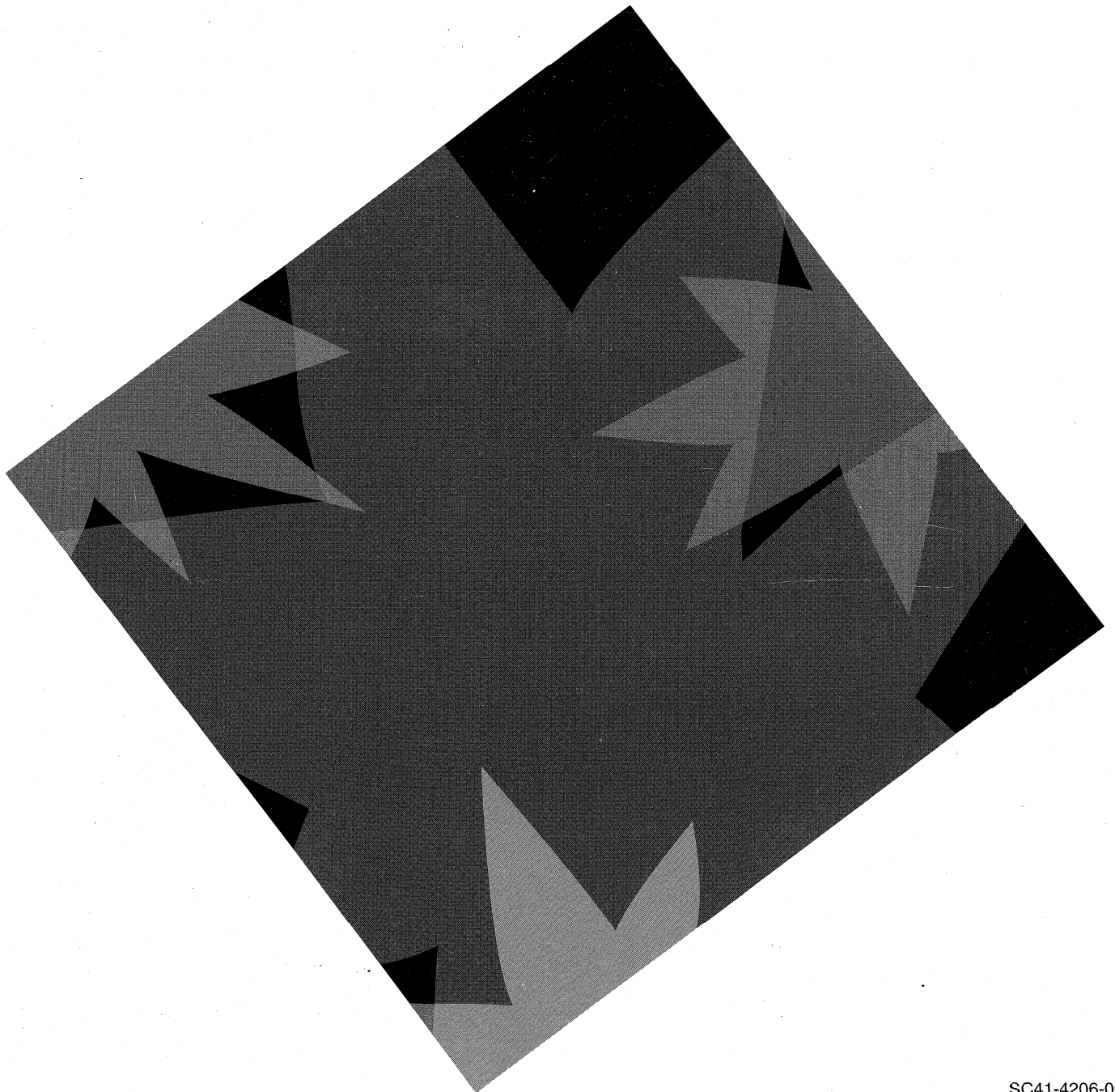


AS/400 Advanced Series



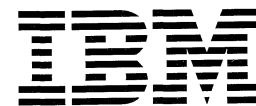
# System Startup and Problem Handling

*Version 3*





AS/400 Advanced Series



# System Startup and Problem Handling

*Version 3*

**Take Note!**

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

**First Edition (December 1995)**

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# Contents

<b>Notices</b> .....	ix
Safety and Environmental Notices .....	ix
Attention .....	ix
Product Recycling .....	x
Product Disposal .....	x
CD-ROM Laser Safety Information .....	x
Trademarks and Service Marks .....	x
<b>About System Startup and Problem Handling (SC41-4206)</b> .....	xi
Who Should Use This Guide .....	xi
<b>Chapter 1. What You Need to Know about Your AS/400 System</b> .....	1-1
AS/400 System Units .....	1-1
System Unit Control Panels .....	1-2
System Expansion or Extension Tower Control Panel .....	1-5
Battery Power Unit for the AS/400 System Units .....	1-7
<b>Chapter 2. Starting and Stopping the System</b> .....	2-1
Starting the System .....	2-1
Stopping the System .....	2-21
<b>Chapter 3. The Operational Assistant Displays</b> .....	3-1
Using Assistance Levels .....	3-1
<b>Chapter 4. Using Media</b> .....	4-1
Using Tapes and Tape Units .....	4-1
Using Diskettes .....	4-24
Storage Device Ready Conditions .....	4-28
Using CD-ROM .....	4-30
Using Optical Media Libraries .....	4-32
<b>Chapter 5. Working with Program Temporary Fixes (PTFs)</b> .....	5-1
AS/400 Program Maintenance Strategy .....	5-1
Ordering PTFs and PTF Information .....	5-2
Installing PTFs .....	5-11
System Storage Areas A and B .....	5-18
Advanced PTF Topics .....	5-19
<b>Chapter 6. Handling and Reporting System Problems</b> .....	6-1
Getting Help with Problems .....	6-9
Analyzing a New Problem .....	6-11
Reporting Hardware and Software Problems .....	6-11
<b>Appendix A. Problem Handling Tables and Procedures</b> .....	A-1
Analyzing Problems with a Symptom .....	A-1
Performing a Main Storage Dump .....	A-7
Determining the Primary or Alternative Consoles .....	A-9
Using the Macintosh as the AS/400 Console .....	A-11
<b>Appendix B. Problem Summary Forms</b> .....	B-1

