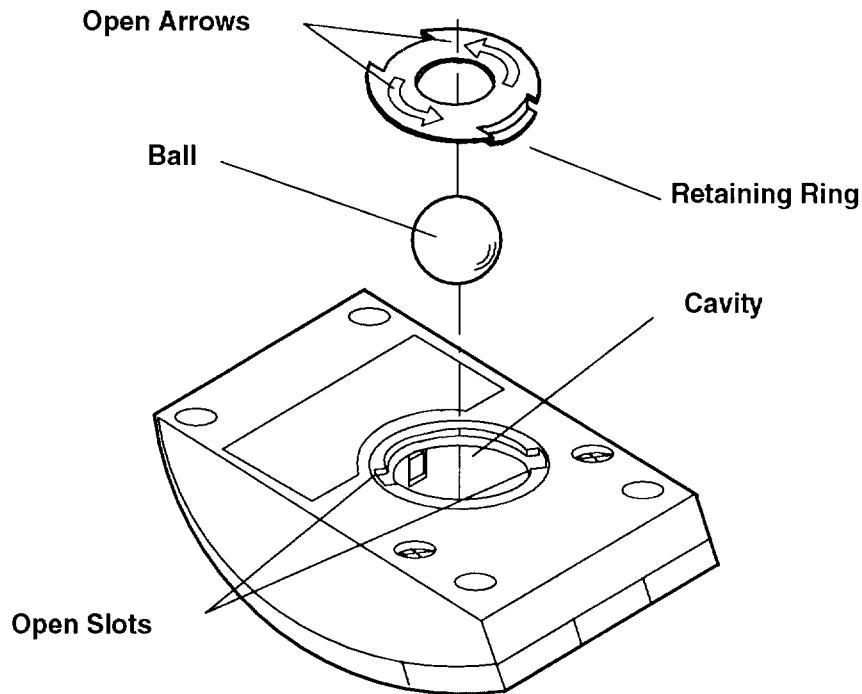
2. Remove the ball.

3. Inspect the ball for contaminants. Wipe it clean with a dry, lint-free cloth.

4. If the ball is dirty, wash it in warm, soapy water. Rinse and wipe the ball with a lint-free cloth until dry.

5. Inspect the ball cavity in the mouse for foreign materials. If there are any foreign materials, remove them.

6. Replace the ball.

7. Replace the retaining ring on the mouse and align it with the open slots in the ball cavity.

8. Turn the retaining ring clockwise until the open slots are covered and you hear the ring snap into place.

Using the 3.5-Inch Diskette Drive

The in-use light is on when the system is accessing the drive. The number 1.44 is printed on the diskette-unload button, as shown in the following illustration.

Do not stop the system unit or remove a diskette when the in-use light is on, or you may lose some of the data on the diskette.

The front of your system unit will look like the following illustrations.

3.5-Inch Diskette Drive

In-Use Light   **Diskette-Unload Button**
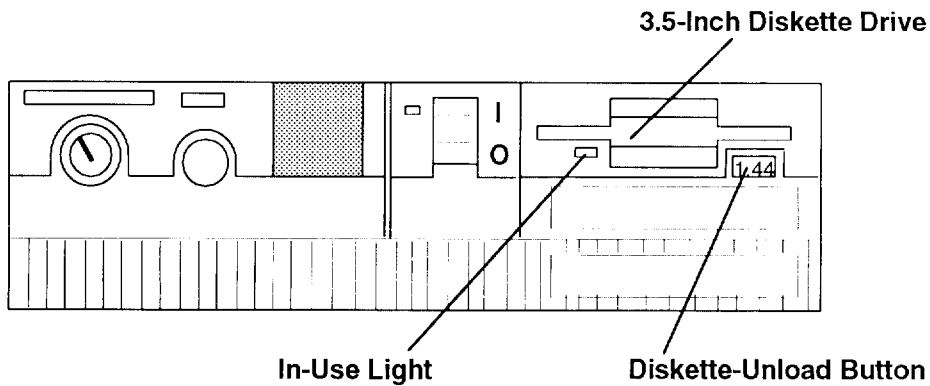
Handling Your Diskettes

Be careful with your diskettes. Because each piece of information occupies such a small area on the diskette, small scratches, dust, food, or tobacco particles can make the information unusable. Be sure to remember the following:

* Do not touch the recording surfaces.

* Keep diskettes away from magnets and magnetic field sources such as telephones, dictation equipment, and electronic calculators.

* Keep diskettes away from extreme heat and cold. The recommended temperature range is 10°C to 60°C (50°F to 140°F).

* Proper care helps prevent loss of information.

* Make backup copies of your diskettes regularly.

Types of 3.5-Inch Diskettes

Warning: Diskette drives and diskettes must be the correct type to store data successfully. If you use the wrong diskette in your 3.5-inch diskette drive, the data on the diskette may be destroyed.

The diskette drive uses the following 3.5-inch diskettes:

- 1.0M-byte capacity, which stores approximately 720K bytes of data.

- 2.0M-byte capacity, which stores approximately 1.44M bytes of data.

A 1M-byte diskette looks like this:

May be labeled 2HC —————— Sliding Metal Shutter

Write-Protect Slot

A 2M-byte diskette looks like this:

Sliding Metal Shutter

Write-Protect Slot —————— **Rectangular Cutout**
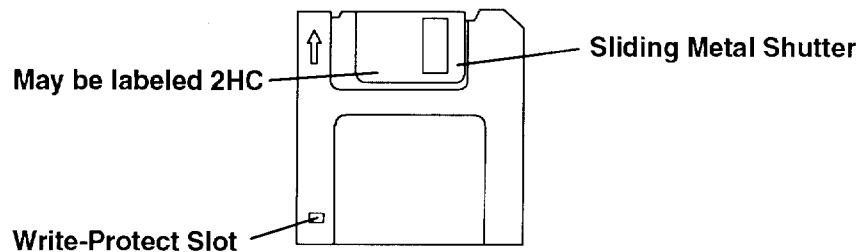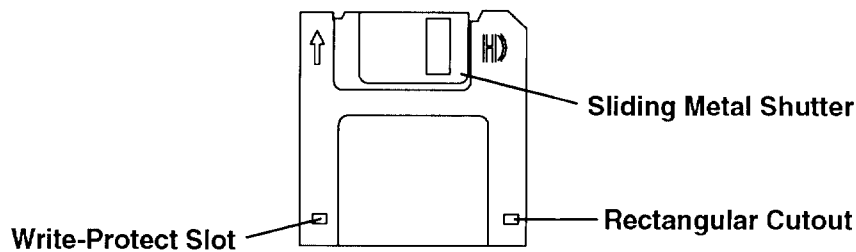
Note: Some computers operate with 720K-byte diskette drives (no printing on the diskette-eject button) that use only 1.0M-byte capacity diskettes. If you are going to be transferring work between computers that have different diskette drives, be certain the diskettes are compatible and are formatted correctly. For more information, refer to your operating system information.

Write-Protecting 3.5-Inch Diskettes

Write-protecting diskettes is necessary so that important information is not accidentally lost.

When diskettes are write-protected, you can read information from the diskettes, but you cannot write information on to them.

There is a write-protect tab on the 3.5-inch diskette.

To locate the write-protect tab, turn the diskette over with the label facing down.

- To *prevent* writing onto a diskette, slide the write-protect tab to *open* the protect slot

Diskette Write-Protected (Read Only):

Rear View

(Slot Open)
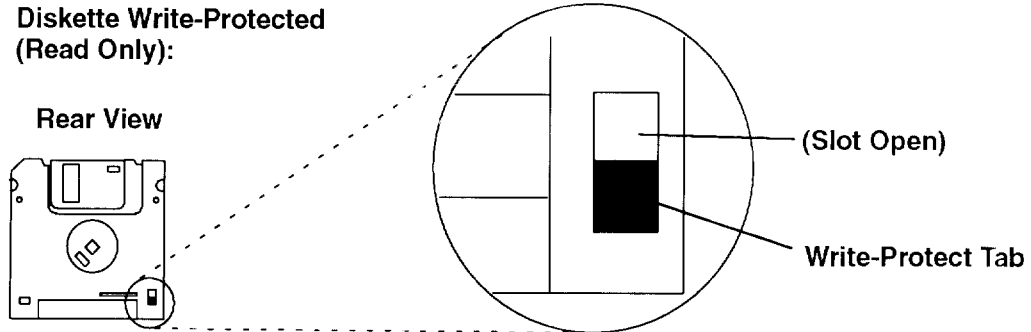
Write-Protect Tab

- To *allow* writing onto a diskette, slide the write-protect tab to *cover* the protect slot

Diskette Not Write-Protected (Read or Write):

Rear View

(Slot Closed)

Write-Protect Tab
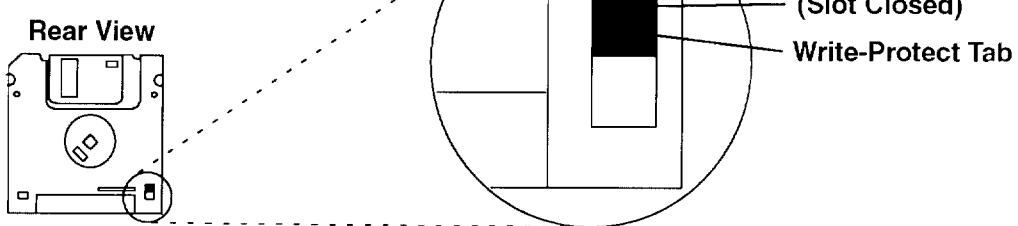
Loading and Unloading the 3.5-Inch Diskette

To load a diskette into the drive, insert the diskette in the diskette drive with the labeled metal shutter first, as shown in the following illustration. Push the diskette into the drive until you hear a click. The click indicates that the diskette is securely in position in the drive

To unload the diskette, push the diskette-unload button. The diskette unloads partially from the drive. Pull the diskette out.
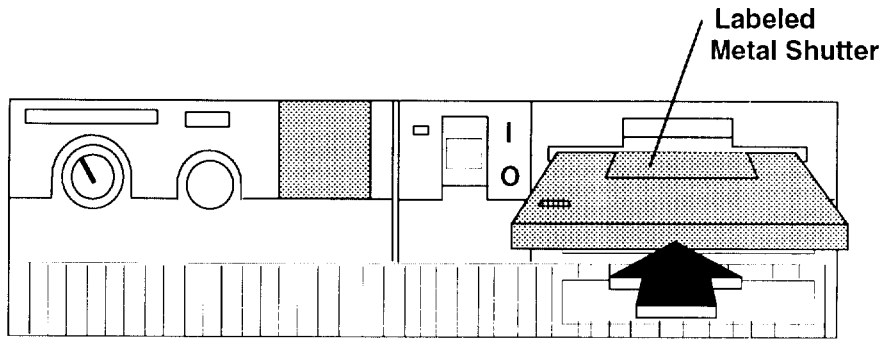
Labeled Metal Shutter

To unload the diskette, push the diskette-unload button. The diskette unloads partially from the drive. shown in this illustrationPull the diskette out.

Diskette-Unload Button
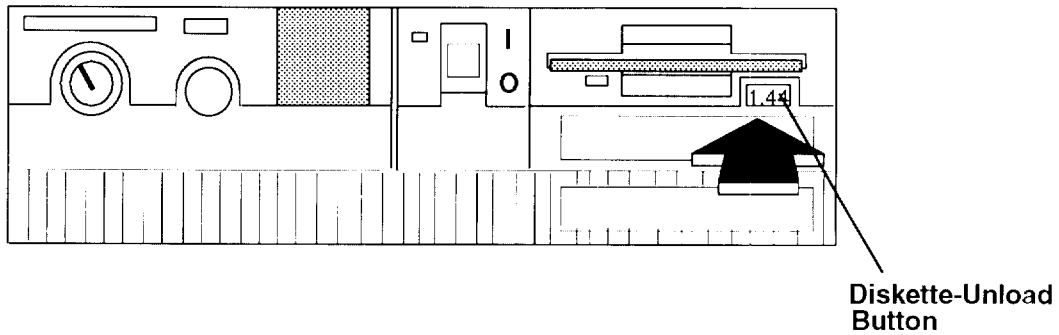
Using the CD-ROM Drive

The CD-ROM drive position is located in either of the optional media positions.

Type B Bezel (CD-ROM and CD-ROM2) CD-ROM Drive

Note: For a translation of this notice, see *System Unit Safety Information.*

CAUTION:
A Class 3 laser is contained in the device. Do not attempt to operate the device while it is disassembled. Do not attempt to open the covers of the device, as it is not serviceable and is to be replaced as a unit.

Type B Bezel (CD-ROM and CD-ROM2):

Unload Button

Status Light

Disc Caddy Opening

Volume Control
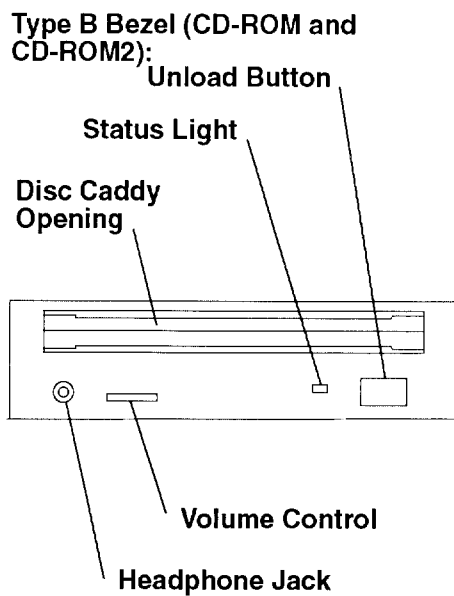
Headphone Jack

The front panel of the drive has an unload button, status light, volume control, headphone jack, and a disc caddy opening.

When the CD-ROM is set to On, the status light indicates one of several conditions. The following are status light states and the respective conditions of the CD-ROM drive:

- Off during standby with the caddy loaded or unloaded.
- Blinks when the caddy is inserted and until completion of initialization.
- Blinks *slowly* when either the lens or disc is dusty (lens should be cleaned by running the cleaning device).
- Blinks fast when in the audio mode.
- Lights during data transfer operations.
- Lights steady when:
  - No disc is in the caddy.
  - The disc is in the caddy upside down.
  - Some condition exists that should be checked. If this occurs, contact your service representative.

Loading the CD-ROM Disc Caddy

Note: The disc caddy is not compatible with the Type C bezel CD-ROM drive.

The CD-ROM media kit contains a CD-ROM diagnostic disc and a disc caddy.

Open the disc caddy and place the CD-ROM disc in the caddy with the printed side up.
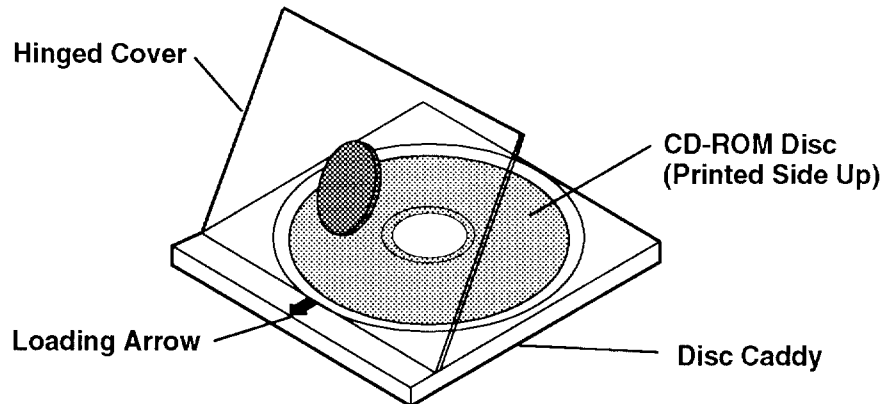
Insert the disc caddy into the disc caddy opening with the loading arrow towards the CD-ROM drive and the printed side of the disc up. Push gently on the caddy. The drive automatically pulls the caddy into the drive and prepares the disc for reading.
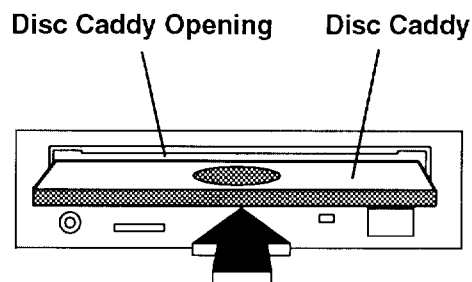
Unloading the CD-ROM Disc Caddy

Push and hold the unload button until the caddy unloads. The CD-ROM drive partially ejects the caddy from the drive opening. Pull the caddy out of the drive.

Note: The unload button must be pushed and held for a minimum of 2 seconds before the caddy unloads.
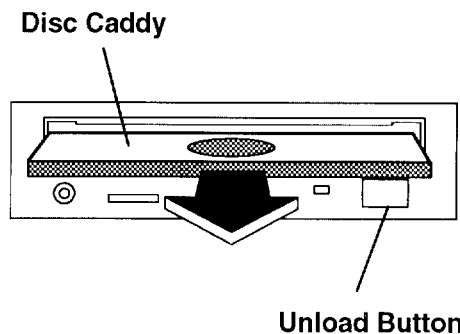
If the disc caddy cannot unload and has to be removed manually from the drive, contact your service representative.

Cleaning the CD-ROM Drive

The CD-ROM drive has an internal cleaning mechanism and does not require an external lens cleaning device.

Type C Bezel CD-ROM Drive

Note: For a translation of this notice, see *System Unit Safety Information.*

CAUTION:
A Class 3 laser is contained in the device. Do not attempt to operate the device while it is disassembled. Do not attempt to open the covers of the device, as it is not serviceable and is to be replaced as a unit.