<b>Appendix C. Control Panel Status Forms</b> . . . . .	C-1
<b>Appendix D. Replacing Battery Power Unit</b> . . . . .	D-1
<b>Bibliography</b> . . . . .	H-1
<b>Index</b> . . . . .	X-1

# Figures

1-1.	9402/9404 Models 4xx (Left) and 9404/9406 Models 5xx (Middle and right).	1-1
1-2.	Control panels for the 9404/9406 Models 5xx (Left), and 9402/9404 Models 4xx (Right),	1-2
1-3.	Expansion or Extension Control Panel for the 9404/9406 Models 5xx	1-6
1-4.	SPCN Address Display	1-6
1-5.	SPCN Fault Display	1-7
2-1.	Sign On Display	2-3
2-2.	Change Power On and Off Defaults Display	2-4
2-3.	Change Power On and Off Schedule Display	2-5
2-4.	Select Products to Work with PTFs Display	2-8
2-5.	IPL Options Display	2-8
2-6.	Set Major System Options Display	2-9
2-7.	Edit Rebuild of Access Paths Display	2-14
2-8.	Display Access Path Status Display	2-15
2-9.	Edit Check Pending Constraints Display	2-15
2-10.	Display Constraint Status	2-16
2-11.	Overview of IPL System Reference Codes and Time Displayed	2-19
2-12.	Confirm Power Off of System Display for Immediate Power Down	2-22
2-13.	Confirm Power Off of System Display for Immediate Power On	2-22
4-1.	1/4-Inch Tape Cartridge	4-3
4-2.	Write-Protect Positions for a 1/4-Inch Tape Cartridge (QIC-525 and QIC-120)	4-7
4-3.	Write-Protect Positions for a 1/4-Inch Tape Cartridge (QIC-1000 and QIC-2GB)	4-8
4-4.	The 8MM 5.0GB or 7.0GB tape unit	4-10
4-5.	Status lights on the 8MM 5.0GB or 7.0GB tape units	4-11
4-6.	Write Protection of 8-mm Tape Cartridges	4-13
4-7.	Preparing a Tape Leader	4-18
4-8.	1/2-Inch Tape Reel Write Protection	4-19
4-9.	Work with Lifetime Statistics Display	4-23
4-10.	Handling Diskettes	4-25
4-11.	CD-ROM drives on the 9402/9404 Models 4xx (left) and 9404/9406 Models 5xx (right)	4-30
5-1.	Sample PTF Cover Letter	5-6
5-2.	Display Spooled File display	5-30
5-3.	Display Spooled File display - screen 2	5-30
5-4.	Select PTF CD-ROM File display	5-32
6-1.	Work with Problems Display	6-12
6-2.	Work with Problem Display	6-13
6-3.	Verify Contact Information Display	6-13
6-4.	Select Problem Severity Display	6-14
6-5.	Select Service Provider Display	6-15
6-6.	Select Reporting Option Display	6-15
6-7.	Display Service Attributes display	6-19
6-8.	Change Service Attributes display	6-20
A-1.	Macintosh Command Key	A-12





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## Tables

2-1.	IPL Summary	2-2
4-1.	Compatibility Between Tape Cartridges and Tape Units	4-4
4-2.	Retention Times for 1/4-Inch Tape Cartridges	4-5
4-3.	Environment Ranges for 1/4-Inch and 1/4-Inch Mini Tape Cartridges	4-8
4-4.	Cleaning the 1/2-Inch Tape Reel Unit	4-19
4-5.	Storage Device Ready Conditions	4-29
5-1.	Getting PTFs and PTF Information	5-2
A-1.	List of System Reference Codes	A-2
A-2.	Macintosh Extended Keyboard Equivalents for Common AS/400 Functions	A-13



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## About System Startup and Problem Handling (SC41-4206)

As the system operator, you have many responsibilities. This guide can help you do system operation tasks, such as:

- Operating the console
- Starting and stopping the system
- Using media
- Running recovery procedures
- Applying program temporary fixes (PTFs)
- Initially diagnosing system problems

For information about other system operation tasks, see the *System Operation* book, SC41-4203. It provides information about handling messages, working with jobs and printer output, devices communications, working with support functions, cleaning up your system, and so on.

For information about other AS/400\* publications, see either of the following:

- The *Publications Reference* book, SC41-4003, in the AS/400 Softcopy Library.
- The *AS/400 Information Directory*, a unique, multimedia interface to a searchable database containing descriptions of titles available from IBM or from selected other publishers. The *AS/400 Information Directory* is shipped with your system at no charge.

For a list of related publications, see the “Bibliography” on page H-1.

---

## Who Should Use This Guide

This guide is intended for, but not limited to, a system operator or administrator who is operating the AS/400 system.

To use this guide, you should already know how to operate the following:

- Display stations
- Printers
- Tape devices
- Diskette devices
- CD-ROM devices
- Optical libraries

You should already know how to do the following AS/400 system tasks:

- Sign on and off your display station
- Use function keys on your display station keyboard
- Use displays and menus, including:
  - Online help information
  - Send and receive messages

For information about how to do the above tasks, see the *System Operation for New Users* book.

### **System/36 Environment Users**

If you are using your AS/400 system in a System/36 environment, start the AS/400 system using an attended initial program load (IPL), and select the kind of environment you want to use. When you have completed the IPL, see the following manuals for information about the System/36 environment:

- *System/36 Environment Programming* book, SC41-4730
- *System/36 Environment Reference* book, SC41-4731

### **Multiple Operating System Users**

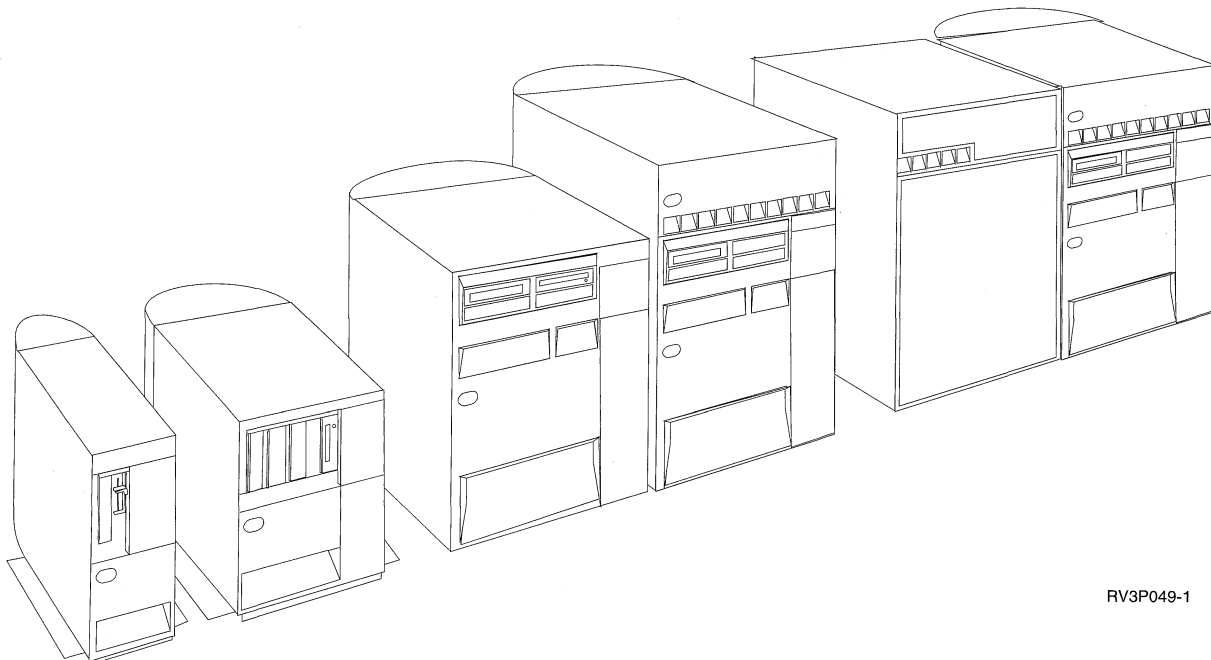
If you are using AS/400 system with multiple operating systems, see *Operator Tasks – Multiple Operating Systems, SC21-8384*

## Chapter 1. What You Need to Know about Your AS/400 System

This chapter contains information about how to identify the lights, displays, and pushbuttons on the control panels of the AS/400\* (AS/400\*) System Units for Version 3 Release 6.

### AS/400 System Units

The AS/400 system units for Version 3 Release 6 are shown in Figure 1-1.



RV3P049-1

Figure 1-1. 9402/9404 Models 4xx (Left) and 9404/9406 Models 5xx (Middle and right).

The following devices can be attached to your system:

- Printers
- Work stations
- Tape units
- Optical media libraries
- Remote controllers
- Personal computers

Your system receives data (input) from each work station, disk, diskette, tape, CD-ROM, optical library, and communications line. The processing unit (in the system unit) processes the data and saves the data on disk, diskette, tape, or optical storage. The processed data (output) can also be directed to a printer or a work station.

The system unit contains the main storage used for processing and has a control panel to control the way your system starts and stops. If you have 9404/9406

## System Unit Control Panels

Models 5xx, you may also have the expansion unit, which is an additional rack of equipment for expanding your system function.

The 9402/9404 Model 40s and 9404/9406 Model 50s System Units are specifically designed for server applications. Because of this design, a program running in batch may perform better than the same program running interactively.

---

## System Unit Control Panels

The control panel is used by system operators and service representatives. You can use the control panel to do an initial program load (IPL) and problem analysis. Following the illustrations, details of the control panels are described.

### Control Panels for the System Units

Figure 1-2 shows the control panels for the 9402/9404 Models 4xx, and 9404/9406 Models 5xx.

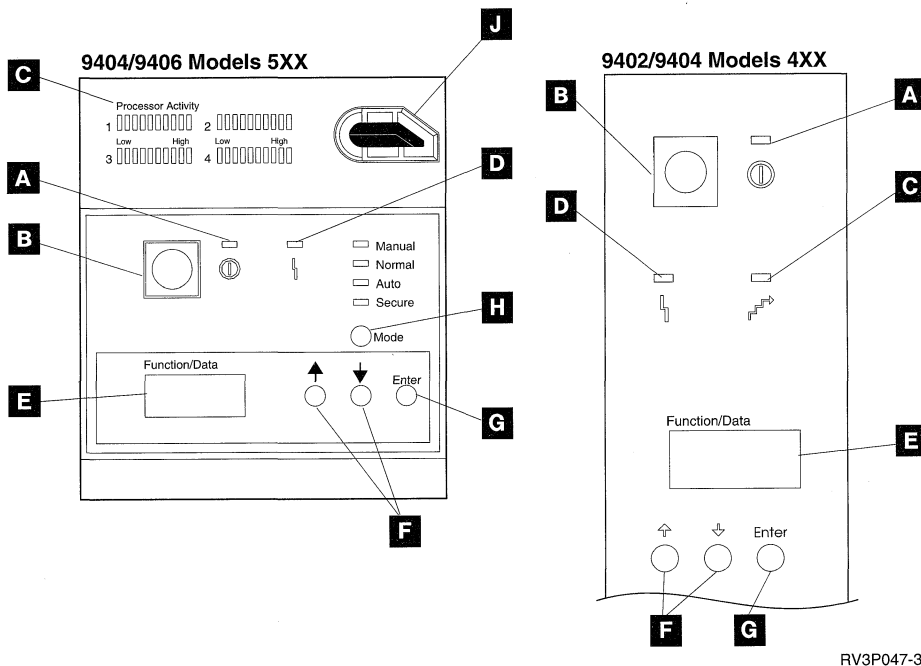


Figure 1-2. Control panels for the 9404/9406 Models 5xx (Left), and 9402/9404 Models 4xx (Right),

### Control Panel Details

**A Power On:** The light comes on when there is power to the system unit.

**Note:** The Power On light blinks when the system is being started up and when the system is manually turned off. When the Power Down System (PWRDWSYS) command or the options on the Power On and Off Tasks (POWER) menu are used, the Power On light does not blink.