Type C Bezel
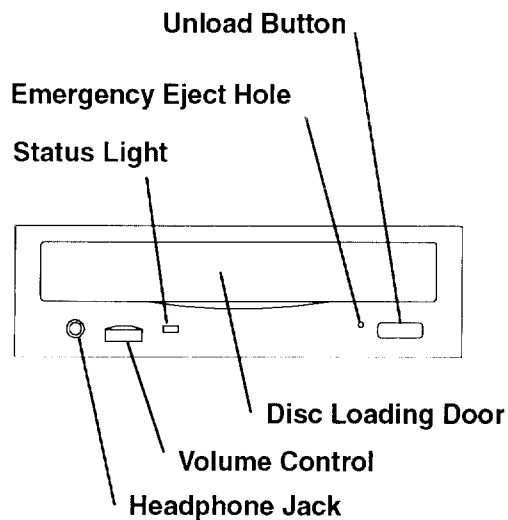
Unload Button

Emergency Eject Hole

Status Light

Disc Loading Door

Volume Control

Headphone Jack

The front panel of the drive has an unload button, status light, volume control, headphone jack, and a disc loading door.

When the CD-ROM is set to On, the status light indicates one of several conditions. The following are status light states and the respective conditions of the CD-ROM drive:

- Off during standby.
- Blinks until completion of initialization.
- Blinks *slowly* when either the lens or disc is dusty (lens should be cleaned by running the cleaning device).
- Blinks fast when in the audio mode.
- Lights during data transfer operations.
- Lights steady when:
  - No disc is in the drive.
  - The disc is in the drive upside down.
  - Some condition exists that should be checked. If this occurs, contact your service representative.

Loading the CD-ROM Drive

Notes:

The disc caddy is not compatible with the Type C bezel CD-ROM drive.

Always handle discs by the edges to avoid leaving fingerprints. Discs can be wiped with a soft, lint-free cloth or lens tissue. Always wipe in a straight line from the inner hub to the outer rim.

1. Press the unload button to open the loading drawer.

Unload Button
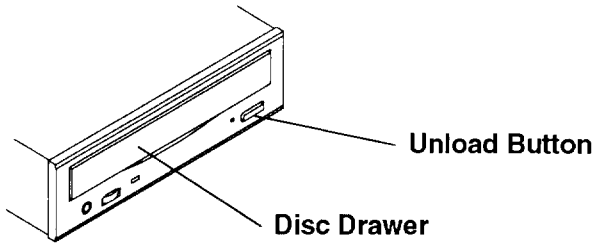
Disc Drawer

2. With the printed side facing upward, place the disc in the disc drawer. Push gently on the front of the disc drawer. The drive automatically pulls the disc drawer into the drive and prepares the disc for reading.

Disc Tray

CD-ROM Disc
(Printed Side Up)

Disc Drawer
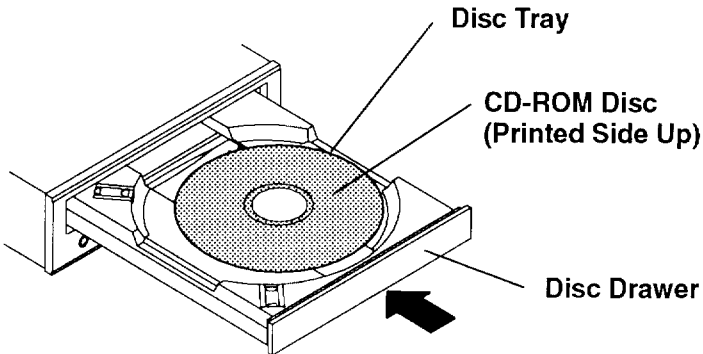
Unloading the CD-ROM Drive

Note: Always handle discs by the edges to avoid leaving fingerprints. Discs can be wiped with a soft, lint-free cloth or lens tissue. Always wipe in a straight line from the inner hub to the outer rim.

1. Push and hold the unload button until the disc drawer comes out. The drive partially ejects the disc drawer. Pull the disc drawer out until it stops.

Note: The unload button must be pushed and held for a minimum of two seconds before the disc drawer is partially ejected.

Unload Button
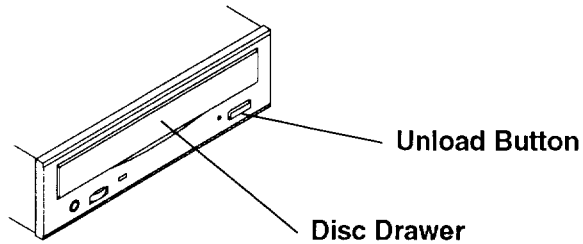
Disc Drawer

2. Wait until the disc drawer ejects out of the drive and stops, and then remove the CD-ROM disc.

CD-ROM Disc

Disc Drawer
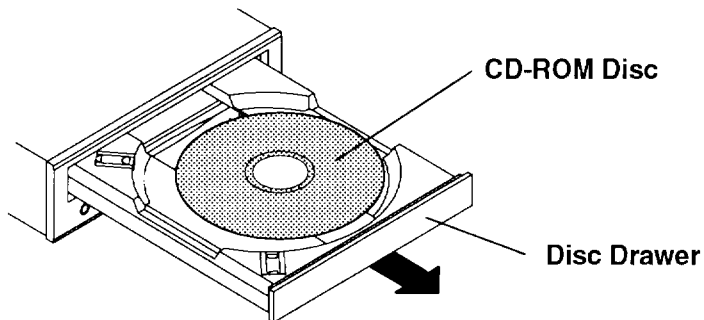
If the disc cannot unload and has to be removed manually from the drive, refer to "Emergency Eject" on page 2-22. If the disc still does not unload after trying the emergency eject procedure, contact your service representative.

Emergency Eject

Note: Execute the following procedure only when the disc drawer will not eject after the unload button is pressed.

1. Power-off the CD-ROM drive.

2. Insert a straight metal small-diameter rod such as a straightened paper clip into the emergency eject hole as shown in the figure.

3. Pull the disc drawer out.
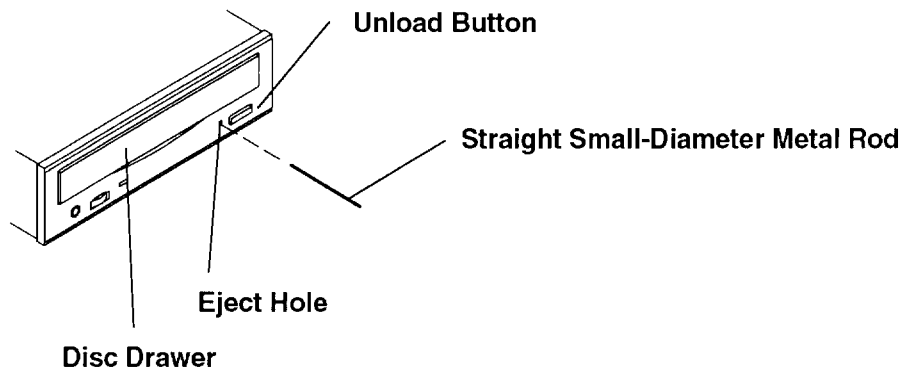
Unload Button

Straight Small-Diameter Metal Rod

Eject Hole

Disc Drawer

Cleaning the CD-ROM Drive

The CD-ROM drive has an internal cleaning mechanism and does not require an external lens cleaning device. The internal cleaning mechanism cleans the head every time a disc is inserted into the disc drawer.

Chapter 3. Using the Diagnostics

This chapter contains information about using and interpreting the diagnostics used on the system unit.

Sources for the Diagnostic Programs

The diagnostic programs are shipped on removable media. The first source is as part of Version 3 (or higher) of the AIX operating system. The diagnostic programs, included as part of Version 3 (or higher) of the AIX operating system, are installed along with the AIX operating system. These diagnostic programs are also updated with the AIX operating system.

The second source is diskettes shipped with the system unit. The diagnostic diskettes shipped with the system unit contain diagnostic programs that can be run in *standalone mode* only. These diagnostic programs contain a special version of Version 3 of the AIX operating system. The special version of the AIX operating system only supports the diagnostic programs and cannot be used for normal system activity.

Note: At AIX Version 4.1 diagnostics will no longer be supported on diskette.

The third source is a diagnostic CD-ROM disc for systems equipped with a CD-ROM drive.

The diagnostic diskettes or the diagnostic CD-ROM disc are the only diagnostic programs available to a system that does not have Version 3 (or higher) of the AIX operating system installed and also does not have built-in ROM diagnostics.

A fourth source is from a network. If your system unit has been configured to receive initial program load (IPL) from a server over a network, then the diagnostics can also be loaded and run from the network.

Diagnostic Programs Operating Considerations

The following items identify some things to consider before using the diagnostic programs.

Diagnostics on a System Unit Attached to Another System

If your system unit is attached to another system using a network or directly attached to the channel of another system, see "Operating with Multiple Attached Systems" in this manual before running any diagnostic procedures.

Selecting a Console Display

When you run diagnostics from removable media, and under some conditions when you run them from disk, you need to select the console display. The diagnostic programs display c31 in the 3-digit display and display instructions on any direct-attached displays and the terminal attached to the S1 port.

If c31 is displayed, follow the instructions to select the console display. If you do not have a console display, set the key mode switch to Normal, and then back to Service. This signals the diagnostic programs to use the 3-digit display for instructions.

Identifying the Terminal Type to the AIX Operating System

Note: This is a different function than selecting a console display.

When you run diagnostics, the AIX operating system must know what type of terminal you are using. If the terminal type is not known when the FUNCTION SELECTION menu is displayed, the diagnostics do not allow you to continue until a terminal is selected from the DEFINE TERMINAL option menu. Select hft for adapter-attached displays. This option sets the TERM environment variable in the AIX operating system.

Undefined Terminal Types

If an undefined terminal type from the DEFINE TERMINAL option menu is entered, the menu will prompt the user to enter a valid terminal type, and the menu will be redisplayed until either a valid type is entered or the user exits the DEFINE TERMINAL option.

Resetting the Terminal

If the user enters a terminal type that is valid (according to the DEFINE TERMINAL option menu) but is not the correct type for the ASCII terminal being used, reading the screen, using the function keys, or using the Enter key may be difficult. These difficulties can be bypassed by pressing Ctrl–C to reset the terminal. The screen display that results from this resetting action varies with the mode in which the system is being run:

- Normal or Maintenance mode – The command prompt appears.

- Service mode – The terminal type will be reset to "dumb," the Diagnostic Operating Instruction panel will be displayed, and the user will be required to go through the DEFINE TERMINAL process again.

Running the Diagnostic Programs from Diskettes

Consider the following when you run the diagnostic programs from diskettes:

- The diagnostic diskettes are labeled as to the devices and functions the diskettes contain. The following diskettes must be inserted in the order shown before the DIAGNOSTIC OPERATING INSTRUCTIONS will be displayed.

1. Boot diskette
2. Configuration diskette
3. Graphics diskette (optional if the system does not contain a graphics adapter)
4. Console Definition diskette.

- There are two different Boot diskettes, one for use in systems containing only 8M-bytes of memory and one for use in systems containing a minimum of 16M-bytes of memory. Only one diskette can be loaded.

Note: When using the 8M-byte boot diskette, only the following devices/adapters may be tested:

- Base system (floating point, memory, I/O planar)
- Async adapters
- Graphic adapters
- Keyboard
- Media devices
- SCSI adapters

All other devices and adapters will not appear on the test list. The devices listed above will only show on the test list if they are normally supported in an 8M-byte system

- There are several different graphics diskettes for configuring and testing graphics adapters. Use only the graphics diskettes for the type of graphics adapters installed in the

system. For each type of graphics adapter installed in a system, you must load the graphics diskette which supports that adapter in order to test it.

The diskette containing the graphics adapter that will be used as the console for running diagnostics should be loaded first. If there are other graphics adapter types installed in the system, load the diskette supporting those adapters immediately following the first graphics diskette.

- If a device installed in a system is not supported by one of the diskettes shipped with the system, check for the existence of a supplemental diagnostic diskette shipped with the device.

- After the DIAGNOSTIC OPERATING INSTRUCTIONS are displayed, follow the displayed instructions in order to test the device or to run a Service Aid.

- The diagnostic programs shipped on diskettes with the system unit have a version number on the label. This *Common Diagnostics and Service Guide* also has a version number on the cover which should match the first two version number digits of the diskettes in order for diagnostics to work correctly. You can check the version of the diagnostic programs on the Diagnostic Operating Instructions.

- When you load the diagnostic programs from diskettes, you may get the following messages on the three-digit display or on the console display:

c01	Insert the first diagnostic diskette
c02	Diskettes inserted out of sequence
c03	The wrong diskette is in the diskette drive
c05	A diskette error occurred
c07	Insert the next diagnostic diskette
c09	Diskette is being read or written
c31	Select the console display.

Running the Diskette Diagnostics from a Non-RS-232 Terminal

Version 1.3 and later versions of the Diagnostic Diskette package allows a terminal attached to any RS-232 or RS-422 adapter to be selected as a console device. The default device is an RS-232 tty attached to the first standard serial port (S1). However, the console device may be changed by editing the **/etc/consdef** file that is provided on Diagnostic Diskette 4. The file format follows:

```
#
# This is the console definition file used to describe the terminal
# device to be used as the console. It is in the form
# attribute=value, one per line. The location is the location code
# seen when listing devices using lsdev. Spaces must not be entered
# around the = sign.
#
# Remove the # signs from the first column of each line to take
# effect. The location must be specified for any attribute in
# this file to be processed.
#
# For example, to define the console device as an rs232 terminal or
# port S1:
#
#connection=rs232
#location=00-00-S1
#speed=9600
#bpc=8
#stops=1
#xon=yes
#parity=non#term=3163
```

To change this file, take the following steps:

1. Enter:

   ```
   cd /tmp
   mkdir diag4
   cd diag4
   ```

2. Insert Diagnostic Diskette 4 into the diskette drive.

3. Enter:

   ```
   cpio -iuvmdC36 </dev/rfd0
   cd etc
   ```

4. To edit the file:

   a. Enter `uncompress consdef`

   b. Edit the `consdef` file to work with your configuration

   c. Enter `compress consdef`.

5. Enter:

   ```
   cd /tmp/diag4
   find . -type f -print | cpio -ouvmC36 > /dev/rfd0
   ```

6. Use the new Diagnostics Diskette 4 with the new configuration.

Running the Diagnostic Programs from Disk or from a Server

Consider the following when you run the diagnostic programs from a disk:

- The diagnostics cannot be loaded and run from a disk until Version 3 of the AIX operating system has been installed and configured. (At AIX Version 4.1 Diagnostics are an installable feature.) After the **installp** command is used to install and configure the AIX operating system, all three modes of operation are available.

- Diagnostics cab be run on a client system that has been properly set up to run from a server. The server must also be set up for the client. When the system is set up to IPL from a server, the diagnostics are executed in the same manner as they were from disk.

- If the diagnostics were loaded from disk or a server, you must shut down the AIX operating system before powering the system unit off to prevent possible damage to disk data. If running from a server, then server data could also be damaged. This is done in one of two ways:

  - If the diagnostic programs were loaded in standalone mode, press the F3 key until DIAGNOSTIC OPERATING INSTRUCTIONS displays; then press the F3 key once again to shut down the AIX operating system.
  - If the diagnostic programs were loaded in Maintenance or Concurrent mode, enter the **shutdown –F** command.

- Under some conditions c31 may appear in the three-digit display with instructions displayed on attached displays and terminals. Follow the instructions to select a console display or set the key mode switch to Normal and back to Service if you do not have a console display.

Running the Diagnostic Programs from CD-ROM

Consider the following when you run diagnostic programs from the CD-ROM disc:

- The diagnostic disc must remain in the CD-ROM drive for the entire time that diagnostics are executing.

- The CD-ROM drive from which diagnostics were loaded cannot be tested.

- The SCSI adapter (or circuitry) controlling the CD-ROM drive from which diagnostics were loaded cannot be tested.

- Diagnostics from CD-ROM are not supported on systems with less than 16MB of installed memory.

To run diagnostics from a CD-ROM drive:

1. Remove any diskette from the diskette drive.

2. Power-on the CD-ROM drive if it is an externally attached device.

3. Insert the caddy with the diagnostic disc into the CD-ROM drive.

4. Set the key mode switch to the Service position.

5. Power-on the system.

Running the Diagnostic Programs from the Network

Consider the following when you run the diagnostic programs from a network:

- Diagnostics cannot be loaded and run from the network until AIX Version 3.2 or higher has been installed and configured on the server.

- Your system unit must be configured to receive initial program load (IPL) over the network.

- The server must be setup properly so that the client can IPL from it.

To run the diagnostic programs from the network:

- Enter the **shutdown –F** command to shut down the operating system.

- Turn the key mode switch to the Service position.

- Power off the system unit, wait 30 seconds, then power on the system unit.

Running the Diagnostic Programs with a 5080 Attached

Consider the following when you run the diagnostic programs on a system attached to a 5080 system:

- When the system unit is attached to a 5085 or 5086 system, the DIAGNOSTIC OPERATING INSTRUCTIONS are not displayed on the monitor attached to the 5085 or 5086. See the *5080 Graphics System Installation, Operation, and Problem Determination* manual for information about operating the combination system.

- At power-on, the keyboard belongs to the graphics processor. Keyboard control can be switched to the system within two minutes of the system power-on by pressing and holding the Alt key and then pressing the Sw Keybd key.

  Warning: Do not attach the 5085 or 5086 keyboard to the system unit without the special diagnostic cable.