**B Power pushbutton:** You can press the pushbutton to start the system; press it again to stop the system.

**Note:**



- Power on is allowed in Manual or Normal mode, and Power off is allowed in Manual mode only.
- In most cases, use the Power Down System (PWRDWNSYS) command on any command line of your display station to stop the system. If you use the Power pushbutton to turn off your system, errors may occur with your data files. For more information on stopping the system, see “Stopping the System” on page 2-21.

**C Processor Activity or Processor Active** The 9402/9404 Models 4xx System Unit has one Processor Active light, and the light blinks when programs are running. Some 9404/9406 Models 5xx System Units have the Processor Activity lights that provide a graphical display of the processor activity, and some have only one Processor Active light.

**D System Attention:** This light comes on when the system requires operator attention, such as correcting a severe system failure. For information about correcting system problems, see Chapter 6, “Handling and Reporting System Problems.”

**E Function/Data display:** When you press the pushbutton (increment or decrement), the function number appears in the Function/Data display. When you press the Enter pushbutton, the function number disappears, and the data is shown for the previously displayed function. Only the numbers of those functions that can be used in the present mode are displayed. The Function/Data display for the system units can display up to 8 digits. The selected function is not sent to the processing unit until the Enter pushbutton is pressed. System reference codes or other information from the processing unit or control panel are also shown in the Function/Data display.

**F Select pushbutton:** The Select pushbutton (increment or decrement) can be used to increase or decrease the number shown in the Function/Data display. The increment pushbutton increases the values in the Function/Data display, and the decrement pushbutton decreases the values. The pushbutton (increment or decrement) can also be used to change the data shown in the Function/Data display when you are selecting an initial program load (IPL) type. The IPL type (A, B, C or D) can be selected by using Function 02. To select IPL type, do the following:

1. Use the Select pushbutton (increment or decrement) to select Function 02, and press the Enter pushbutton.
2. Use the Select pushbutton (increment or decrement) to select the IPL type you want, and press the Enter pushbutton.

**G Enter pushbutton:** The Enter pushbutton is used to send function information shown in the Function display to the processing unit or to save the type of IPL you selected.

**H Mode:** On 9404/9406 Models 5xx system units, there are four modes available: Manual, Normal, Auto, and Secure. For the 9402/9404 Models 4xx, only Manual and Normal modes are available, and the mode is selected by using Function 02 on the control panel. To select the mode for the 9402/9404 Models 4xx, do the following:

1. Use the Select pushbutton (increment or decrement) to select Function 02, and press the Enter pushbutton.
2. Use the Select pushbutton (increment or decrement) to select the mode. Since Function 02 can be used to select IPL type, the Function/Data

## System Unit Control Panels

display for the 9402/9404 Models 4xx shows both the mode and IPL type at the same time.

You can stop the system by using the Power Down System (PWRDWNSYS) command on the command line of any display station when the system is in any mode. You must have QSYSOPR authority to use the Power Down System (PWRDWNSYS) command. For more information, see “Stopping the System” on page 2-21.

You can also display the kind of IPL the system is set to do when the system is in any mode. The following table summarizes what you can do in the Manual, Normal, Auto, or Secure mode:

Operation	Manual Mode	Normal Mode	Auto Mode	Secure Mode
Turn on system (Power push-button)	Allowed	Allowed	Not allowed	Not allowed
Power off (Power push-button)	Allowed	Not allowed	Not allowed	Not allowed
Display Selected IPL	Allowed	Allowed	Allowed	Allowed
Select IPL	Allowed	Not allowed <sup>1</sup>	Not allowed	Not allowed
Start IPL	Allowed	Not allowed	Not allowed	Not allowed
Display system reference code	Allowed	Allowed	Allowed	Allowed
Remote IPL	Not allowed	Program control allowed	Program control allowed	Not allowed
Timed IPL	Not allowed	Program control allowed	Program control allowed	Not allowed
Restart IPL (after power failure)	Not allowed	Program control allowed	Program control allowed	Not allowed
Power Down System command	Program control allowed	Program control allowed	Program control allowed	Program control allowed

<sup>1</sup> Allowed for 9402/9404 Models 4xx

### Manual:

When the mode is set to Manual, the system allows you to do all manual IPLs, such as an operator-attended IPL from disk or tape, and manual control functions, such as select an IPL or display the kind of IPL that the system is set to run. However, you cannot do a remote IPL, an IPL by date and time, or an IPL after a power failure.

**Note:** You should only set the mode to Manual when necessary. This will ensure that no one accidentally presses the Power push-button and causes the system to stop.

## System Expansion or Extension Control Panel

### Normal:

The Normal mode allows you to manually turn the power on and to do each of the automatic operations. That is, you can start the system by doing a manual or remote IPL, an IPL by date and time, or an IPL after a power failure.

If you want to stop the system when the mode is set to Normal, use the Power Down System (PWRDWNSYS) command at any display station. You must have QSYSOPR authority to use the Power Down System (PWRDWNSYS) command.

### Secure:

The Secure mode locks the control panel on the system unit. You can only stop the system from a display station using the Power Down System (PWRDWNSYS) command.

### Auto:

The Auto (automatic) mode allows a remote IPL, an IPL by date and time, and an IPL after a power failure.

When the mode is set to Auto, you cannot:

- Start the system by doing an IPL manually.
- Stop the system by using the Power pushbutton.
- Select a different IPL type by using the Select pushbutton.

For more information about the types of IPLs, see Chapter 2, "Starting and Stopping the System."

### J

**Electronic keystick:** The keystick contains a small circuit card that lets you use the mode select button to sequence through the four IPL modes (Manual, Normal, Auto, and Secure). Each mode has an indicator that is illuminated when the mode is selected. When the keystick is not inserted, the default mode is the last mode selected.