- There is a special diagnostic cable available with the combination system to attach the 5085/5086 keyboard directly to the system unit. See the *5080 Graphics System Installation, Operation, and Problem Determination* manual for information about setting the combination system up.

Running the Diagnostic Programs from a tty Terminal

Consider the following when you run diagnostic programs using a tty-type terminal as the console display:

- See the operator manual for your type of tty terminal to find the key sequences you need to respond to the diagnostic programs. For the 3151, refer to the *3151 ASCII Display Station Guide to Operations*, Order Number GA18-2633. For the 3164, refer to the *3164 ASCII Color Display Station Description*, Order Number GA18-2617.

- When the diagnostic programs present display information through the S1 port, certain attributes are used. These attributes are set as if the diagnostic programs were using a 3161 display terminal. The following tables list attributes for the 3161 ASCII Display Terminal and for two other ASCII display terminals commonly used with the system.

- If you have a tty terminal other than a 3151, 3161, or 3164 attached to the S1 port, your terminal may have different names for the attributes. Use the attribute descriptions in the following tables to determine the settings for your terminal.

General Attributes Always Required

The following general attributes are the default settings for the diagnostic programs. Be sure your terminal is set to these attributes.

Note: These attributes should be set before the diagnostic programs are loaded.

General Attributes Always Required *(continued on next page)*				
General Setup Attributes	3151 /11/31 /41 Settings	3151 /51/61 Settings	3161/3164 Settings	Description
Machine mode	IBM 3151	IBM 3151 PC	IBM 3161 or IBM 3164	The diagnostic programs are set to emulate use of the 3161 ASCII Display Terminal. If your terminal can emulate a 5085, 3161 or 3164 terminal, use the following attribute settings. Otherwise, refer to your operator's manual, compare the following attribute descriptions with those of your terminal, and set your attributes accordingly.
Generated Code Set		ASCII		
Screen	Normal	Normal		Uses the EIA-232 interface protocol.
Row and Column	24 x 80	24 x 80		Uses the EIA-232 interface protocol.
Scroll	Jump	Jump	Jump	When the last character on the bottom line is entered, the screen moves down one line.
Auto LF	Off	Off	Off	For the "On" setting, pressing the Return key moves the cursor to the first character position of the next line. For the "Off" setting, pressing the Return key moves the cursor to the first character position of the current line.The CR and LF characters are generated by the New line setting.
CRT saver	Off	Off	10	The "10" setting causes the display screen to go blank if there is no activity for 10 minutes. When the system unit sends data or a key is pressed, the display screen contents are displayed again.
Line wrap	On	On	On	The cursor moves to the first character position of the next line in the page after it reaches the last character position of the current line in the page.
Forcing insert	Off	Off		

General Attributes Always Required				
General Setup Attributes	**3151 /11/31 /41 Settings**	**3151 /51/61 Settings**	**3161/3164 Settings**	**Description**
Tab	Field	Field	Field	The column tab stops are ignored. and the tab operation depends on the field attribute character positions.
Trace			All	Both inbound data (data to the system unit) and outbound data (data from the system unit) to and from the main port can be transferred to the auxiliary port without disturbing communications with the system unit when the Trace key is pressed.

Additional Communication Attributes

The following communication attributes are for the 3151, 3161, and 3164 terminals.

Additional Communication Attributes			
Communication Setup Attributes	3151 (models 11, 31, 41) settings	3161/3164 settings	Description
Operating mode	Echo	Echo	Data entered from the keyboard on the terminal is sent to the system unit for translation and then sent back to the display screen. Sometimes called conversational mode.
Line speed	9600 bps	9600 bps	Uses the 9600 bps (bits per second) line speed to communicate with the system unit.
Word length (bits)	8	8	Selects eight bits as a data word length (byte).
Parity	No	No	Does not add a parity bit, and is used together with the word length attribute to form the 8-bit data word (byte).
Stop bit	1	1	Places a bit after a data word (byte).
Turnaround character	CR	CR	Selects the carriage return (CR) character as the line turnaround character.
Interface	EIA-232C	EIA-232C	Uses the EIA-232 interface protocol.
Line control	IPRTS	IPRTS	Uses the 'permanent request to send' (IPRTS) signal to communicate with system unit.
Break signal (ms)	500	500	The terminal sends a 'break signal' to the system unit within 500ms after the Break key is pressed.
Send null suppress	On		Trailing null characters are not sent to the system unit.
Send null		On	Trailing null characters are sent to the system unit.
Response delay (ms)	100	100	The terminal waits for 100ms for the system unit to respond.

Additional Keyboard Attributes

The following keyboard attributes are for the keyboard attached to the 3151, 3161, and 3164 terminals.

Additional Keyboard Attributes			
Keyboard Setup Attributes	3151 (models 11, 31, 41) settings	3161/3164 settings	Description
Enter	Return	Return	The Enter key functions as the Return key.
Return	New line	New line	The cursor moves to the next line when the Return key is pressed.
New line	CR	CR	The Return key generates the carriage return (CR) and the line feed (LF) characters. The line turnaround occurs after the CR and LF characters are generated.
Send	Page	Page	The contents of the current page are sent to the system unit when the Send key is pressed.
Insert character	Space	Space	A blank character is inserted when the Insert key is pressed.

Additional Printer Attributes

The following printer attributes are for a printer attached to the 3151, 3161, and 3164 terminals.

Additional Printer Atrributes			
Printer Setup Attributes	3151 (models 11, 31, 41) settings	3161/3164 settings	Description
Line speed	9600	9600	Uses 19,200 or 9600 bps (bits per second) line speed to communicate with the system unit.
Word length (bits)	8	8	Selects eight bits as a data word length (byte).
Parity	Even	No	
Stop bit	1	1	Places a bit after a data word (byte).
Characters	ALL		
Line end		CR-LF	
Print		Viewport	
Print EOL		Off	
Print null		Off	

Diagnostic Modes of Operation

The diagnostics can be run in three modes:

- Maintenance mode allows checking of most system resources.
- Concurrent mode allows the normal system functions to continue while selected resources are being checked.
- Standalone mode allows checking of all the system devices and features.

Maintenance Mode

Maintenance mode runs the diagnostics using the customer's Version 3 of the operating system. This mode requires that all activity on Version 3 of the operating system be stopped so the diagnostics have most of the resources available to check. All of the system resources except the SCSI adapters and the disk drive used for paging can be checked.

Error log analysis is done in maintenance mode when you select the **Problem Determination** option on the DIAGNOSTIC MODE SELECTION menu.

The **shutdown –m** command is used to stop all activity on Version 3 of the operating system and put the operating system into maintenance mode. Then the **diag** command is used to load the diagnostic controller so you can run the diagnostic programs from the menus. After the diagnostic controller is loaded, follow the normal diagnostic instructions.

Running the Diagnostics in Maintenance Mode

To run the diagnostics in maintenance mode you must be logged on to the customer's Version 3 of the operating system as root or superuser and use the **shutdown –m** and **diag** commands. Use the following steps to run the diagnostics in maintenance mode:

1. Stop all programs except the operating system.

2. Log onto Version 3 of the operating system as root or superuser.

3. Enter the **shutdown –m** command.

4. When a message indicates the system is in maintenance mode, enter the **diag** command.

Note: It may be necessary to set TERM type again.

5. When DIAGNOSTIC OPERATING INSTRUCTIONS is displayed, follow the displayed instructions to checkout the desired resources.

6. When testing is complete; use the F3 key to return to DIAGNOSTIC OPERATING INSTRUCTIONS. Then press the F3 key again to return to the operating system prompt.

7. Press Ctrl-D to log off from root or superuser.

Concurrent Mode

Concurrent mode provides a way to run diagnostics on some of the system resources during normal system activity. Because the system is running in normal operation, some of the resources cannot be tested in concurrent mode. The following resources *cannot* be tested in Concurrent mode:

- SCSI adapters connected to paging devices
- The disk drive used for paging
- Some display adapters.

There are three levels of testing in concurrent mode:

- The *share-test level* tests a resource while the resource is being shared by programs running in the normal operation. This testing is mostly limited to normal commands that test for the presence of a device or adapter.

- The *sub-test level* tests a portion of a resource while the remaining part of the resource is being used in normal operation. For example, this test could test one port of a multiport device while the other ports are being used in normal operation.

- The *full-test level* requires the device not be assigned to or used by any other operation. This level of testing on a disk drive may require the use of the **varyoff** command. The diagnostics display menus to allow you to vary off the needed resource.

The diagnostics also display a menu to assign a resource if another resource is needed.

Error log analysis is done in concurrent mode when you select `the` **Problem Determination** option on the DIAGNOSTIC MODE SELECTION menu.

To run the diagnostics in concurrent mode you must be logged onto Version 3 of the AIX operating system and have proper authority to issue the commands.

The **diag** command loads the diagnostic controller and displays the diagnostic menus

Running the Diagnostics in Concurrent Mode

To run diagnostics in concurrent mode, take the following steps:

1. Log on to Version 3 of the operating system as `root` or `superuser`.

2. Enter the **diag** command.

3. When the DIAGNOSTIC OPERATING INSTRUCTIONS are displayed, follow the instructions to check out the desired resources.

4. When testing is complete; use the F3 key to return to the DIAGNOSTIC OPERATING INSTRUCTIONS. Then press the F3 key again to return to the operating system prompt. Be sure to *vary on* any disk drives you had varied to off.

5. Press the Ctrl-D key sequence to log off from `root` or `superuser`.

Standalone Mode

Standalone mode provides the most complete checkout of the system resources. This mode also requires that no other programs be running on the system.

Standalone mode can be loaded in three ways:

- From removable media. This method is the only method available for those systems that do not have Version 3 of the AIX operating system installed.

- From a disk within the system unit. This loads the diagnostic programs that are a part of Version 3 of the operating system. Version 3 of the operating system must be installed and configured before the diagnostics can run from it.

- On some system units, built-in diagnostics can be run from read-only memory (ROM). These diagnostics are intended to be used when it is not possible to use Version 3 of the AIX operating system diagnostic programs. The tests provided by the built-in diagnostic programs are not as complete as Version 3 of the AIX operating system diagnostic programs.

Running the Diagnostics in Standalone Mode

To run diagnostics in standalone mode:

1. Stop all programs including the AIX operating system.

2. Set the power switch on the system unit to Off.

3. Set the key mode switch to the Service position.

Note: When the diagnostic programs are run from diskettes or from a CD-ROM disc, the diagnostics do *not* check the error log entries.

4. To load the standalone diagnostics from diskettes, insert the first diagnostic diskette into the diskette drive.

5. To load the standalone diagnostics from a CD-ROM disc, insert the CD-ROM diagnostic disc into the CD-ROM drive.

6. To load the diagnostics from the disk, leave diskette and CD-ROM drives empty.

7. Set the power switch on the system unit to On.

   - If c07 is displayed, insert the appropriate diagnostic diskette. If necessary, refer to the CEREADME file for additional information.

   - If c31 is displayed, follow the instructions to select a console display.

Note: If while the diagnostics are loading, some system units stop with 260, 261 or 262 displayed in the 3-digit display and the console display is blank, press the 1 (one) key on the console keyboard to cause the diagnostics to continue to load.

8. After the diagnostic controller loads, DIAGNOSTIC OPERATING INSTRUCTIONS appear on the console display.

   If the system unit does *not* have a console display, the diagnostics run automatically and loop on the diagnostic test until the system unit power switch is set to Off.

   When the diagnostics are run from disk, a c99 is displayed when the tests have completed.

   When the diagnostics are run from diskette, a c07 is displayed when the tests have completed.

9. If a problem is detected while the diagnostics are loading, a flashing 888 displays in the 3-digit display. See "Reading Flashing 888 Numbers" on page 3-16 for instructions on reading the message.

10. Follow the displayed instructions to checkout the desired resources.

11. When testing is complete; use the F3 key to return to the DIAGNOSTIC OPERATING INSTRUCTIONS.

12. If you loaded the diagnostics from the disk, press the F3 key (from a defined terminal) or press 99 (for an undefined terminal) to shut down the diagnostics before turning off the system unit.

Note: Pressing the F3 key (from a defined terminal) produces a "Confirm Exit" popup menu which offers two options: continuing with the shutdown by pressing F3; or returning to diagnostics by pressing Enter.

For undefined terminals, pressing 99 will produce a full screen menu which offers two options: continuing with the shutdown by pressing 99 and then Enter; or returning to diagnostics by pressing Enter.

13. If you loaded the diagnostics from diskettes or from a CD-ROM disc, turn off the system unit after the shutdown is complete.

System Exerciser

The System Exerciser tests and exercises devices in an overlap mode and can be run from disk in standalone or maintenance mode and from the network.

Starting the System Exerciser

When the System Exerciser is selected from the FUNCTION SELECTION menu, another menu displays all devices to be tested. Pressing the Enter key starts tests for all of the devices.

The time required to test all of the devices depends on the number of devices to be tested and can range from several minutes to approximately one hour for a fully loaded system. Because some devices require less time to test than others, the System Exerciser may test a device one or more times.

Note: If the system contains tape devices, CD-ROM, or diskette drives, you will be asked whether you want to use media in the devices when you are testing.

Display Screens

If the console is a graphics display, normal test patterns are displayed during the tests. After the graphics adapter test is finished, the standby screen is displayed.

If the console is an async terminal, the standby screen will be displayed during testing. The time-of-day will be displayed at the top of the screen and is updated approximately every minute.

After all devices have been tested at least once, a results screen will be displayed until either the Enter key is pressed to restart the System Exerciser or the System Exerciser is stopped. If no errors were detected, the results screen displays the No trouble found message; if errors have been detected, the results screen displays a list of devices with corresponding errors.

Stopping the System Exerciser

Although the System Exerciser can be stopped at any time, it is best to stop it while the results screen is displayed. Stopping the System Exerciser at other times can cause the loss of test information.

When the System Exerciser is stopped, the screen displays all tested devices with errors flagged. Selecting a device that has an error flag provides details such as SRN, location code, number of times the device was tested, and the number of times an error was detected.

Using the System Exerciser to Check Repairs and Intermittent Problems

The System Exerciser can be used to check the system following repairs and to identify intermittent problems.

When the System Exerciser is running, most built-in error recovery procedures are turned off. This can cause occasional errors to be reported that normally have no effect on system operation. Parts should only be replaced when:

- A high number of errors are reported in relation to the number of times the device was tested.

- Errors reported by the System Exerciser are in the same area as that reported by the customer.

Reading Flashing 888 Numbers

A flashing 888 number indicates that the diagnostic programs detected an error, and a diagnostic message is ready to be read. For additional information about flashing 888 numbers, refer to Chapter 6, "System Unit Error Isolation Features."

Note: The 9333 displays four-digit SRNs that are not listed in this book. To decode these SRNs, refer to 9333 documentation listed in "Service Hints" in Chapter 1.

Step 1. Determine the Type of Message

The three-digit display should be flashing 888.

1. Get a problem summary form from the *AIX Version 4.1 Problem Solving Guide and Reference* or a blank sheet of paper to record the numbers appearing in the three-digit display.

2. Be sure the key mode switch is set to Normal or Service.

   Note: Every time you press the Reset button, hold it for about one second to allow the program to sense the change.

3. Press the Reset button once. Record the number in the three-digit display. This is the message type.

4. In the following list, go to the step for your message type.

Type 102	Go to Step 2.
Type 103	Go to Step 3.
Type 105	Go to Step 4.
Other	Go to Step 5.

Step 2. Reading the Type 102 Message

A 102 message is generated when a software or hardware error occurs during system execution of an application. Use the following steps and information to determine the content of the Type 102 message. Crash and dump status codes are listed on the following page.

```
102 = Message type
RRR = Crash code
SSS = Dump status code
888 or 103 or 105
```

1. Press the Reset button once and record the crash code. If the crash code is 55?, see the note at the end of this step.
2. Press the Reset button and record the dump status code (dump progress indicator).
3. Press the Reset button again. Look at the number in the three-digit display to answer the following question.

Is 888 flashing in the three-digit display?

NO   The message has a Type 103 or 105 message included in it. Go to Step 3 to read out the SRN and FRU information about Type 103 messages. Go to Step 4 to read out the SRN and FRU information about Type 105 messages.

YES   This completes the read-out of this message. You can repeat the message by pressing the Reset button. You must power the system unit Off to recover from this halt. Return to the MAP step that directed you here.

Note: There are no SRNs associated with this message type. If the crash code is 558 and you were loading the diagnostic diskettes, the problem may be that you used the incorrect diagnostic boot diskette. Try using the boot diskette for 8M-byte systems.

Step 3. Reading the Type 103 Message

A Type 103 message is generated when a hardware error is detected. Use the following steps and information to determine the content of the Type 103 message (You may have come here from a Type 102 message. If so, use the same procedure).

1. Press the Reset button and record the first three digits of the six-digit SRN.

   Note: The 9333 machine type displays four-digit SRNs that are not listed in this book. To decode these SRNs, refer to 9333 documentation.

2. Press the Reset button and record the next three digits of the SRN.

3. Each time the Reset button is pressed, three digits of a FRU location code display. When all FRU location codes are read out, the three-digit display returns to the flashing 8 8 8 or, if another message is waiting to be displayed, a ccc. If a ccc is displayed, repeat this step to receive the next message. Try the first SRN listed; if it does not resolve the problem, try following SRNs in the order listed. If the message contains more than four FRUs, not all FRU location codes will be present.

   Press the Reset button and record the three-digit numbers until a flashing 888 displays. Use the following to identify the numbers being read.