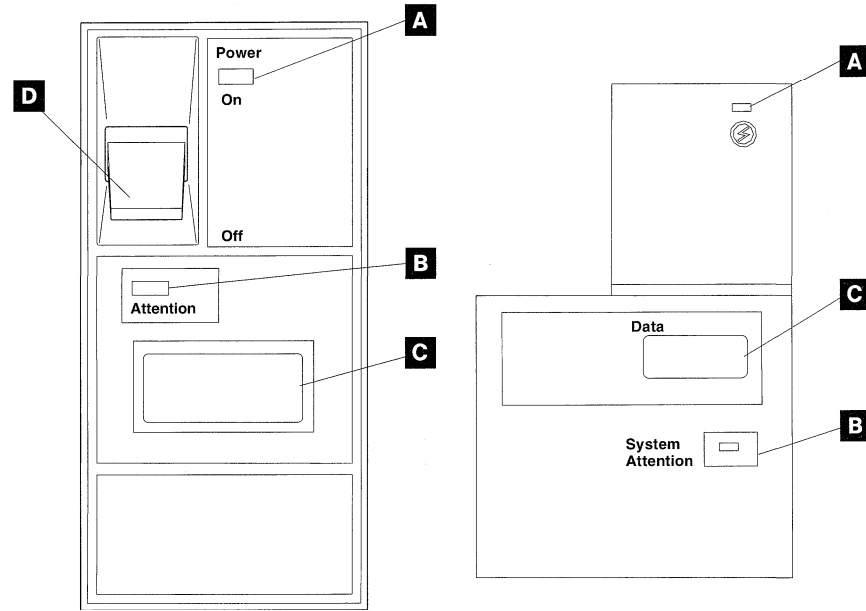
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## System Expansion or Extension Tower Control Panel

The expansion or extension control panel allows the system power control network (SPCN) to display power fault information for the unit. The SPCN is an asynchronous communications network that gives the Operating System/400\* (OS/400\*) licensed program control of electrical power.

Figure 1-3 on page 1-6 shows the expansion or extension control panels for the 9404/9406 Models 5xx.

## System Expansion or Extension Control Panel



RV3P025-0

Figure 1-3. Expansion or Extension Control Panel for the 9404/9406 Models 5xx

The following are components of these panels:

- A Power on light:** Indicates when power is available to the unit.
- B Attention light:** Used by the SPCN to indicate that a power fault has been detected.
- C 8-digit LCD:** Used to display the SPCN address, power status, or an SPCN reference code.
- D Power switch:** Controls the power for everything that is installed in the unit.

## Address and Fault Displays

The expansion or extension control panel is used by the system power control network to display the unit's power address during normal conditions and a system reference code during a power failure.

Figure 1-4 shows the normal running display with \*rru where rr is the rack address and ranges from 01 to 63 and u indicates which SPCN port the unit is connected to, and ranges from 1 to A (1 through 10).

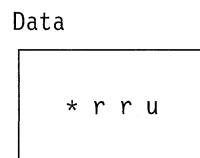


Figure 1-4. SPCN Address Display

When a power error occurs, the SPCN node displays an error code on the unit control panel and sends a message to the operating system. Figure 1-5 on page 1-7 shows that this system reference code always starts with a 1 followed by the rr (rack address) and u (unit address) followed by the four digit reference code cccc.

Data

1 r r u c c c c
-----------------

Figure 1-5. SPCN Fault Display

Use the message in the system operator's message queue (QSYSOPR) rather than the error code displayed on the unit control panel to solve the problem. For information on how to begin solving a system problem, see Chapter 6, "Handling and Reporting System Problems."

---

### Battery Power Unit for the AS/400 System Units

When the utility power is lost on the AS/400 9402/9404 Models 4xx or 9404/9406 Models 5xx, the following power sources may be used to protect the System Units from losing data.

- Continuously Powered Mainstore (CPM): An internal battery power source that is automatically activated in the event of utility power loss. CPM provides full operating power for a short time to allow a system shut-down procedure. This is indicated by system reference code D6xx xxxx on the control panel.
- Battery Power Unit (BPU): An internal battery power source that is automatically activated in the event of utility power loss. The battery power unit provides full operating power for a short time to all components within the system unit, but not to any external components.

Since the battery power unit has a limited life span, you will need to replace the battery when the system reference code (SRC), 1xxx D101 or 1xxx D102 is shown on the system control panel. The order number for the battery power unit is 86G8040. For information about replacing the battery, see Appendix D, "Replacing Battery Power Unit."

- Uninterruptible Power Supply (UPS): An external power source that is automatically activated in the event of utility power loss. The UPS provides full operating power for a short time to all system components.

The 9404/9406 Models 5xx support both BPU and CPM, and the 9402/9404 Models 4xx support UPS.

For more information on power loss recovery, see the *Backup and Recovery – Advanced* book.

# System Expansion or Extension Control Panel

---

## Chapter 2. Starting and Stopping the System

To start the system, turn the system power on and do an initial program load (IPL). During an IPL, system programs are loaded from the system auxiliary storage and the system hardware is checked. When the IPL is finished, the Sign On display is shown on all available display stations.

You can stop the system (turn the power off) using the Power On and Off Tasks (POWER) menu. To get to the Power On and Off Tasks (POWER) menu, type go power on any command line and press the Enter key. You can also stop the system by using the Power pushbutton. However, using the Power pushbutton is not recommended because of the errors that may occur with your data files.

You can set up a schedule that automatically powers your system on and off. You can determine the time of day you want the system powered on and off and specify special circumstances that change that normal daily schedule, such as a holiday or special closing.

This chapter is divided into two parts. Basic information about starting your system and setting up the power on and off schedule can be found in "Starting the System." Information on different ways to stop your system is included in "Stopping the System" on page 2-21.

---

### Starting the System

When you start your system by turning the power on, an IPL is done for the system to reset storage and recognize changes to certain system characteristics.

There are four different situations that typically require an initial program load: starting normal operations, starting a remote system, changing configuration options, and recovering after a power failure. When your system is sent to you, it is set to do a normal or unattended IPL. An **unattended IPL** is done automatically by the system after the power is turned on, then the Sign On display is shown on all available display stations. An **attended IPL** shows displays on the display station you are using for a console. This allows you to change the configuration options such as how the system does an IPL and how the system runs.

Table 2-1 on page 2-2 shows a summary of how to do IPLs from the operator panel. The following sections explain these steps in more detail.

## Starting the System

Table 2-1. IPL Summary		
System State	Unattended IPL	Attended IPL
Running	<ol style="list-style-type: none"> <li>1. Set the mode to <b>Normal</b>.</li> <li>2. Type PWRDWSYS *IMMED RESTART(*YES) on any command line and press the Enter key.</li> </ol>	<ol style="list-style-type: none"> <li>1. Set the mode to <b>Manual</b>.</li> <li>2. Type PWRDWSYS *IMMED RESTART(*YES) on any command line and press the Enter key.</li> <li>3. Follow the displays on the console to complete the IPL.</li> <li>4. Set the mode to <b>Normal</b>.</li> </ol>
Not Running	<ol style="list-style-type: none"> <li>1. Set the mode to <b>Normal</b>.</li> <li>2. Power on all devices.</li> <li>3. Move Power pushbutton to <b>Power On</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Set the mode to <b>Manual</b>.</li> <li>2. Power on all devices.</li> <li>3. Press the Power pushbutton to <b>Power On</b>.</li> <li>4. Follow the displays on the console to complete the IPL.</li> <li>5. Set the mode to <b>Normal</b>.</li> </ol>
<p><b>Note:</b> Always set the mode to <b>Normal</b> after the IPL is finished.</p>		

## Normal Operations (Unattended IPL)

### Before You Start

- The mode must be set to Normal (unattended IPL).
- The QIPLTYPE system value must be set to 0 (unattended IPL). See "System Values that Control IPL" on page 2-11 for information on how to set this system value. If this is the first time you are doing an IPL, the QIPLTYPE system value is already set to 0.

**Note:** The system must be powered on and the IPL complete before you can display or change the QIPLTYPE system value.

To do an unattended IPL:

1. Turn on the power of any display stations, printers, tape devices, diskette devices, and controllers you or others may want to use.
2. Make sure the mode is set to Normal. Use the Power pushbutton to turn on the system.
3. When the unattended IPL is done, the Sign On display appears on the display station.



## Signing On the System

To sign on the system:

```

                                Sign On
                                System . . . . . : SYSTEM01
                                Subsystem . . . . . : QBASE
                                Display . . . . . : DSP01

User . . . . . _____
Password . . . . . _____
Program/procedure . . . . . _____
Menu . . . . . _____
Current library . . . . . _____

```

Figure 2-1. Sign On Display

1. Type your user ID, your password (if security is active), and fill in any of the optional entry fields you want to use. Use the Tab key to move the cursor from field to field on the display.

### Notes:

- a. The *Password* field is displayed only if password security is active on the system.
- b. In the top right corner of the Sign On display, the name of the system you are using, the subsystem the system is using, and the display station identifier (ID) are shown.

2. Press the Enter key.

If this is an unattended IPL, (depending on what options you select on this display or what is defined in your user profile), one or more of the following occurs:

- The AS/400 Main Menu is displayed.
- Another menu is displayed.
- A program or procedure is run.
- A current library is inserted into your library list.

If you specify a program or procedure to run and a menu to be displayed, the program or procedure is run first and then the menu is shown.

Now that your system is up and running be aware that:

- The Operational Assistant\* displays are now the default.
- The system cleanup functions are automatically started with default values. See chapter 8 of the *System Operation* book for more information about customizing the cleanup function.
- The Attention key program defaults to display the Operational Assistant (ASSIST) menu.

**Note:** If this is an attended IPL, the IPL Options display is shown. Go to step 6 on page 2-8.

## Setting Up Your Automatic Power On and Off Schedule

You can plan when you want to power on and off the system by setting the power on and off schedule. To work with the power on and off schedule, go to the Power On and Off Tasks (POWER) menu.

**Note:** You can also display this menu from the Customize your system, users, and devices (SETUP) menu by selecting option 3 (Power on and off tasks).

### Displaying the Power On and Off Schedule

The power on and off schedule ensures that the system is powered on and off at specific times during the day or night. To view this schedule, type go power on any command line, press the Enter key, and select option 1 (Display power on and off schedule) on the Power On and Off Tasks menu.

The power on and off schedule shows the date, day, and time (using the 24-hour clock) that the system will be powered on and off. The *Description* column includes comments about those days that have been changed from the system's regular schedule. Any user can display this schedule.

### Changing Power On and Off Schedule Defaults

To set up your own power on and off schedule, select option 2 (Change power on and off schedule) on the Power On and Off Tasks (POWER) menu. On the Change Power On/Off Schedule display, press F10 (Change power on/off defaults). Figure 2-2 shows the Change Power On/Off Defaults display.

```

Change Power On/Off Defaults
System: SYSTEM01
Type choices below, then press Enter.
First day of week . . . . . 1 1=Sunday, 2=Monday, 3=Tuesday,
4=Wednesday, 5=Thursday, 6=Friday,
7=Saturday
Minutes before power off to send
message . . . . . 20 0-60
Week          Default      Default
Day           Power       Power
Sunday       07:30:00   20:00:00
Monday       05:30:00   _____
Tuesday      _____
Wednesday    _____
Thursday     _____
Friday       _____ 23:00:00
Saturday     07:30:00   20:00:00
F1=Help  F3=Exit  F12=Cancel
    
```

Figure 2-2. Change Power On and Off Defaults Display

On this display, you can change the first day of the week by typing a number in the *First day of week* field. Also, the system automatically sends users a message telling them when the system will be powered off. You can indicate how many minutes before power off you want the system to send this message in the *Minutes before power off to send* field.

When the system sends the power off message, you can delay the scheduled time for powering off from 30 minutes to 3 hours when you reply to the message. Then the system will wait the time specified before powering off. You do not have another chance to delay the time.

For example, as shown in Figure 2-2 on page 2-4, on Mondays you want the system powered on at 5:30 a.m. and off on Fridays at 11:00 p.m. On Saturdays and Sundays you want the system powered on at 7:30 a.m. and off at 8:00 p.m. Type the new times in the *Default Power On* and *Default Power Off* columns next to Saturday and Sunday. When you press the Enter key, your changes are shown on the Display Power On/Off Schedule and the Change Power On/Off Schedule displays.

### Remember...

To make sure the system powers on completely after being powered off, check to see if the mode is set to Normal.

### Changing a Day in the Power On and Off Schedule

Figure 2-3 shows the Change Power On/Off Schedule display where you can change the power on and off schedule for a single day.