   ```
   103   = Message type
   XXX-XXX = SRN
   c01 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = First FRU location code
   c02 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = Second FRU location code
   c03 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = Third FRU location code
   c04 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = Fourth FRU location code
   ```

4. Identify the SRN. You can cycle through the numbers again by pressing the Reset button.

5. The FRU location codes translate into an eight-digit location code (AB-CD-EF-GH) Each digit of the eight-digit location code is presented as a three-digit number in the three-digit display.

   ```
       A   B   C   D   E   F   G   H   = Eight-digit location code
   c01 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = First FRU location code
   c02 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = Second FRU location code
   c03 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = Third FRU location code
   c04 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = Fourth FRU location code
   ```

Note: If a ccx (x can be any digit from 2 through 9) is encountered as part of the location code, only the part of the code that is different from the location code of the previous FRU is shown. To form the complete location code of the next FRU, substitute the information following the ccx into the location code of the previous FRU.

For example, if the previous FRU location is:

c01 100 200 300 401 500 601 700 800,

and the next FRU location is listed as:

cc2 602,

the complete location code of the next FRU is:

cc2 100 200 300 401 500 602 700 800.

To identify each digit of the location code (AB-CD-EF-GH), translate the right-most two digits using the following table. See "Location Codes" in this chapter to determine the physical location of the resource.

xx	Value	xx	Value	xx	Value	xx	Value
00 =	0	11 =	A	21 =	K	31 =	U
01 =	1	12 =	B	22 =	L	32 =	V
02 =	2	13 =	C	23 =	M	33 =	W
03 =	3	14 =	D	24 =	N	34 =	X
04 =	4	15 =	E	25 =	O	35 =	Y
05 =	5	16 =	F	26 =	P	36 =	Z
06 =	6	17 =	G	27 =	Q		
07 =	7	18 =	H	28 =	R		
08 =	8	19 =	I	29 =	S		
09 =	9	20 =	J	30 =	T		

6. The only way to recover from an 888 type of halt is to power the system unit Off Return to the MAP step that directed you here.

Step 4. Reading the Type 105 Message

Type 105 and 103 messages are similar. The Type 105 message contains SRNs in encoded form because the SRN contains characters that cannot be displayed in the three-digit display. Use the following steps and information to determine the content of the Type 105 message. (You may have come here from a Type 102 message. If so, use the same procedure).

1. Press the Reset button and record the first three digits of the SRN.

2. Press the Reset button and record the next three digits of the SRN.

3. Repeatedly press the Reset button, each time recording the numbers in the three-digit display, until c01 is displayed.

4. Each time the Reset button is pressed, three digits of a FRU location code display. When all FRU location codes are read out, the three-digit display returns to the flashing 838 or, if another message is waiting to be displayed, a ccc. If a ccc is displayed, repeat this step to receive the next message. Try the first SRN listed; if it does not resolve the problem, try following SRNs in the order listed. If the message contains more than four FRUs, not all FRU location codes will be present. Press the Reset button and record the three-digit numbers until a flashing 888 displays. Use the following to identify the numbers being read.

```
105 = Message type
1xx 2xx 3xx 4xx = encoded SRN
c01 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = First FRU location code
c02 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = Second FRU location code
c03 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = Third FRU location code
c04 1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx = Fourth FRU location code
```

5. Determine the SRN by translating the rightmost two digits of each position within the encoded SRN (1xx 2xx 3xx 4xx) using the table at the end of the following substep You can cycle through the numbers again by pressing the Reset button.

6. The FRU location codes translate into an eight-digit location code (AB-CD-EF-GH) Each digit of the eight-digit location code is presented as a three-digit number in the three-digit display.

```
       A    B    C    D    E    F    G    H  = Eight-digit location code
c01  1xx  2xx  3xx  4xx  5xx  6xx  7xx  8xx  = First FRU location code
c02  1xx  2xx  3xx  4xx  5xx  6xx  7xx  8xx  = Second FRU location code
c03  1xx  2xx  3xx  4xx  5xx  6xx  7xx  8xx  = Third FRU location code
c04  1xx  2xx  3xx  4xx  5xx  6xx  7xx  8xx  = Fourth FRU location code
```

Note: If a ccx (x can be any digit from 2 through 9) is encountered as part of the location code, only the part of the code that is different from the location code of the previous FRU is shown. To form the complete location code of the next FRU, substitute the information following the ccx into the location code of the previous FRU.

For example, if the previous FRU location is:

c01 100 200 300 401 500 601 700 800,

and the next FRU location is listed as:

cc2 602,

the complete location code of the next FRU is:

```
cc2 100 200 300 401 500 602 700 800.
```

To identify each digit of the location code (AB-CD-EF-GH), translate the rightmost two digits using the following table. See "Location Codes" in Chapter 1 to determine the physical location of the resource.

xx Value	xx Value	xx Value	xx Value
00 = 0	11 = A	21 = K	31 = U
01 = 1	12 = B	22 = L	32 = V
02 = 2	13 = C	23 = M	33 = W
03 = 3	14 = D	24 = N	34 = X
04 = 4	15 = E	25 = O	35 = Y
05 = 5	16 = F	26 = P	36 = Z
06 = 6	17 = G	27 = Q	
07 = 7	18 = H	28 = R	
08 = 8	19 = I	29 = S	
09 = 9	20 = J	30 = T	

7. The only way to recover from an 888 type of halt is to power the system unit Off. Return to the MAP step that directed you here.

Step 5. Other Numbers

The only valid message types are types 102, 103, 104, and 105. Type 104 messages are used by the manufacturing plant and should be ignored. If you have any other number displayed, take the following actions:

1. Press the Reset button again and again until a flashing 888 appears in the three-digit display. If you do not get a flashing 888 in the display, you should consider the numbers as *steady* numbers. Go to Appendix B "Three-Digit Display Numbers" and follow the procedures for analyzing three-digit display codes.

2. When the flashing 888 is displayed, go to Step 1.

Chapter 4. Using the Service Aids

Introduction to Service Aids

The diagnostic programs contain the following service aids which display data and do additional testing:

- Service hints.
- Display Previous Diagnostic Results.
- Display or Change Configuration or Vital Product Data.
- Display or Change Diagnostic Test List.
- Disk Media.
- Diskette Media.
- Local Area Network.
- SCSI Bus.
- Display Test Patterns.
- Microcode Download..
- Display/Alter Bootlist.
- Trace Service Aid.
- Dials and LPFK Configuration.
- Diagnostic Diskette Creation.
- Disk-based Diagnostic Update.
- Hardware Error Report.
- Display Test Patterns for the Multimedia Video Capture Adapter.
- Service Aids for Use With Ethernet
- AIX Shell Prompt

The service aids are described in the following topics.

Service Hints

This service aid displays CEREADME (CE read me) file information from the source from which the diagnostics were loaded (diskettes, disk, CDROM). This file contains information that is not in the publications for this version of the diagnostics. It also contains information about using this particular version of diagnostics.

Use the Enter key to page forward through the information or the – and Enter keys (dash and Enter) to page backwards through the file.

Display Previous Diagnostic Results

Note: This service aid is not available when you load the standalone diagnostics from diskettes or CD-ROM.

Each time the diagnostics produce a service request number (SRN) to report a problem, information about that problem is logged. The service representative can look at this log to see what SRNs are recorded. This log also records the results of diagnostic tests that are run in loop mode.

When this service aid is selected, information on the last problem logged is displayed. The Page Down and Page Up keys can be used to look at information about previous problems.

This information is not from the error log maintained by Version 3 of the operating system. This information is stored in the **/etc/lpp/diagnostics/data/*.dat** file.

Display or Change Configuration or Vital Product Data (VPD)

Note: The following Version 3 operating system commands are not available for use when you load this service aid from diskettes.

This service aid allows you to display and change configuration data and VPD.

Use the **lscfg** command to copy the contents of the configuration and VPD files to another file or to a printer. This command identifies the resources that have diagnostic support. For more information about the **lscfg** command, see the Version 3 operating system information.

In the following examples, the first example copies the configuration data and VPD to a file named **/u/mine/VPD**. The second example prints the configuration list. The third example displays the VPD on the screen.

```
lscfg -v > /u/mine/VPD
lscfg | enq
lscfg -v | pg
```

Display Configuration

This service aid displays a list of the resources installed on this system.

Display Vital Product Data (VPD)

This service aid displays the VPD for all of the resources installed on this system. Use the Page Down and Page Up keys to see the data for all resources.

Display/Alter VPD

Warning: If this service aid was loaded from diskettes or CD-ROM disc, any changes or additions you make to the VPD data will be lost when you shut down.

This service aid allows you to display and alter the VPD for any resource. When you select this service aid, a menu allows you to select the desired resource.

Change Configuration

Warning: If this service aid was loaded from a non-disk-based diagnostic package, any changes or additions you make to the configuration data will be lost when you set the power switch to Off.

This service aid allows you to add or delete data for the drawer data from the configuration list. This service aid is used to add nonmachine readable data to the configuration list.

Display or Change Diagnostic Test List

During power-on self-test, the diagnostic controller uses the diagnostic test list to determine which resources to check.

This service aid provides a way to delete a resource from the diagnostic test list and a way to add a deleted resource back into the diagnostic test list. This service aid also provides a way to display the diagnostic test list.

Disk Media

This service aid provides a format disk service aid and a certify disk service aid.

Format Disk

There are two options available to format a disk, and an option that can be used to overwrite all accessible blocks on the disk with a user-selectable pattern.

Format without Certify

The format option writes all of the ID fields and writes a bit pattern in all of the data fields. This option does not reassign data blocks that are bad.

Format and Certify

The format and certify option writes all of the ID fields and writes a bit pattern in all of the data fields. It also reassigns any data blocks found to be bad during formatting. If there are too many bad data blocks, a message is sent to alert you.

This service aid should be used to completely erase the existing data on a disk. The diagnostic programs may instruct you to use this service aid when data on a disk is found to be badly damaged.

Erase Disk

This option can be used to overwrite (remove) all data currently stored in user-accessible blocks of the disk. The Erase Disk option writes one or more patterns to the disk. An additional option allows data in a selectable block to be read and displayed on the system console.

To use the Erase Disk option, specify the number (0–3) of patterns to be written. Select the patterns to be written; the patterns are written serially. That is, the first pattern is written to all blocks. Then the next pattern is written to all blocks, overlaying the previous pattern. A random pattern will be written by selecting the "Write random pattern? " option.

Certify Disk

The certify disk service aid reads all of the ID and data fields. It checks for bad data in the ID and data fields. If there are too many bad data blocks, a message is sent to alert you.

Diskette Media

This service aid provides a way to verify the data written on a diskette. When this service aid is selected, a menu asks you to select the type of diskette being verified. The program then reads all of the ID and data fields on the diskette one time and displays the total number of bad sectors found.

Local Area Network

This service aid provides a means to analyze Local Area Network (LAN) problems related to attached ethernet, Token-Ring and FDDI adapters. The service aid allows you to do the following:

- Monitor the ring (Token-Ring only). Abnormal conditions are reported.

- Connectivity testing. Data is transferred between two stations, and the results are reported.

SCSI Bus

This service aid provides additional testing for SCSI bus problems and should be used only after the normal diagnostic test programs do not find a problem.

A **SCSI Test Unit Ready** command is sent to a SCSI device you select from the SCSI BUS ADDRESS SELECTION Menu; test results are then displayed. To analyze a SCSI bus problem, start with only one device attached; then add one device at a time until you identify the failing device. *Always* use a terminator at the end of the SCSI bus.

Display Test Patterns

This service aid provides a way to display the test patterns needed to adjust the 5081, 6091, and 8517 displays. Select the pattern you need from the menu.

Note: This service aid should not be run in a multi-window environment.

Microcode Download

Microcode Download is a service aid that allows microcode resident on devices such as disk or tape drives to be updated. This service is normally needed when a problem is discovered or an enhancement is made to existing microcode.

This service aid presents a list of system-installed devices that can undergo microcode update. Select a device that needs to be updated from the list; download is accomplished by following instruction furnished with the service aid.

A similar scenario should be employed for resources detecting as missing. Again, select the appropriate information based on available information. If the information is not known select the option that removes the resource permanently.

Display/Alter Bootlist

This service aid allows you to display, alter, or erase the list of the IPL devices from which the system will attempt to load either Version 3 of the operating system or the diagnostic programs.

The system will attempt to perform an IPL from the first device in the list. If the device is not a valid IPL device or if the IPL fails, the system will proceed in turn to the other devices in the list to attempt an IPL.

Trace Service Aid

The Trace service aid is used as a tool to correct problems with microcode on either a serial disk adapter or a serial disk controller. This service aid is intended for use by trained service representatives.

Dials and LPFK Configuration

This service aid configures Dials or LPFK devices to be used on the S1 or S2 serial port. Until these devices are configured, they can not be tested by the diagnostic programs. If Dials or LPFK devices attached to the S1 or S2 serial port do not show on the diagnostic test list, use this service aid first to configure the device.

Diagnostic Diskette Creation Service Aid

Note: Before creating diagnostic diskettes with this service aid, any service update software (PTFs) should first be applied.

The create diagnostic diskette package service aid requires at least 10000 blocks of free space in the **root** directory and 8800 blocks of free space in the **/tmp** directory. If you do not have enough free space in these directories, an error message displays when you run this service aid.

Note: If you receive any messages about missing files when you run this service aid, the diskettes created by this service aid may not work properly. The files identified by the messages may be necessary for these diskettes to work properly.

This service aid creates diagnostic diskettes that are customized to the system they were created on. The diskettes created by this service aid contain only the diagnostics for the devices on the system the service aid is run on.

Disk-Based Diagnostic Update Service Aid

This service aid is used to update to the most current level, the Version 3 diagnostic programs stored on the disk.The update is performed by inserting all diskettes containing the service update software (PTFs) into the diskette drive when the service aid prompts you to do so.

Hardware Error Report

The Hardware Error Report service aid is a tool which scans the error log for hardware errors and displays the data to the user. The error report can be optionally directed to format certain error log types into a more more meaningful presentation.

Display Test Patterns for the Multimedia Video Capture Adapter

The M-Video Capture Adapter service aid provides a selection of patterns to be used for adjusting the M-Video Capture Adapter. Select the appropriate pattern from the choices listed on the M-Video service aid menu.

Service Aids for Use With Ethernet

This service aid provides a tool for diagnosing Ethernet problems.

AIX Shell Prompt

This service aid provides a Bourne Shell for the root user. The root password must be entered to get to the shell prompt.

Chapter 5. Using the System Verification Procedure

Step 1. Considerations before Running This Procedure

- This procedure requires use of all of the system resources. No other activity can be running on the system while you are doing this procedure. Before starting this procedure, you should stop all programs and the operating system.

  If this system unit is directly attached to another system unit or attached to a network, be sure communications with the other system unit is stopped. If needed, see Chapter 2 for more information about multiple system attachments.

- This procedure requires a direct-attached display or a tty terminal attached to the S1 port.

- This procedure runs the diagnostic programs in standalone mode from either your normal IPL source or from removable media (if installed). If the diagnostic programs are installed on disk or LAN, these procedures should be run from disk or LAN. (See the operator manual for your type tty terminal to find the key sequences you need to respond to the diagnostic programs.)

  If you need more information about standalone mode, see "Diagnostic Modes of Operation" on page 3-11.

- If a console is not selected, the diagnostics stop with c31 in the three-digit display. The instructions for selecting a console are displayed on all of the direct-attached displays and any terminal attached to the S1 port. Follow the displayed instructions to select a console display.

- If the system unit is attached to a 5085 or 5086, the DIAGNOSTIC OPERATING INSTRUCTIONS menu does *not* display on the display attached to the 5085 or 5086.

- Go to Step 2.

Step 2. Loading the Diagnostic Programs

1. Stop all application programs running on the operating system.

2. Stop the operating system (If help is needed; call your 800 support number).

3. Power the system off.

4. Set the key mode switch to the Service position.

5. If you want to run the diagnostics with removable media, and are running the diagnostics from a terminal attached to an S1 port, continue with this substep. If not, go to substep 6.

   - The terminal must be attached to the S1 port on the system unit.
   - The attributes for the terminal must be set to match the defaults of the diagnostic programs. (For more information regarding attributes refer to Chapter 3 "Using the Diagnostics".)
   - Before changing any settings, record the normal settings, and be sure the terminal attributes are set to work with the diagnostic programs.

6. Power the system on.

   If c07 is displayed, insert the next diagnostic diskette.

   If c31 is displayed, select the console display using the displayed instructions.

7. When the DIAGNOSTIC OPERATING INSTRUCTIONS display, go to Step 3.

Step 3. Running System Verification

The DIAGNOSTIC OPERATING INSTRUCTIONS should be displayed.

1. Press the Enter key.

2. If the terminal type has not been defined, you must use the `Initialize Terminal` option on the `FUNCTION SELECTION` menu to initialize the operating system environment before you can continue with the diagnostics. This is a separate and different operation than selecting the console display.

3. If you want to do a general checkout without much operator action, select the `Diagnostic Routines` option on the `FUNCTION SELECTION` menu.

Note: If you want to do a more complete checkout including the use of wrap plugs, select the `Advanced Diagnostics` option on the `FUNCTION SELECTION` menu. The advanced diagnostics are primarily for the service representative; they may instruct you to install wrap plugs to better isolate a problem.

4. Select the `System Verification` option on the `DIAGNOSTIC MODE SELECTION` menu.

5. If you want to run a general checkout of all installed resources, select the `System Checkout` option on the `DIAGNOSTIC SELECTION` menu.

   If you want to check one particular resource, select that resource on the `DIAGNOSTIC SELECTION` menu.