Change Power On/Off Schedule					SYSTEM01
Start list at . . . . . 04/30/95				Date	3/13/95 20:17:05
Change times and descriptions below, then press Enter. To change defaults, press F10.					
Date	Day	Power On	Power Off	Description	
04/30/95	Sun	07:30:00	20:00:00		
05/01/95	Mon	05:30:00			
05/02/95	Tue				
05/03/95	Wed		14:30:00	Closing - company picnic	
05/04/95	Thu	05:30:00			
05/05/95	Fri		23:00:00		
05/06/95	Sat	06:40:00	20:00:00		
05/07/95	Sun	07:30:00	20:00:00		
05/08/95	Mon	05:30:00			
05/09/95	Tue				
05/10/95	Wed				
					More...
F1=Help F3=Exit F10=Change power on/off defaults F12=Cancel					

Figure 2-3. Change Power On and Off Schedule Display

For example, to change the power on and off time for the plant's company picnic on Wednesday, May 3:

1. Type 14:30 in the *Power Off* column to power the system off at 2:30 p.m. so the employees can attend the picnic.
2. Type the reason for the change, Closing - Company picnic, in the *Description* column across from the date and time and press the Enter key.
3. Type the start time 5:30 in the *Power On* column to power the system back on Thursday, May 4.

## Starting the System

To display the schedule starting on a different date, type the date you want to start with in the *Start list at* field and press the Enter key. The information displayed begins with the date you specify.

### Solving Problems with the Automatic Power Schedule

If the power schedule is not working:

- Make sure the Start Cleanup (STRCLNUP) command is part of your startup program.

The automatic power scheduler uses a job called QSYSSCD to process the requests for schedule changes. The Start Cleanup (STRCLNUP) command must be run to start the QSYSSCD job. The IBM\*-supplied startup program includes the Start Cleanup (STRCLNUP) command. If you have your own startup program from a previous release, it may not contain the Start Cleanup (STRCLNUP) command.

- Make sure that you specify Yes on the Change Cleanup (CHGCLNUP) command to allow automatic cleanup. The QSYSSCD job will not start if you do not allow automatic cleanup.
- Make sure the Start Cleanup Command (STRCLNUP) command submits the QSYSSCD job to the job queue specified in the Change Cleanup (CHGCLNUP) command.
- Check to see if the QSYSSCD job is running; it could be on a held job queue.
- Make sure the job queue that the Start Cleanup (STRCLNUP) command is submitted to has the maximum jobs parameter set to \*NOMAX or a number greater than 1. Because the QSYSSCD job always runs, the other jobs that perform automatic cleanup and power off functions are not able to start if the maximum jobs parameter is set to 1. To change the maximum jobs parameter, use the Change Subsystem Description (CHGSBSD) command.
- Make sure the mode is set to Normal or Auto.

## Starting a Remote System

To start the remote system automatically using a telephone and modem, you need to set system value QRMTIPL to 1 (see "System Values that Control IPL" on page 2-11).

### Before You Start

- Set the mode on the control panel to Normal or Auto and turn the system off.
- After the system is turned off and is made ready for remote IPL, do not turn the modem on or off. Otherwise, the system may start unexpectedly, although it will turn itself off in a few minutes.

To start the remote system:

1. Dial the telephone number that is assigned to the ECS modem and line of the remote system.

### Attention

If you hang up before the silence, the IPL may not complete.

## Changing Your System During IPL (Attended IPL)

2. Wait about 20 to 40 seconds while the telephone rings. You will hear a modem tone and then silence. At this time, the communication is being established from the modem to the control panel to start the IPL sequence.
3. Hang up the telephone. The system does an IPL and the Sign On display is shown.
4. Go to "Signing On the System" on page 2-3.

## Changing Your System during IPL (Attended IPL)

To change IPL options, install the operating system, use dedicated service tools, or recover from a system failure, do an attended IPL.

### Before You Start

- Set the mode to Manual, or
- Set the QIPLTYPE system value to 1. For information on how to set this system value, see "System Values that Control IPL" on page 2-11.

**Note:** The system must be on and the IPL complete before you can display or change the QIPLTYPE system value.

### Doing an Attended IPL when the Power Is Off

1. Make sure the power for the display station you are using as the console is turned on. The power should be turned on for display stations, printers, tape devices, diskette devices, and controllers you or others may want to use.
2. Use the control panel to do the following:
  - a. Make sure Manual mode is selected on the control panel.
  - b. Use the Power pushbutton to turn on the power.

**Note:** When you have completed the attended IPL, you may want to set the mode to Normal.

### Doing an Attended IPL when the Power Is On

If the system is running and you are able to enter commands, set the mode to Manual. Type the following on any command line and press the Enter key:

```
PWRDWN SYS OPTION(*IMMED) RESTART(*YES)
```

If you cannot enter commands, start the IPL from the operator panel, as follows:

1. Use the Power pushbutton to turn off the system. For information on how to use the Power pushbutton, see [href refid=posys page=yes..](#)
2. Press the Power pushbutton to start an IPL.

During the attended IPL, the IPL or Install the System display is shown on the console.

3. On the IPL or Install the System display, select option 1 (Perform an IPL) and press the Enter key.

The IPL Sign On display is shown. You may have to wait 30 or more minutes for this display to appear.

4. Sign on to the system using the Sign On display (see "Signing On the System" on page 2-3). The Select Products to Work with PTFs display is shown.

## Changing Your System During IPL (Attended IPL)

- On the Select Products to Work with PTFs display, select the product for which you want to apply the PTF and continue with the attended IPL.

If you do not want to apply a PTF, press F3 (Exit) on the Select Products to Work with PTFs display and continue with the IPL.

```

                                Select Products to Work with PTFs
                                System:  RCHAS377
Position to . . . . .          Product
Type options, press Enter. Press F21 to select All.
  1=Select

Opt Product  Option Release
5763999 *BASE  V3R0M5
5738SS1 *BASE  V2R3M0
0TSTPRD *BASE  V1R1M0
0TSTPRD *BASE  V2R1M0
0TSTPRD *BASE  V2R3M0
1DEVEXC *BASE  V2R2M0
1DEVEXC *BASE  V2R3M0

```

Figure 2-4. Select Products to Work with PTFs Display

- The IPL Options display is shown next. See “Changing IPL Options” on page 2-8 to select options to change system attributes.