6. Go to Step 4.

Step 4. Additional System Verification

The checkout programs end with either the `TESTING COMPLETE` menu and a message stating `No trouble was found` or the `A PROBLEM WAS DETECTED ON (Time stamp)` menu with an SRN.

1. Press Enter to return to the `DIAGNOSTIC SELECTION` menu.

2. If you want to check other resources, select the resource from the list displayed on your terminal. When you have checked all of the resources you need to check, go to Step 5.

Step 5. Stopping the Diagnostics

1. If you are running the diagnostics from removable media, go to substep 2. If diagnostics are being run from disk or LAN, the system first should be shut down using the following procedure:

   a. Continue to press F3 until you get to the `DIAGNOSTIC OPERATING INSTRUCTIONS`.

   b. Press F3 once and follow the displayed instructions to shut down Version 3 of the operating system.

2. Set the key mode switch to the Normal position.

3. If you changed any attributes on your tty terminal to run the diagnostic programs, change the settings back to normal.

4. This completes the system verification. Report the SRN to the service organization if you received one. To do a normal IPL, turn off the system unit and wait 30 seconds; then set the power switch of the system unit to On.

Chapter 6. Hardware Problem Determination

This chapter contains steps for obtaining a service request number (SRN) to correct hardware problems.

Hardware Problem Determination Procedure

This chapter contains steps for obtaining a service request number (SRN). You report the SRN to the service organization. The service organization uses the SRN to determine which field replaceable units (FRUs) are needed to restore the system to correct operation.

Step 1. Considerations before Performing This Procedure

Note: See the operator manual for your type of ttyterminal to find the key sequences you need to respond to the diagnostic programs.

- The diagnostic programs can use direct-attached displays or a tty terminal attached to the S1 port.

- This procedure asks you to select the mode you want to run the diagnostic programs in (standalone, maintenance, or concurrent). If you need more information about the modes, see "Diagnostic Modes of Operation" in Chapter 3.

- If the system unit is attached to a 5085 or 5086, the DIAGNOSTIC OPERATING INSTRUCTIONS do *not* display on the display attached to the 5085 or 5086.

- If the procedure instructs you to stop the operating system, refer to Chapter 7 for additional information.

- Go to Step 2.

Step 2

(From Step 1)

Version 3 of the operating system contains the diagnostic programs. Other operating systems may not contain diagnostic programs.

Is Version 3 of the operating system used on this system?

NO   Go to Step 21.
YES   Go to Step 3.

Step 3

(From Step 2)

Determine if Version 3 of the operating system is accepting commands.

Is Version 3 of the operating system accepting commands?

NO   Try the following:
1. Stop the operating system.
2. If you cannot stop the operating system, set the power switch on the system unit to Off; then go to Step 6.

YES   Go to Step 4.

Step 4

(From Step 3)

Diagnostic tests can be run on many resources while the operating system is running. However, problem isolation is obtained by running diagnostics in standalone mode.

Do you want to run the diagnostics in standalone mode?

NO   Go to Step 5.

YES   Do the following to shut down your system:
1. At the system prompt, stop the operating system.
2. After the operating system is stopped, set the power switch on the system unit to Off.
3. Go to Step 6.

Step 5

(From Step 4)

This step loads concurrent diagnostics.

1. Log on as root or as superuser.

2. Enter the **diag** command.

3. Wait until the words DIAGNOSTIC OPERATING INSTRUCTIONS are displayed, or for three minutes.

Are the DIAGNOSTIC OPERATING INSTRUCTIONS **displayed without any obvious console display problems?**

NO   Do the following to shut down your system:
1. At the system prompt, stop the operating system.
2. After the operating system is stopped, set the power switch on the system unit to Off.
3. Go to Step 6.

YES   Go to Step 10.

Step 6

(From Steps 3, 4, 5, 7)

This step loads standalone diagnostics.

1. Set the key mode switch to the Service position.

2. Be sure the power switches of the attached devices are set to On.

3. Set the power switch on the system unit to On.

4. If `c31` is displayed, follow the displayed instructions to select a console display. If you do not have a console display, set the key mode switch to the Normal position and then set it to the Service position to indicate to the diagnostics there is no console display.

   If you cannot select a console display, go to Step 20. Otherwise, continue to the next substep.

5. Wait until one of the following conditions occurs, then go to the next substep:

   - The power-on light does not come on, or it comes on and does not stay on.
   - The same number is displayed in the 3-digit display for longer than three minutes, and the power-on light is on.
   - The number `888` is flashing in the 3-digit display.
   - The 3-digit display is blank.
   - The system stops with two or more numbers between `221` and `296` alternating in the 3-digit display.
   - The words `DIAGNOSTIC OPERATING INSTRUCTIONS` are displayed.

6. Starting at the top of the following table, find your symptom and follow the instructions given in the Action column.

Symptom	Action
The system stops with a blank 3-digit display and the words DIAGNOSTIC OPERATING INSTRUCTIONS are displayed with no obvious problem on the console display (for example, it is not distorted or blurred).	Go to Step 10.
The power-on light does not come on or comes on and does not stay on.	Check the power cable to the outlet. Check the circuit breakers and check for power at the outlet. If you do not find a problem, record SRN 111–152 and report the problem to the service organization. **STOP.** You have completed these procedures.
The system stops with a steady (not flashing) number displayed in the 3-digit display, and the power-on light is on.	The number must be other than c31. See substep 3 above for this number. Go to Step 7.
The system stops with 888 flashing in the 3-digit display.	Go to Step 8.
The system stops with a blank 3-digit display, and the words DIAGNOSTIC OPERATING INSTRUCTIONS are *not* displayed correctly.	Go to Step 9.
The 3-digit display is blank and the normal system log-in screen is displayed.	Be sure the key mode switch is set to the Service position. If the key mode switch was not in the Service position, stop the operating system, set it to the Service position, and press Reset. Then repeat this step. If the key mode switch was in the Service position, record and report SRN 111–1 2. **STOP.** You have completed these procedures.
The system stops with two or more numbers between 221 and 296 alternating in the 3-digit display.	Go to Step 16.

Step 7

(From Step 6, 18)

The following steps analyze a steady (not flashing) number displayed in the 3-digit display while attempting to load the diagnostics.

3-Digit Display Number	Action
200	Be sure the key mode switch is set to the Service position. If the key mode switch was not in the Service position, set it to the Service position, and then go to Step 6, substep 4. If the key mode switch was in the Service position, record and report SRN 111-200. **STOP.** You have completed these procedures.
260, 261, 262	Go to Step 21.
Any other number	Record and report SRN 101-xxx (where xxx is the number displayed in the 3-digit display). **STOP.** You have completed these procedures.

Step 8

(From Steps 6, 18)

A flashing 888 in the 3-digit display indicates that a crash message or a diagnostic message is ready to be read.

1. Use the steps in the "Reading Flashing 888 Numbers" in Chapter 3 to:

   - Read all of the message.
   - Identify the SRN if applicable.
   - Record the remaining numbers for the service representative.

2. If you identified an SRN, go to substep 3. Otherwise, go to substep 5.

3. Record the SRN and any other numbers.

4. Report the SRN to the service organization. Report any other numbers read to the service representative to determine the location of the failing FRU.

5. **STOP.** You have completed these procedures.

Step 9

(From Steps 6, 18, 20)

The following steps analyze a console display problem.

Find your type of console display in the following table; then follow the instructions given in the Action column.

Console Display	Action
Display Device	Go to the your display documentation for problem determination.
tty terminal	Go to the documentation for problem determination for this type of terminal.

Step 10

(From Steps 5, 6, 12, 18)

The diagnostic control program loaded correctly.

Press the Enter key.

Is the FUNCTION SELECTION **menu displayed?**

NO   Go to Step 11.

YES   Go to Step 12.

Step 11

(From Steps 10, 20)

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
101-key keyboard. Identify by the type of Enter key used. The Enter key is within one horizontal row of keys.	Record and report service request number 111-921. **STOP.** You have completed these procedures.
102-key keyboard. Identify by the type of Enter key used. The Enter key extends into two horizontal rows of keys.	Record and report service request number 111-922. **STOP.** You have completed these procedures.
Kanji keyboard. Identify by the Japanese characters.	Record and report service request number 111-923. **STOP.** You have completed these procedures.
tty-terminal keyboard. This applies to all attached terminals.	Go to the documentation for problem determination for this type terminal.

Step 12

(From Step 10)

1. If the terminal type has not been defined, you must use the `Initialize Terminal` option on the `FUNCTION SELECTION` menu to initialize the operating system environment before you can continue with the diagnostics. This is a separate and different operation than selecting the console display.

2. Select `Diagnostic Routines`.

3. Press the Enter key.

4. In the table on the following page, find the menu or system response you received when you selected `Diagnostic Routines`; then follow the instructions given in the Action column.

System Response	Action
The DIAGNOSTIC MODE SELECTION menu is displayed.	Select Problem Determination, and then go to Step 13.
The MISSING RESOURCE menu is displayed.	Follow the displayed instructions until either the DIAGNOSTIC SELECTION menu or an SRN is displayed. If the DIAGNOSTIC SELECTION menu is displayed, go to Step 13. If you get an SRN, record it, and go to Step 15. If you get a number in the 3-digit display, go to Step 14.
The NEW RESOURCE menu is displayed.	Follow the displayed instructions. Note: Devices attached to serial ports S1 or S2 will not appear on the NEW RESOURCE menu. If the DIAGNOSTIC SELECTION menu is displayed, go to Step 13. If you get an SRN, record it, and go to Step 15. If you do *not* get an SRN, go to Step 19.
The diagnostics begin testing a resource. **Note:** If Problem Determination was selected from the DIAGNOSTIC MODE SELECTION menu, and if a recent error has been logged in the error log, the diagnostics will automatically begin testing the resource.	Follow the displayed instructions. If the No Trouble Found screen is displayed, press Enter. If another resource is tested, repeat this step. If the ADVANCED DIAGNOSTIC SELECTION menu is displayed, go to Step 10. If an SRN is displayed, record it, and go to Step 15.

Step 13

(From Step 12)

The system checkout option checks all of the resources (available in standalone mode only).

Select and run the diagnostic tests on the resources you are having problems with or run system checkout to check all of the configured resources. Find the response in the following table and perform the specific action.

Diagnostic Response	Action
An SRN is displayed.	Go to Step 15.
The system stopped with a number displayed in the 3-digit display.	Go to Step 14.
The TESTING COMPLETE menu and the No trouble was found message is displayed, and you have *not* tested all of the resources.	Press Enter and continue with the testing.
The TESTING COMPLETE menu and the No trouble was found message displayed and you *have* tested all of the resources.	Go to Step 19. Notes: If dials and LPFKs are attached to serial ports S1 or S2 and you are running diagnostics from disk or server, the dials and LPFKs will only appear on the selection screen if they have been configured by the user. Use the Dials and LPFKs Configuration service aid to configure these devices. If the dials and LPFKs are attached to serial ports S1 or S2, you must configure them using the Dials and LPFKs Configuration service aid before they can be tested from diskette.

Step 14

(From Steps 12, 13)

A flashing 888 in the 3-digit display indicates that a crash message or a diagnostic message is ready to be read.

1. Use the steps in the "Reading Flashing 888 Numbers" in Chapter 3 to:

   • Read all of the message.
   • Identify the SRN.
   • Record the remaining numbers for the service representative.

2. Record the SRN.

3. Report the SRN to the service organization. Report any other numbers to the service representative to determine the location of the failing FRU.

4. **STOP.** You have completed these procedures.

Step 15

(From Steps 12, 13)

The diagnostic programs produced an SRN for this problem.

1. Record the SRN and any other numbers.

2. Report the SRN to the service organization.

3. **STOP.** You have completed these procedures.

Step 16

(From Step 6)

The system stopped with two or more numbers between 221 and 296 alternating in the 3-digit display. This indicates the diagnostics could not load from disk, so the load program is looking for the diagnostic programs on the diskettes or some other load device.

Are you trying to load the diagnostic programs from diskettes or a CD-ROM disc?

NO	Go to Step 22.
YES	Record and report SRN $111-101$.

STOP. You have completed these procedures.

Step 17

(From Steps 21, 22)

When you load the diagnostics from diskettes or a CD-ROM disc and run them from a tty terminal, the attributes for the terminal must be set to match the defaults of the diagnostic programs. The tty terminal must be attached to port S1 on the system unit.

Are you going to load the diagnostics from diskettes or a CD-ROM disc and run them from a tty terminal attached to port S1?

NO   Go to Step 18.

YES   Go to "Running the Diagnostic Programs from a tty Terminal" in Chapter 3 and be sure your terminal attributes are set to work with the diagnostic programs.

Return to Step 18 when you finish checking the attributes. Record any settings that are changed.

Step 18

The following steps analyze a failure to load the diagnostic programs from a disk, or a failure to determine whether the diagnostic programs are on a disk.

1. Set the power switch on the system unit to Off.

2. Set the key mode switch to the Service position.

3. Insert either the first diagnostic diskette into the diskette drive or the diagnostic CD-ROM disc into the CD-ROM drive.

4. Set the power switch on the system unit to On.

5. If c07 is displayed in the 3-digit display, insert the next diagnostic diskette. If c31 is displayed, follow the displayed instructions to select the console display. If no console display is available, set the key mode switch to the Normal position, and then set it to the Service position to indicate to the diagnostics that there is no console display.

   If you cannot select a console display, to Step 20. Otherwise, continue to the next substep.

6. Wait until one of the following conditions occur, then go to the next substep:

   - The system stops with two or more numbers between 221 and 296 alternating in the 3-digit display.
   - The same number is displayed in the 3-digit display for longer than three minutes, and the power-on light is on.
   - The number 888 is flashing in the 3-digit display.
   - The 3-digit display is blank.
   - The words DIAGNOSTIC OPERATING INSTRUCTIONS are displayed.

7. Starting at the top of the following table, find your symptom; then perform the specific action.

Symptom	Action
The system stops with a blank 3-digit display, and the words DIAGNOSTIC OPERATING INSTRUCTIONS are displayed with *no* obvious problem on the console display (for example, it is *not* distorted or blurred).	Go to Step 10.
The system stops with a blank 3-digit display, and the words DIAGNOSTIC OPERATING INSTRUCTIONS are *not* displayed correctly.	Go to Step 9.
The system stops with 260, 261, or 262 displayed in the 3-digit display.	Record and report SRN 111-101. **STOP.** You have completed these procedures.
The system stops with a steady (not flashing) number displayed in the 3-digit display, and the power-on light is on.	The number must be other than c07 or c31. See previous substep 4 for these numbers Go to Step 7.
The system stops with 888 flashing in the 3-digit display.	Go to Step 8.
The system stops with two or more numbers between 221 and 296 alternating in the 3-digit display.	Record and report SRN 111-101. **STOP.** You have completed these procedures.

Step 19
(From Steps 12, 13)

The diagnostics did not find a hardware problem. If you still have a problem, contact your software support center. If you are attached to another system, refer to Chapter 2 and check your configuration before calling the software support center.

Step 20
(From Steps 6, 18)

When the c31 halt was present, were the instructions to select a console display readable with no obvious problems with the display?

NO   Go to Step 9.

YES   Go to Step 11.

Step 21

(From Steps 2 and 7)

> An English-only version of diagnostics are provided on diskette and CD-ROM disc.
>
> **Do you want to run diagnostics from diskette or a CD-ROM disc?**
>
> **NO**   If you have a problem, call for service, and report the problem.
>
> **YES**   Go to Step 17.

Step 22

(From Step 16)

> An English-only version of diagnostics are provided on diskette and CD-ROM disc.
>
> **Do you want to run diagnostics from diskette or a CD-ROM disc?**
>
> **NO**   Record and report SRN 111-103. **Stop**. You have completed these procedures.
>
> **YES**   Go to Step 17.

Chapter 7. Changing the System Unit Position

This chapter explains how to change the 7030 system unit to position it either horizontally or vertically.

Changing the System Unit Base

As shown in Chapter 1, the system unit operates in either a horizontal or vertical position. When the unit is used in the horizontal position, there is a base that is attached to the bottom of the unit with two large screws. When you want to use the system unit in the vertical position, the base can be removed from the bottom and attached to the side of the unit that has two mounting holes. The screws have knobs for ease in attaching or removing the base and are captured in the base with a retaining ring. No screwdriver is required.

Note: Refer to "Stopping the System Unit" on page 2-4 before changing the system unit base.

1. Stand the unit on the side with the two screw mounting holes facing upward.

2. Loosen the two screws that are attached to the base.

3. Remove the base.

Warning: In the following illustration, the system unit is shown tilted on the side that does not have screw mounting holes. Do *not* operate the system unit on the side that does not have base screw mounting holes. This may result in damaged or lost data.
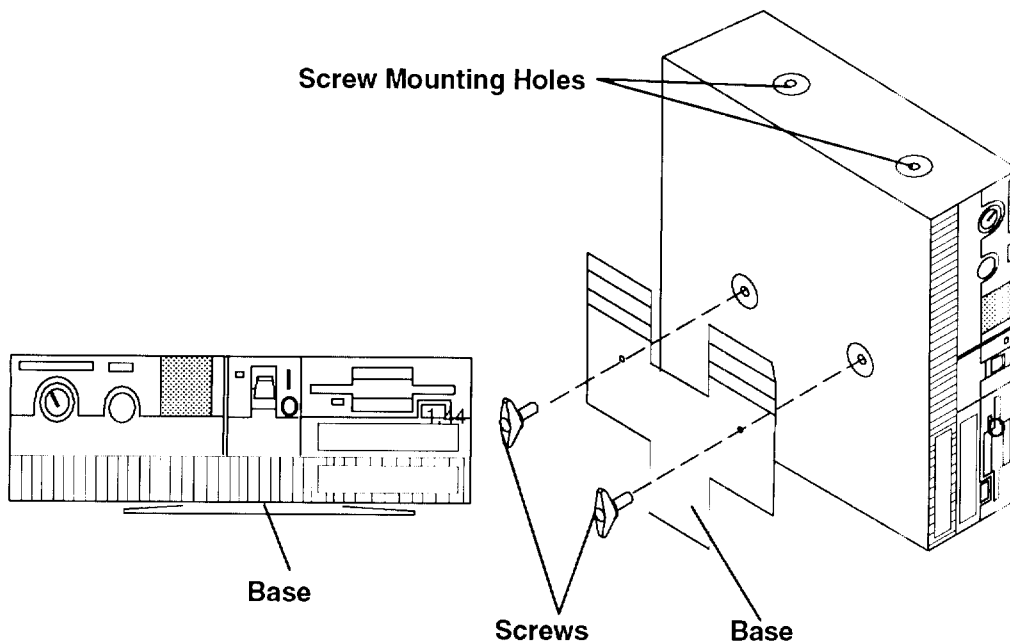
4. Place the base on the side of the unit that has the two screw mounting holes.
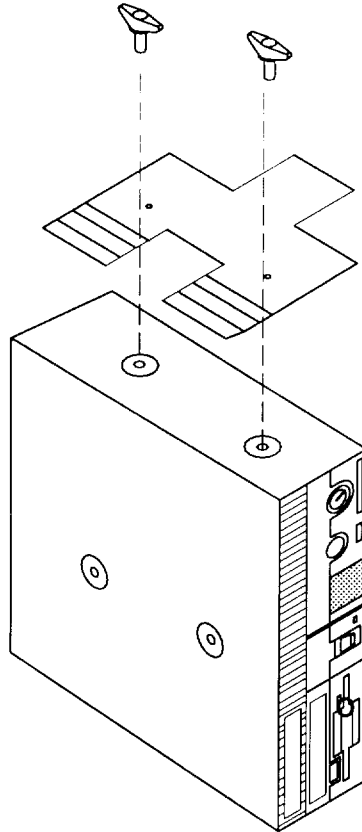
5. Tighten the two screws to the unit until the screws are finger-tight.

6. Stand the unit in the vertical position on the base.

Base
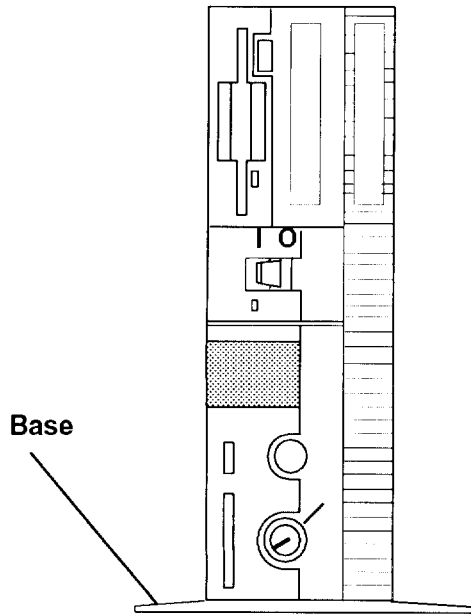
To change the unit from a vertical to a horizontal position, reverse the procedure.

Changing the Logo Position

There are two logos on the system unit: one on the front cover and one on the back cover. The logos can be turned so they can be read when the system unit is in either a horizontal or a vertical position.

With the system unit in the vertical position, to change the logos:

1. Grasp the logo with your fingertips.

2. Turn the logo 90° in a clockwise direction on the front cover (counterclockwise direction on the back cover).

3. Release the logo back into position.

Vertical Position
Front View

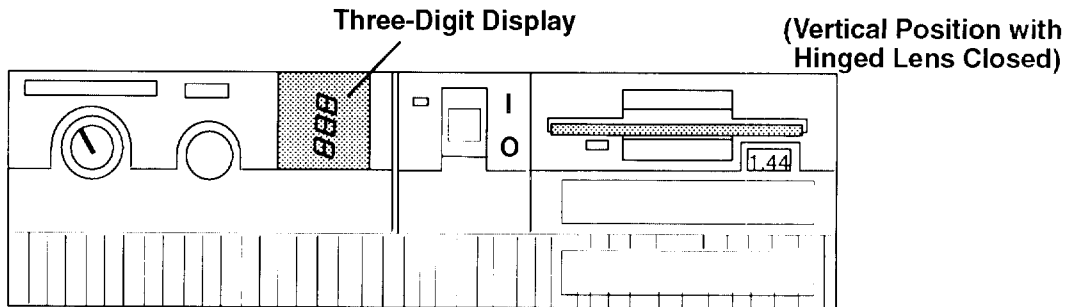**Vertical Position**
Back View
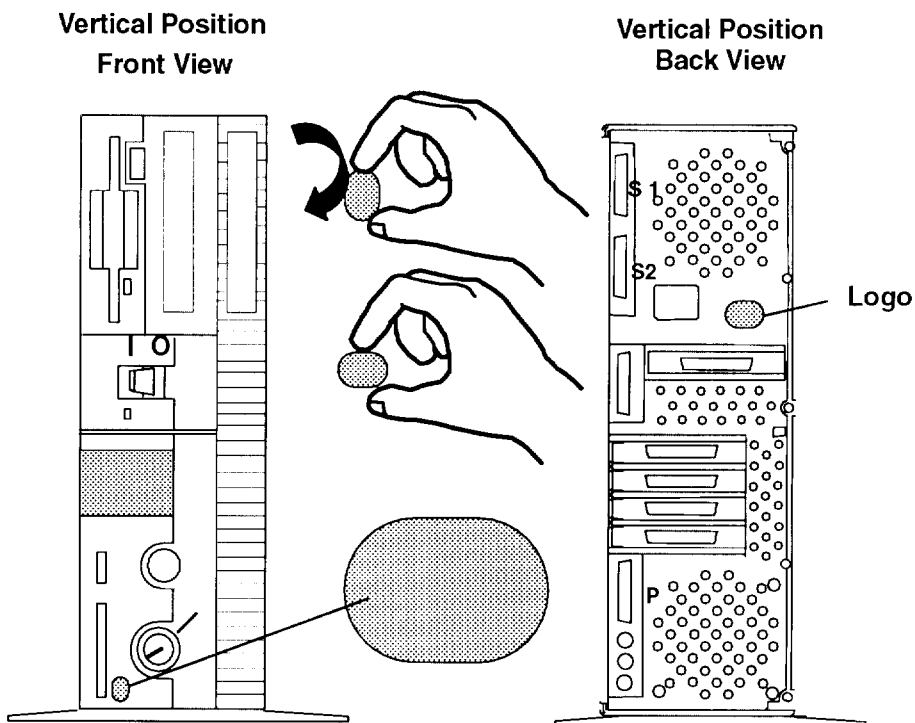
Logo

To change the logos when the unit is in a horizontal position, use the same procedure. But, in step 2, turn the logo 90° in a counterclockwise direction on the front cover (clockwise direction on the back cover).

Changing the Three-Digit Display Position

You can change the three-digit display position so that it can easily be read when the system unit is in the vertical or horizontal position.
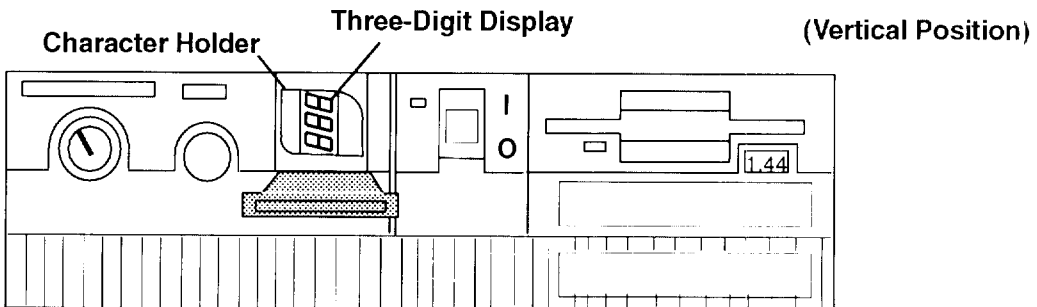
There is a hinged lens over the three-digit display.

Note: In the following figures, the three 7-segment characters appear lit to help in understanding the position of the three-digit display.

Three-Digit Display   **(Vertical Position with Hinged Lens Closed)**

To change the display with the system unit in the horizontal position and the three-digit display in the vertical position, do the following:

1. To open, push down on the top of the hinged lens.

Character Holder   **Three-Digit Display**   **(Vertical Position)**

2. Grasp the character holder with your fingertips.

3. Turn the holder 90° in a counterclockwise direction.

Character Holder   **Three-Digit Display**   **(Horizontal Position)**
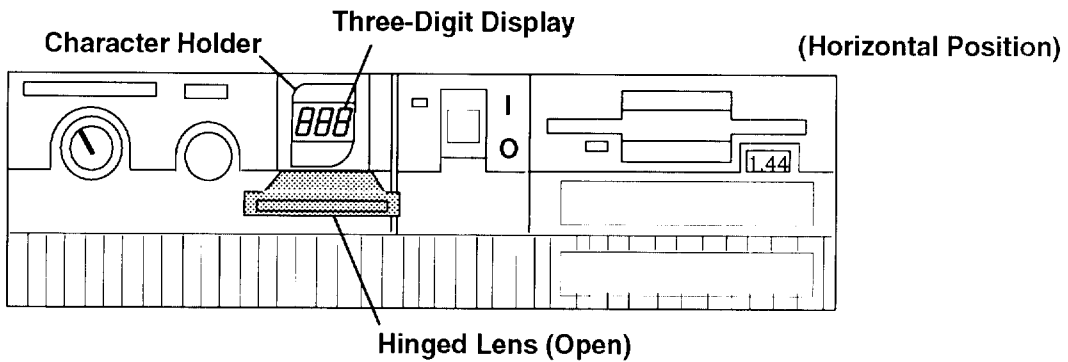
Hinged Lens (Open)

4. Close the hinged lens.

Three-Digit Display
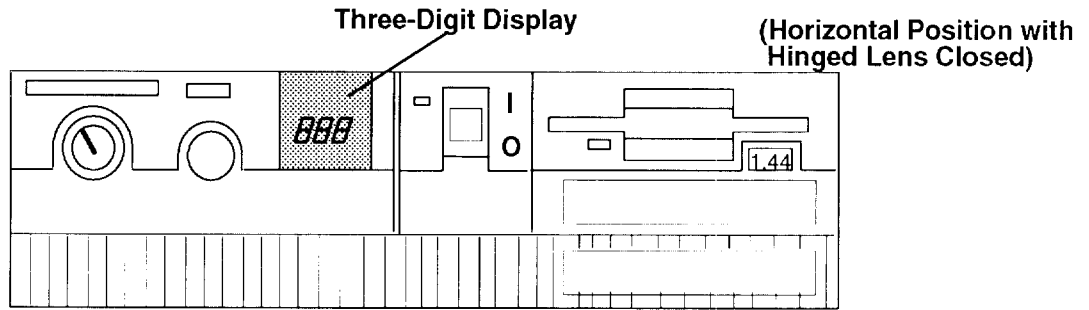
To change the three-digit display when the system unit is in the vertical position and the three-digit display is in the horizontal position, use the same procedure, except for step 3. Turn the holder 90° in a clockwise direction.

Chapter 8. Moving the System Unit

This chapter provides important information about moving the system unit.

Moving the System Unit

Warning: Damage as a result of improper handling may void your equipment warranty. Contact your local representative to obtain packing materials or assistance to prepare your system for moving.

A trained service representative should be contacted to move your system. The following danger and caution notices should be observeddanger and caution notices should be observed if you decide to move the unit yourself.

Note: For a translation of these notices, see System Unit Safety Information.

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 cables 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 cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables 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 communications lines.**

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

DANGER
> **To prevent shock hazard, disconnect the power cable from the electrical outlet before relocating the system.**

1. Set the power switches on the attached devices and the system unit to Off.

2. Unplug all attached devices and the system unit from power outlets.

3. Be sure to label all of the cables and cords connected to the rear of the system unit as you disconnect them.

4. In the location you are moving to, the power outlets should be checked for correct wiring, voltage, and grounding before attaching any of the devices or the system unit.

5. Connect all signal cables to the devices before connecting any device or the system unit to the power outlets.

Chapter 9. Diskless/Dataless Workstation Configuration

This chapter explains how to set up the system unit for diskless/dataless operation.

Diskless/Dataless Workstation Configuration

There are two ways to configure the 7030 system units:

- Standard system – the operating system is on the disk drive within the .7030

- Diskless/dataless system – the operating system is on a remote server. When the operating system is on a remote server, the workstation is referred to as a diskless/dataless workstation.

In this manual, the configuration that uses a remote server to load the operating system is referred to as diskless/dataless.

Note: The diskless/dataless system cannot boot without using a network server. The diskless/dataless system is called the *client* of the server.

What type of system do you want to create when you install the software on this system?

Standard system   Go to your software installation guide.

Diskless/dataless system
          Go to Step 1, "Planning."

Step 1. Planning

This chapter contains procedures for preparing a client so that it can be added to an existing diskless/dataless network.

Before you can proceed with the procedures in this section, you need to collect the following information from your network administrator:

1.1 What kind of network are you using to contact your diskless BOOT server? (Circle one and then go to the step listed after your choice.)

- Token-Ring   (Go to substep 1.2)

- Ethernet   (Go to substep 1.4)

1.2 What is the location of the Token-Ring card in your system that you want to use to contact your BOOT server? (Refer to your *About Your Machine* document for correct card location.) (Circle one.)

- Micro Channel slot 1   (Go to substep 1.3)

- Micro Channel slot 2   (Go to substep 1.3)

- Micro Channel slot 3   (Go to substep 1.3)

- Micro Channel slot 4   (Go to substep 1.3)

1.3 What data rate is the Token-Ring?

Note: It is very important that you use the correct data rate. An incorrect rate can cause disruption of your network.

- 4M bit   (Go to substep 1.4)

- 16M bit   (Go to substep 1.4)

1.4 Do you need to enter any of the following addresses? If yes, write down the addresses.

Note: You must include any leading zeros in each triplet of numbers. For example, if your address is 1.11.111.1, you must enter '001.011.111.001'.

Client address: [_ _ _ . _ _ _ . _ _ _ . _ _ _]

BOOTP server address: [_ _ _ . _ _ _ . _ _ _ . _ _ _]

Gateway address: [_ _ _ . _ _ _ . _ _ _ . _ _ _]

1.5 If the network cables are not already connected, ask your system administrator if your network cables can be connected later (in Step 2).

1.6 Go to Step 2, "Starting the System."

Step 2. Starting the System

2.1   Set the system unit power switch to the Off position if it is not already off.

2.2   If your system administrator gave permission (in Step 1), connect your network cables.

2.3   Turn the key mode switch to the Secure position.

2.4   Turn on all attached devices, such as terminals, tape drives, monitors, and external disk drives.

2.5   Set the system unit power switch to the On position.

2.6   Wait for 200 to appear in the 3-digit display and then continue with substep 2 7.

2.7   Turn the key mode switch to the Service position.

2.8   Press the yellow Reset button. What happens next depends on how your system is configured. Wait a minute to see which of the following occurs:

- If the Select Language menu displays, go to substep 2.9.

- If the Main Menu displays, go to Step 3, "Setting Up Network Configuration."

- If the screen remains blank and the number 261 or 262 displays in the 3-digit display and you are using an ASCII (async) terminal, press one of the number keys on your keyboard and continue with Step 3, "Setting Up Network Configuration."

- If the screen remains blank and the number 261 or 262 does *not* display, consult your *AIX Version 4.1 Problem Solving Guide and Reference*

2.9   Enter the number corresponding to the language you want to use in these menus. The screen will change to display the language you selected.

To return to the Main Menu, enter 99.

Go to Step 3, "Setting Up Network Configuration."

Step 3. Setting Up Network Configuration

```
                        Main Menu
                Configuration and Diagnostics

        1.  Select BOOT (Startup) Device
        2.  Select Language for these Menus
        3.  Send Test Transmission (PING)
        4.  Exit Main Menu and Start System (BOOT)




        Type the number for your selection, then press "ENTER"
        (Use the "Backspace" key to correct errors)
```

3.1   From the Main Menu, select the **Select BOOT (Startup) Device** option (1) and press Enter.

The Select BOOT (Startup) Device menu displays.

Consult your answers to the Step 1, "Planning" questions to help you complete the following steps.

3.2   If you are booting over a Token-Ring network, go to substep 3.3.

If you are booting over an Ethernet network, select Ethernet and go to substep 3.4.

3.3   For each Token-Ring adapter, you have two selections: 16M-bit and 4M-bit data rates.

Note: It is very important that you select the correct data rate. An incorrect data rate may cause the total disruption of your network.

3.3.1   Enter the number for the selection that corresponds to the adapter, slot and data rate combination that you want to use to communicate with your diskless BOOTP server.

3.3.2   Go to substep 3.4.

3.4   The Set or Change Network Addresses screen should display. If you do not need to enter any addresses, go to substep 3.5.

If you *do* need to enter addresses, do the following:

Note: You must include any leading zeros in each triplet of numbers. For example, if your address is 1.11.111.1, you must enter '001.011.111.001'.

3.4.1   Type the number in front of each address you want to enter and then type in the address. (Do *not* enter 99 when you have finished entering addresses.)

3.4.2   Go to substep 3.5.

3.5 Locate the line on the screen that begins with `Hardware Address`. Write down the hardware address in the space below.

Hardware address _____.

3.6 You are now ready to return to the Main Menu. enter `99`.

3.7 You now need to find out how much memory (RAM) is installed on your system. There are three ways to find out how much memory (RAM) you have:

- Check the "About Your Machine" list.

- Call your system administrator.

- Use the procedures in Chapter 5.

Write down your memory size on the line below.

Total memory _____.

3.8 Are you the administrator for the diskless BOOT server this client will use?

NO Go to Step 4, "Waiting for Client Registration on the Diskless Server."

YES Set the system unit power switch to the Off position. Go to substep 3.9.

3.9 Will this machine use AIX Version 3.2 as its operating system?

NO Go to Step 4, "Waiting for Client Registration on the Diskless Server."

YES Go to Chapter 10, "Diskless Systems Installation" in the *AIX Version 4.1 Installation Guide*.

Step 4. Waiting for Client Registration on the Diskless/Dataless Server

Before you can continue, the administrator of your server must add your machine as a diskless client on the diskless server. Before your client can be registered (added), the server administrator must know two things about your machine:

- The hardware address of your machine (the address you wrote down in substep 3.5).

- The amount of memory (RAM) in your machine (the amount you wrote down in substep 3.7).

Contact your administrator now and report your hardware address and RAM.

You must halt at this point and wait until your administrator has finished adding your client machine to the server.

You have two choices:

- You can leave this machine powered on while you wait. This way you will not have to repeat Step 2, "Starting the System" and Step 3, "Setting Up Network Configuration" when you are ready to continue with the setup of this machine. When your diskless server administrator informs you the client is registered, continue with Step 5, "Booting the Diskless Client."

- If your administrator cannot add your machine to the server right away and you are uncomfortable leaving the client on, you can turn the system power off now. After the client has been registered, repeat Step 2, "Starting the System" and Step 3, "Setting Up Network Configuration," and then continue with Step 5, "Booting the Diskless Client."

Step 5. Booting the Diskless/Dataless Client

5.1   At the Main Menu, select **Exit Main Menu & Start System (Boot)** (option 4)

The Starting System (BOOT) screen displays.

5.2   Turn the key mode switch to the Normal position, and press Enter to continue booting the system.

5.3   The `Booting . . . . Please Wait` message displays and your system will begin booting. This first boot will take a number of minutes—please be patient (subsequent boots will be faster). At times you may not see any indications of activity on your screen, but the numbers in your 3-digit display will be changing as the boot progresses. Eventually your screen will go blank. Then after several minutes `c31` will appear on the 3-digit display.

5.4   Each terminal and direct-attached display device (or console) attached to your system will then show a message asking you to select your system console. Your console is the screen and keyboard that you will be using to manage your system.

Press the specified keys only on the keyboard you want to use as your system console.

Your system will resume the boot process.

5.5   A login prompt should display on your console when the system has finished booting (this may take a while). As booting progresses, the numbers in the 3-digit display will change.

Note: During the boot process the message `Multi-user initialization completed` will display and the system will appear to be inactive for 2–3 minutes. This does not mean the system has completed booting. Please be patient, the login prompt will eventually display.

When the login prompt appears, you have completed the hardware setup of your system. You must now complete the software setup for this machine—especially your network configuration (see the following Note).

Note: Even though you can now boot from your network server, this machine is *not* yet fully configured to use the network. If you want to have full network functionality for this machine you must complete the network configuration procedures. You may also need to perform other software configuration tasks such as configuring your display and setting date and time. To complete your software setup, do one of the following:

– If you are using AIX as your operating system, you should now go to the *AIX Version 4.1 Installation Guide*, and begin the procedures setting up the display device.

– If you want to run a non-AIX operating system on this client, you should now reset the built-in network configuration information (BOOT device on the Main Menu) so that the client will boot from the non-AIX-Version 3.2 server. Then reboot the client.

Appendix A. Supplies

This appendix contains a list of supplies and the part numbers to order.

Part Number	Description
6404088	3.5-Inch 1.0M-byte Blank Diskette (box of ten)
6404083	3.5-Inch 2.0M-byte Blank Diskette (box of ten).
72X6111	3.5-Inch 4.0MB Blank Diskette (Box of 10)
21F8763	4-mm Data Tape Cartridge (5-pack)
21F8758	4-mm DDS IIII Data Tape Cartridge (5-pack)
21F8762	4-mm DDS IIII Diagnostic Cartridge
8191160	4-mm DDS 2 Data Cartridge (5-pack)
8191146	4-mm DDS 2 Diagnostic Cartridge
21F8732	1/4-Inch, 1.2 GB Data Tape Cartridge (5-pack)
21F8587	1/4-Inch, 525 MB Data Tape Cartridge (5-pack)
21F8588	1/4-Inch, 150 MB Data Tape Cartridge (5-pack)
21F8570	1/4-Inch, Cartridge Head Cleaning Kit
21F8595	8-mm Data Tape Cartridge (5-pack)
21F8593	8-mm Cleaning Tape Cartridge
0352465	1/2-Inch, Head Cleaning Kit
13F5647	Tape Cleaning Solution
33F8354	Lithium Battery

In the United States, you can order these supplies by calling toll-free **1-800-438-2468**, or you can FAX your inquiry to **1-800-522-3422**.

Appendix B. Three-Digit Display Numbers

This appendix contains lists of the various numbers and characters that may display in the three-digit display. Determine the type of operation being performed, then use the list for that type operation.

Built-In Self-Test (BIST) Indicators

100	BIST completed successfully; control was passed to IPL ROS.
101	BIST started following Reset.
102	BIST started following power-on Reset.
103	BIST could not determine the system model number.
104	Equipment conflict; BIST could not find the CBA.
105	BIST could not read from the OCS EPROM.
106	BIST failed: CBA not found
111	OCS stopped; BIST detected a module error.
112	A checkstop occurred during BIST; checkstop results could not be logged out.
113	Three checkstops have occurred.
120	BIST starting a CRC check on the 8752 EPROM.
121	BIST detected a bad CRC in the first 32K bytes of the OCS EPROM.
122	BIST started a CRC check on the first 32K bytes of the OCS EPROM.
123	BIST detected a bad CRC on the OCS area of NVRAM.
124	BIST started a CRC check on the OCS area of NVRAM.
125	BIST detected a bad CRC on the time-of-day area of NVRAM.
126	BIST started a CRC check on the time-of-day area of NVRAM.
127	BIST detected a bad CRC on the 8752 EPROM.
130	BIST presence test started.
140	Running BIST. (Box Manufacturing Mode Only)
142	Box manufacturing mode operation.
143	Invalid memory configuration.
144	Manufacturing test failure.
151	BIST started AIPGM test code.
152	BIST started DCLST test code.
153	BIST started ACLST test code.
154	BIST started AST test code.
160	Bad EPOW Signal/Power status signal.
161	BIST being conducted on BUMP I/O.
162	BIST being conducted on JTAG.
163	BIST being conducted on Direct I/O.
164	BIST being conducted on CPU.
165	BIST being conducted on DCB and Memory.
166	BIST being conducted on Interrupts.
170	BIST being conducted on Multi-Processors.
180	Logout in progress.
185	A checkstop condition occurred during the BIST.
186	System logic-generated checkstop (Model 250 only).
187	Graphics-generated checkstop (Model 250).
195	BIST completed.
888	BIST did not start.

Power-On Self-Test (POST) Indicators

20c	L2 cache POST error. (The display shows a solid 20c for 5 seconds.)
21c	L2 cache is not detected. (The display shows a solid 21c for 2 seconds.)
22c	Attempting a normal mode IPL from FDDI specified in NVRAM IPL device list.
23c	Attempting a normal mode IPL from FDDI specified in IPL ROM device list.
24c	Attempting a service mode IPL from FDDI specified in NVRAM IPL device list.
25c	Attempting a service mode IPL from FDDI specified in IPL ROM device list.
200	IPL attempted with keylock in the Secure position.
201	IPL ROM test failed or checkstop occurred (irrecoverable).
202	Unexpected machine check interrupt.
203	Unexpected data storage interrupt.
204	Unexpected instruction storage interrupt.
205	Unexpected external interrupt.
206	Unexpected alignment interrupt.
207	Unexpected program interrupt.
208	Unexpected floating point unavailable interrupt.
209	Unexpected SVC interrupt.
210	Unexpected SVC interrupt.
211	IPL ROM CRC comparison error (irrecoverable).
212	RAM POST memory configuration error or no memory found (irrecoverable).
213	RAM POST failure (irrecoverable).
214	Power status register failed (irrecoverable).
215	A low voltage condition is present (irrecoverable).
216	IPL ROM code being uncompressed into memory.
217	End of boot list encountered.
218	RAM POST is looking for good memory.
219	RAM POST bit map is being generated.
220	IPL control block is being initialized.
221	NVRAM CRC comparison error during AIX IPL(key mode switch in Normal mode). Reset NVRAM by reaccomplishing IPL in Service mode. For systems with an internal, direct-bus-attached (DBA) disk, IPL ROM attempted to perform an IPL from that disk before halting with this operator panel display value.
222	Attempting a Normal mode IPL from Standard I/O planar-attached devices specified in NVRAM IPL Devices List.
223	Attempting a Normal mode IPL from SCSI-attached devices specified in NVRAM IPL Devices List.
224	Attempting a Normal mode IPL from 9333 subsystem device specified in NVRAM IPL Devices List.
225	Attempting a Normal mode IPL from 7012 DBA disk-attached devices specified in NVRAM IPL Devices List.
226	Attempting a Normal mode IPL from Ethernet specified in NVRAM IPL Devices List.
227	Attempting a Normal mode IPL from Token-Ring specified in NVRAM IPL Devices List.
228	Attempting a Normal mode IPL from NVRAM expansion code.
229	Attempting a Normal mode IPL from NVRAM IPL Devices List: cannot IPL from any of the listed devices, or there are no valid entries in the Devices List.

230	Attempting a Normal mode IPL from adapter feature ROM specified in IPL ROM Device List.
231	Attempting a Normal mode IPL from Ethernet specified in IPL ROM Device List.
232	Attempting a Normal mode IPL from Standard I/O planar-attached devices specified in ROM Default Device List.
233	Attempting a Normal mode IPL from SCSI-attached devices specified in IPL ROM Default Device List.
234	Attempting a Normal mode IPL from 9333 subsystem device specified in IPL ROM Device List.
235	Attempting a Normal mode IPL from 7012 DBA disk-attached devices specified in IPL ROM Default Device List.
236	Attempting a Normal mode IPL from Ethernet specified in IPL ROM Default Device List.
237	Attempting a Normal mode IPL from Token-Ring specified in IPL ROM Default Device List.
238	Attempting a Normal mode IPL from Token-Ring specified by the operator.
239	System failed to IPL from the device chosen by the operator.
240	Attempting a Service mode IPL from adapter feature ROM.
241	Attempting a normal boot from devices specified in the NVRAM boot list.
242	Attempting a Service mode IPL from Standard I/O planar-attached devices specified in the NVRAM IPL Devices List.
243	Attempting a Service mode IPL from SCSI-attached devices specified in the NVRAM IPL Devices List.
244	Attempting a Service mode IPL from 9333 subsystem device specified in the NVRAM IPL Devices List.
245	Attempting a Service mode IPL from 7012 DBA disk-attached devices specified in the NVRAM IPL Devices List.
246	Attempting a Service mode IPL from Ethernet specified in the NVRAM IPL Devices List.
247	Attempting a Service mode IPL from Token-Ring specified in the NVRAM Device List.
248	Attempting a Service mode IPL from NVRAM expansion code.
249	Attempting a Service mode IPL from the NVRAM IPL Devices List; cannot IPL from any of the listed devices, or there are no valid entries in the Devices List.
250	Attempting a Service mode IPL from adapter feature ROM specified in the IPL ROM Device List.
251	Attempting a Service mode IPL from Ethernet specified in the IPL ROM Default Device List.
252	Attempting a Service mode IPL from Standard I/O planar-attached devices specified in the ROM Default Device List.
253	Attempting a Service mode IPL from SCSI-attached devices specified in the IPL ROM Default Device List.
254	Attempting a Service mode IPL from 9333 subsystem device specified in the IPL ROM Devices List.
255	Attempting a Service mode IPL from 7012 DBA disk-attached devices specified in IPL ROM Default Device List.
256	Attempting a Service mode IPL from Ethernet specified in the IPL ROM Devices List.
257	Attempting a Service mode IPL from Token-Ring specified in the IPL ROM Devices List.
258	Attempting a Service mode IPL from Token-Ring specified by the operator.
259	Attempting a Service mode IPL from FDDI specified by the operator

260	Information is being displayed on the display console.
261	No supported local system display adapter was found.
262	Keyboard not detected as being connected to the system's keyboard port.
263	Attempting a Normal mode IPL from adapter feature ROM specified in the NVRAM Device List.
269	Stalled state - the system is unable to IPL.
271	Mouse and Mouse port POST.
272	Tablet Port POST.
277	Auto Token-Ring LANstreamer MC 32 Adapter
278	Video ROM scan POST.
279	FDDI POST.
280	3com Ethernet POST.
281	Keyboard POST executing.
282	Parallel port POST executing.
283	Serial port POST executing.
284	POWER Gt1 graphics adapter POST executing.
285	POWER Gt3 graphics adapter POST executing.
286	Token-Ring adapter POST executing.
287	Ethernet adapter POST executing.
288	Adapter card slots being queried.
289	POWER GT0 Display Adapter POST.
290	IOCC POST error (irrecoverable).
291	Standard I/O POST running.
292	SCSI POST running.
293	7012 DBA disk POST running.
294	IOCC bad TCW SIMM in slot location J being tested.
295	Graphics Display adapter POST, color or grayscale.
296	ROM scan POST.
297	System model number does not compare between OCS and ROS (irrecoverable).
298	Attempting a software IPL.
299	IPL ROM passed control to the loaded program code.
301	Flash Utility ROM test failed or checkstop occurred (irrecoverable).
302	Flash Utility ROM: User prompt, move the key to the service position in order to perform an optional Flash Update. LED 302 will only appear if the key switch is in the secure position. This signals the user that a Flash Update may be initiated by moving the key switch to the service position. If the key is moved to the service position then LED 303 will be displayed, this signals the user to press the reset button and select optional Flash Update.
303	Flash Utility ROM: User prompt, press the reset button in order to perform an optional Flash Update. LED 302 will only appear if the key switch is in the secure position. This signals the user that a Flash Update may be initiated by moving the key switch to the service position. If the key is moved to the service position LED 303 will be displayed, this signals the user to press the reset button and select optional Flash Update.
304	Flash Utility ROM IOCC POST error (irrecoverable).
305	Flash Utility ROM standard I/O POST running.
306	Flash Utility ROM is attempting IPL from Flash Update media device.
307	Flash Utility ROM system model number does not compare between OCS and ROM (irrecoverable).
308	Flash Utility ROM: IOCC TCW memory is being tested.
309	Flash Utility ROM passed control to a Flash Update Boot Image.
311	Flash Utility ROM CRC comparison error (irrecoverable).

312	Flash Utility ROM RAM POST memory configuration error or no memory found (irrecoverable).
313	Flash Utility ROM RAM POST failure (irrecoverable).
314	Flash Utility ROM Power status register failed (irrecoverable).
315	Flash Utility ROM detected a low voltage condition.
318	Flash Utility ROM RAM POST is looking for good memory.
319	Flash Utility ROM RAM POST bit map is being generated.
322	CRC error on media Flash Image. No Flash Update performed.
323	Current Flash Image is being erased.
324	CRC error on new Flash Image after Update was performed. (Flash Image is corrupted.)

Configuration Program Indicators

5c0	Streams-based hardware drive being configured.
5c1	Streams-based X.25 protocol being configured.
5c2	Streams-based X.25 COMIO emulator driver being configured.
5c3	Streams-based X.25 TCP/IP interface driver being configured.
5c4	FCS adapter device driver being configured.
5c5	SCB network device driver for FCS is being configured.
5c6	AIX SNA channel being configured.
500	Querying Standard I/O slot.
501	Querying card in Slot 1.
502	Querying card in Slot 2.
503	Querying card in Slot 3.
504	Querying card in Slot 4.
505	Querying card in Slot 5.
506	Querying card in Slot 6.
507	Querying card in Slot 7.
508	Querying card in Slot 8.
510	Starting device configuration.
511	Device configuration completed.
512	Restoring device configuration files from media.
513	Restoring basic operating system installation files from media.
516	Contacting server during network boot.
517	Mounting client remote file system during network IPL.
518	Remote mount of the root and /usr file systems failed during network boot.
520	Bus configuration running.
521	/etc/init invoked cfgmgr with invalid options; /etc/init has been corrupted or incorrectly modified (irrecoverable error).
522	The configuration manager has been invoked with conflicting options (irrecoverable error).
523	The configuration manager is unable to access the ODM database (irrecoverable error).
524	The configuration manager is unable to access the config. rules object in the ODM database (irrecoverable error).
525	The configuration manager is unable to get data from a customized device object in the ODM database (irrecoverable error).
526	The configuration manager is unable to get data from a customized device driver object in the ODM database (irrecoverable error).
527	The configuration manager was invoked with the phase 1 flag; running phase 1 at this point is not permitted (irrecoverable error).
528	The configuration manager cannot find sequence rule, or no program name was specified in the ODM database (irrecoverable error)
529	The configuration manager is unable to update ODM data (irrecoverable error).

530	The program **savebase** returned an error.
531	The configuration manager is unable to access the **PdAt** object class (irrecoverable error).
532	There is not enough memory to continue (malloc failure); irrecoverable error.
533	The configuration manager could not find a configure method for a device.
534	The configuration manager is unable to acquire database lock (irrecoverable error).
535	HIPPI diagnostics interface driver being configured.
536	The configuration manager encountered more than one sequence rule specified in the same phase (irrecoverable error).
537	The configuration manager encountered an error when invoking the program in the sequence rule.
538	The configuration manager is going to invoke a configuration method.
539	The configuration method has terminated, and control has returned to the configuration manager.
551	IPL vary-on is running.
552	IPL varyon failed.
553	IPL phase 1 is complete.
554	Unable to define NFS swap device during network boot.
555	Unable to create NFS swap device during network boot.
556	Logical Volume Manager encountered error during IPL vary-on.
557	The root filesystem will not mount.
558	There is not enough memory to continue the system IPL.
559	Less than 2 M bytes of good memory are available to load the AIX kernel.
570	Virtual SCSI devices being configured.
571	HIPPI common function device driver being configured.
572	HIPPI IPI-3 master transport driver being configured.
573	HIPPI IPI-3 slave transport driver being configured.
574	HIPPI IPI-3 transport services user interface device driver being configured.
575	A 9570 disk-array driver is being configured.
576	Generic async device driver being configured.
577	Generic SCSI device driver being configured.
578	Generic commo device driver being configured.
579	Device driver being configured for a generic device.
580	HIPPI TCPIP network interface driver being configured.
581	Configuring TCP/IP.
582	Configuring Token-Ring data link control.
583	Configuring an Ethernet data link control.
584	Configuring an IEEE Ethernet data link control.
585	Configuring an SDLC MPQP data link control.
586	Configuring a QLLC X.25 data link control.
587	Configuring a NETBIOS.
588	Configuring a Bisync Read-Write (BSCRW).
589	SCSI target mode device being configured.
590	Diskless remote paging device being configured.
591	Configuring an LVM device driver.
592	Configuring an HFT device driver.
593	Configuring SNA device drivers.
594	Asynchronous I/O being defined or configured.
595	X.31 pseudo-device being configured.
596	SNA DLC/LAPE pseudo-device being configured.
597	OCS software being configured.
598	OCS hosts being configured during system reboot.

599	Configuring FDDI data link control.
600	Starting network boot portion of **/sbin/rc.boot**
602	Configuring network parent devices.
603	**/usr/lib/methods/defsys**, **/usr/lib/methods/cfgsys**, or **/usr/lib/methods/cfgbus** failed.
604	Configuring physical network boot device.
605	Configuration of physical network boot device failed.
606	Running **/usr/sbin/ifconfig** on logical network boot device.
607	**/usr/sbin/ifconfig** failed.
608	Attempting to retrieve the **client.info** file with **tftp**. Note that a flashing 608 indicates multiple attempt(s) to retrieve the **client_info** file are occurring.
609	The **client.info** file does not exist or it is zero length.
610	Attempting remote mount of NFS file system.
611	Remote mount of the NFS file system failed.
612	Accessing remote files; unconfiguring network boot device.
614	Configuring local paging devices.
615	Configuration of a local paging device failed.
616	Converting from diskless to dataless configuration.
617	Diskless to dataless configuration failed.
618	Configuring remote (NFS) paging devices.
619	Configuration of a remote (NFS) paging device failed.
620	Updating special device files and ODM in permanent filesystem with data from boot RAM filesystem.
622	Boot process configuring for operating system installation.
77c	Progress indicator. A 1.0 GB 16-bit SCSI disk drive being identified or configured.
700	Progress indicator. A 1.1 GB 8-bit SCSI disk drive being identified or configured.
701	Progress indicator. A 1.1 GB 16-bit SCSI disk drive is being identified or configured.
702	Progress indicator. A 1.1 GB 16-bit differential SCSI disk drive is being identified or configured.
703	Progress indicator. A 2.2 GB 8-bit SCSI disk drive is being identified or configured.
704	Progress indicator. A 2.2 GB 16-bit SCSI disk drive is being identified or configured.
705	The configuration method for the 2.2 GB 16-bit differential SCSI disk drive is being run. If an irrecoverable error occurs, the system halts.
706	Progress indicator. A 4.5 GB 16-bit SCSI disk drive is being identified or configured.
707	Progress indicator. A 4.5 GB 16-bit differential SCSI disk drive is being identified or configured.
708	Progress indicator. A L2 cache is being identified or configured.
710	POWER GXT150M graphics adapter being identified or configured.
711	Unknown adapter being identified or configured.
712	Graphics slot bus configuration is executing.
713	The IBM ARTIC960 device is being configured.
714	A video capture adapter is being configured.
715	The Ultimedia Services audio adapter is being configured. This LED displays briefly on the panel.
720	Unknown read/write optical drive type being configured.
721	Unknown disk or SCSI device being identified or configured.
722	Unknown disk being identified or configured.
723	Unknown CD-ROM being identified or configured.

724	Unknown tape drive being identified or configured.
725	Unknown display adapter being identified or configured.
726	Unknown input device being identified or configured.
727	Unknown async device being identified or configured.
728	Parallel printer being identified or configured.
729	Unknown parallel device being identified or configured.
730	Unknown diskette drive being identified or configured.
731	PTY being identified or configured.
732	Unknown SCSI initiator type being configured.
733	7GB 8mm tape drive being configured.
85c	Progress indicator. Token-Ring High-Performance LAN adapter is being identified or configured.
89c	Progress indicator. A multimedia SCSI CD-ROM is being identified or configured.
811	Processor complex being identified or configured.
812	Memory being identified or configured.
813	Battery for time-of-day, NVRAM, and so on being identified or configured. or system I/O control logic being identified or configured.
814	NVRAM being identified or configured.
815	Floating-point processor test
816	Operator panel logic being identified or configured.
817	Time-of-day logic being identified or configured.
819	Graphics input device adapter being identified or configured.
821	Standard keyboard adapter being identified or configured.
823	Standard mouse adapter being identified or configured.
824	Standard tablet adapter being identified or configured.
825	Standard speaker adapter being identified or configured.
826	Serial Port 1 adapter being identified or configured.
827	Parallel port adapter being identified or configured.
828	Standard diskette adapter being identified or configured.
831	3151 adapter being identified or configured, or Serial Port 2 being identified or configured.
834	64-port async controller being identified or configured.
835	16-port async concentrator being identified or configured.
836	128-port async controller being identified or configured.
837	16-port remote async node being identified or configured.
838	Network Terminal Accelerator Adapter being identified or configured.
839	7318 Serial Communications Server being configured.
841	8-port async adapter (EIA-232) being identified or configured.
842	8-port async adapter (EIA-422A) being identified or configured.
843	8-port async adapter (MIL-STD 188) being identified or configured.
844	7135 RADiant Array disk drive subsystem controller being identified or configured.
845	7135 RADiant Array disk drive subsystem drawer being identified or configured.
847	16-port serial adapter (EIA-232) being identified or configured.
848	16-port serial adapter (EIA-422) being identified or configured.
849	X.25 Interface Co-Processor/2 adapter being identified or configured.
850	Token-Ring network adapter being identified or configured.
851	T1/J1 Portmaster adapter being identified or configured.
852	Ethernet adapter being identified or configured.
854	3270 Host Connection Program/6000 connection being identified or configured.
855	Portmaster Adapter/A being identified or configured.

857	FSLA adapter being identified or configured.
858	5085/5086/5088 adapter being identified or configured.
859	FDDI adapter being identified or configured.
861	Optical adapter being identified or configured.
862	Block Multiplexer Channel Adapter being identified or configured.
865	ESCON Channel Adapter or emulator being identified or configured.
866	SCSI adapter being identified or configured.
867	Async expansion adapter being identified or configured.
868	SCSI adapter being identified or configured.
869	SCSI adapter being identified or configured.
870	Serial disk drive adapter being identified or configured.
871	Graphics subsystem adapter being identified or configured.
872	Grayscale graphics adapter being identified or configured.
874	Color graphics adapter being identified or configured.
875	Vendor generic communication adapter being configured.
876	8-bit color graphics processor being identified or configured.
877	POWER Gt3/POWER Gt4 being identified or configured.
878	POWER Gt4 graphics processor card being configured.
880	POWER Gt1 adapter being identified or configured.
887	Integrated Ethernet adapter being identified or configured.
889	SCSI adapter being identified or configured.
890	SCSI-2 Differential Fast/Wide and Single-Ended Fast/Wide Adapter/A.
891	Vendor SCSI adapter being identified or configured.
892	Vendor display adapter being identified or configured.
893	Vendor LAN adapter being identified or configured.
894	Vendor async/communications adapter being identified or configured.
895	Vendor IEEE 488 adapter being identified or configured.
896	Vendor VME bus adapter being identified or configured.
897	S/370 Channel Emulator adapter being identified or configured.
898	POWER Gt1x graphics adapter being identified or configured.
899	3490 attached tape drive being identified or configured.
901	Vendor SCSI device being identified or configured.
902	Vendor display device being identified or configured.
903	Vendor async device being identified or configured.
904	Vendor parallel device being identified or configured.
905	Vendor other device being identified or configured.
908	POWER GXT1000 Graphics subsystem being identified or configured.
912	2.0GB SCSI-2 differential disk drive being identified or configured.
913	1.0GB differential disk drive being identified or configured.
914	5GB 8 mm differential tape drive being identified or configured.
915	4GB 4 mm tape drive being identified or configured.
916	Non-SCSI vendor tape adapter being identified or configured.
917	Progress indicator. 2.0GB 16-bit differential SCSI disk drive is being identified or configured.
918	Progress indicator. 2GB 16-bit single-ended SCSI disk drive is being identified or configured.
920	Bridge Box being identified or configured.
921	101 keyboard being identified or configured.
922	102 keyboard being identified or configured.
923	Kanji keyboard being identified or configured.
924	Two-button mouse being identified or configured.
925	Three-button mouse being identified or configured.
926	5083 tablet being identified or configured.
927	5083 tablet being identified or configured.

928	Standard speaker being identified or configured.
929	Dials being identified or configured.
930	Lighted program function keys (LPFK) being identified or configured.
931	IP router being identified or configured.
933	Async planar being identified or configured.
934	Async expansion drawer being identified or configured.
935	3.5-inch diskette drive being identified or configured.
936	5.25-inch diskette drive being identified or configured.
937	An HIPPI adapter is being configured.
942	POWER GXT 100 graphics adapter being identified or configured.
943	Progress indicator. 3480 and 3490 control units attached to a System 370 Channel Emulator/A adapter are being identified or configured.
945	1.0GB SCSI differential disk drive being identified or configured.
946	Serial port 3 adapter is being identified or configured.
947	Progress indicator. A 730MB SCSI disk drive is being configured.
948	Portable disk drive being identified or configured.
949	Unknown direct bus-attach device being identified or configured.
950	Missing SCSI device being identified or configured.
951	670MB SCSI disk drive being identified or configured.
952	355MB SCSI disk drive being identified or configured.
953	320MB SCSI disk drive being identified or configured.
954	400MB SCSI disk drive being identified or configured.
955	857MB SCSI disk drive being identified or configured.
956	670MB SCSI disk drive electronics card being identified or configured
957	120MB DBA disk drive being identified or configured.
958	160 MB DBA disk drive being identified or configured.
959	160MB SCSI disk drive being identified or configured.
960	1.37GB SCSI disk drive being identified or configured.
968	1.0GB SCSI disk drive being identified or configured.
970	Half-inch, 9-track tape drive being identified or configured.
971	150MB 1/4-inch tape drive being identified or configured.
972	2.3GB 8 mm SCSI tape drive being identified or configured.
973	Other SCSI tape drive being identified or configured.
974	CD-ROM drive being identified or configured.
975	Progress indicator. An optical disk drive is being identified or configured.
977	M-Audio Capture and Playback Adapter being identified or configured
981	540MB SCSI-2 single-ended disk drive being identified or configured.
985	M-Video Capture Adapter being identified or configured.
986	2.4GB SCSI disk drive being identified or configured.
987	Progress indicator. Enhanced SCSI CD-ROM drive is being identified or configured.
989	200MB SCSI disk drive being identified or configured.
990	2.0GB SCSI-2 single-ended disk drive being identified or configured.
991	525MB 1/4-inch cartridge tape drive being identified or configured.
994	5GB 8 mm tape drive being identified or configured.
995	1.2GB 1/4 inch cartridge tape drive being identified or configured.
996	Progress indicator. Single-port, multi-protocol communications adapter is being identified or configured.
997	FDDI adapter being identified or configured.
998	2.0GB4 mm tape drive being identified or configured.
999	7137 or 3514 Disk Array Subsystem being configured.

Dump Progress Indicators

The following dump progress indicators, or dump status codes, are part of a Type 102 message.

Note: When a lowercase c is listed, it displays in the lower half of the seven-segment character position. The leftmost position is blank on the following codes.

0c0	The dump completed successfully.
0c2	A dump, requested by the user, is started.
0c3	The dump is inhibited.
0c4	The dump did not complete. A partial dump may be present.
0c5	The dump program could not access the dump device.
0c6	A dump to the secondary dump device was requested. Make the secondary dump device ready; then press Ctrl-Alt-Numpad2.
0c7	Reserved.
0c8	The dump function is disabled.
0c9	A dump is in progress.

Diagnostic Load Progress Indicators

Note: When a lowercase c is listed, it displays in the lower half of the seven-segment character position.

c00	AIX Install/Maintenance loaded successfully.
c01	Insert the first diagnostic diskette.
c02	Diskettes inserted out of sequence.
c03	The wrong diskette is in diskette drive.
c04	The loading stopped with a nonrecoverable error.
c05	A diskette error occurred.
c06	The **rc.boot** configuration shell script is unable to determine type of boot.
c07	Insert the next diagnostic diskette.
c08	RAM file system started incorrectly.
c09	The diskette drive is reading or writing a diskette.
c20	An unexpected halt occurred, and the system is configured to enter the kernel debug program instead of entering a system dump.
c21	The **ifconfig** command was unable to configure the network for the client network host.
c22	The **tftp** command was unable to read client's *ClientHostName*.**info** file during a client network boot.
c24	Unable to read client's *ClientHostName*.**info** file during a client network boot.
c25	Client did not mount remote miniroot during network install.
c26	Client did not mount the **/usr** file system during the network boot.
c29	The system was unable to configure the network device.
c31	Select the console display for the diagnostics. To select No console display, set the key mode switch to Normal then to Service. The diagnostic programs will then load and run the diagnostics automatically.
c32	A direct-attached display (HFT) was selected.
c33	A tty terminal attached to serial ports S1 or S2 was selected.
c34	A file was selected. The console messages store in a file.
c40	Configuration files are being restored.
c41	Could not determine the boot type or device.
c42	Extracting data files from diskette.
c43	Cannot access the boot/install tape.
c44	Initializing installation database with target disk information.
c45	Cannot configure the console.
c46	Normal installation processing.
c47	Could not create a physical volume identifier (PVID) on disk.
c48	Prompting you for input.
c49	Could not create or form the JFS log.
c50	Creating root volume group on target disks.
c51	No paging devices were found.
c52	Changing from RAM environment to disk environment.
c53	Not enough space in the **/tmp** directory to do a preservation installation.
c54	Installing either BOS or additional packages.
c55	Could not remove the specified logical volume in a preservation installation.
c56	Running user-defined customization.
c57	Failure to restore BOS.
c58	Displaying message to turn the key.
c59	Could not copy either device special files, device ODM, or volume group information from RAM to disk.
c61	Failed to create the boot image.

c99   Diagnostics have completed. This code is only used when there is no console.

Debugger Progress Indicators

c20   The kernel debugger has started due to an unexpected system halt

Flashing 888 Message Descriptions

A Crash Message (Type 102) can occur at any time. The following information describes both Crash and Diagnostic Messages.

Type 102 Message

The message type 102 contains information about a dump. See "Reading Flashing 888 Numbers" in Chapter 3 for information about reading the message out.

Crash Codes

000	Unexpected system interrupt.
200	Machine check because of a memory bus error.
201	Machine check because of a memory timeout.
202	Machine check because of a memory card failure.
203	Machine check because of a out of range address.
204	Machine check because of an attempt to write to ROS.
205	Machine check because of an uncorrectable address parity.
206	Machine check because of an uncorrectable ECC error.
207	Machine check because of an unidentified error.
208	Machine check due to an L2 uncorrectable ECC.
300	Data storage interrupt from the processor.
32x	Data storage interrupt because of an I/O exception from IOCC.
38x	Data storage interrupt because of an I/O exception from SLA.
400	Instruction storage interrupt.
500	External interrupt because of a scrub memory bus error.
501	External interrupt because of an unidentified error.
51x	External interrupt because of a DMA memory bus error.
52x	External interrupt because of an IOCC channel check.
53x	External interrupt from an IOCC bus timeout;x represents the IOCC number.
54x	External interrupt because of an IOCC keyboard check.
558	There is not enough memory to continue the IPL.
700	Program interrupt.
800	Floating point is not available.

Dump Status Codes

This field contains the dump progress indicator value. See Dump Progress Indicators in this appendix.

Type 103 and 105 Messages

Message types 103 and 105 contain service information. The information should be recorded on the "Problem Summary Form" or on a blank sheet of paper.

This message contains the SRN and the location codes for up to four FRUs. The SRN is reported to the service organization and the location codes are needed by the service representative. See "Reading Flashing 888 Numbers" in Chapter 3 for information about the diagnostic information contained within this message.

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