### Changing IPL Options

To change IPL options, you need to do an attended IPL. See “Changing Your System during IPL (Attended IPL)” on page 2-7 for information on how to do an attended IPL.

When you select option 1 (Perform an IPL) on the IPL or Install the System display, the IPL Options display is shown as in Figure 2-5.

```

                                IPL Options
Type choices, press the Enter key.

System date . . . . .          XX / XX / XX  MM / DD / YY
System time . . . . .          XX : XX : XX  HH : MM : SS
Clear job queues . . . . .      N           Y=Yes, N=No
Clear output queues . . . . .   N           Y=Yes, N=No
Clear incomplete job logs . . . . N           Y=Yes, N=No
Start print writers . . . . .    Y           Y=Yes, N=No
Start this device only . . . . . N           Y=Yes, N=No
Run #STRTUP1 procedure . . . . . Y           Y=Yes, N=No
Run #STRTUP2 procedure . . . . . Y           Y=Yes, N=No
Set major system options . . . . N           Y=Yes, N=No
Define or change system at IPL . . . . N           Y=Yes, N=No

```

Figure 2-5. IPL Options Display

To change an IPL option, type the new option over the existing information and press the Enter key.

Depending on what you selected, one of the following displays is shown next:

- If you typed Y (Yes) in the *Set major system options* field, the Set Major System Options display is shown. See “Setting Major System Options” on page 2-9.

## Changing Your System During IPL (Attended IPL)

**Note:** If you also typed Y (Yes) in the *Define or change system at IPL* field, the Define or Change the System at IPL menu is shown after the Set Major Options display.

- If you typed Y (Yes) in the *Define or change system at IPL* field and N (No) in the *Set major system options* field, the Define or Change System at IPL menu is shown. See “Defining or Changing the System at IPL” on page 2-10.
- If you typed N (No) for both the *Set major system options* field and the *Define or change system at IPL* field, the menu, program, or procedure you defined on the Sign On display or in your user profile is shown.

### Setting Major System Options

Figure 2-6 shows the Set Major System Options display where you can select automatic configuration, the type of device configuration naming, and the special environment in which you want to run. This display is shown when you type a Y (Yes) in the *Set major system options* field on the IPL Options display.

Set Major System Options		
Type choices, press the Enter key.		
Enable automatic configuration . . . . .	Y	Y=Yes, N=No
Device configuration naming . . . . .	*NORMAL	*NORMAL, *S36,*DEVAD
Default special environment . . . . .	*NONE	*NONE, *S36

Figure 2-6. Set Major System Options Display

Using the following information, type the new values over the existing values in the following fields:

#### **Enable automatic configuration:**

Y (Yes) automatically configures local devices.

N (No) indicates no automatic configuration.

#### **Device configuration naming:**

\*NORMAL uses a naming convention unique to the AS/400 system, for example, DSP01 and PRT01 for displays and printers, TAP01 and DKT01 for tape and diskette devices.

\*S36 uses a naming convention similar to System/36, for example, W1 for workstations, P1 for printers, and T1 and I1 for tape and diskette devices.

\*DEVADR uses a naming convention which is obtained from the device resource name, for example, DSP010203 for a display station, PRT010203 for a printer, TAP01 and DKT01 for tape and diskette devices.

#### **Default special environment:**

\*NONE indicates there is no special environment.

\*S36 sets up the System/36 environment that is used if you are migrating from the System/36.

Press the Enter key. Depending on what you selected on the IPL Options display, the following is shown next:

## Changing Your System During IPL (Attended IPL)

- If you typed an N (No) in the *Define or change the system at IPL* field, the menu, program, or procedure you defined on the Sign On display is shown next.
- If you typed a Y (Yes) in the *Define or change system at IPL* field, the Define or Change System at IPL menu is displayed. See “Defining or Changing the System at IPL.”

### Defining or Changing the System at IPL

On the Define or Change the System at IPL display, you can change the configuration of the system, change system values, network attributes, user profiles, and object or file attributes. This display is shown when you type a Y (Yes) in the *Define or change the system at IPL* field on the IPL Options display.

1. Do one of the following:
  - To change the way the system starts, select option 3 (System value commands) and go to “Changing System Values during IPL.”
  - If you selected option 1, 2, 4, 5, or 6, continue to select options and use the displays until you are finished.
2. When you are finished using the options on this display, press F3 (Exit and continue IPL) to continue the IPL.

### Changing System Values during IPL

**System values** control information that affects the operation of certain parts of the system. Some system values that you change do not take effect until the next IPL; other system values take effect immediately.

On the System Value Commands display, you can change system values that affect IPL or other areas of the system. This display is shown when you type a Y (Yes) in the *Define or change the system at IPL* field on the IPL Options display (see step 6 on page 2-8).

To change system values during an IPL:

1. Select option 3 (System value commands) on the Define or Change System at IPL display (see “Defining or Changing the System at IPL”).
2. Select option 3 (Work with system values).
3. Select option 2 (Change) on the Work with System Values display.
4. Type the new system value over the current value and press the Enter key.
5. Press F3 (Exit) to return to the System Value Commands display.
6. Press F3 (Exit) to return to the Define or Change the System at IPL display, and press F3 again to continue the IPL.

#### Security Considerations

To change system values, you must be signed on as QPGMR, QSYSOPR, or QSRV, or have all object (\*ALLOBJ) authority. Certain system values can be changed only by a security officer (someone with all object (\*ALLOBJ) and security administrator (\*SECADM) special authorities).



### System Values that Control IPL

The system values listed below let you control the type of IPL and the way the system does an IPL. Change these system values using option 2 (Change) on the Work with System Values (WRKSYSVAL) display.

#### QIPLDATTIM

The IPL date and time system value lets you specify the IPL date and time for starting the system automatically. The default value \*NONE indicates that no timed automatic IPL is desired.

The date format used by your system for date and time is defined in the system value QDATFMT. You need to know your system date format for step 1. Use option 5 (Display) to determine the format.

To specify the IPL date and time:

1. Type the new date over the current date as follows:

- MM/DD/YY where MM is the month, DD is the day, and YY is the year.

For example, to start the system on June 26, 1995, type 06/26/95.

- YY/MM/DD where YY is the year, MM is the month, and DD is the day.

For example, to start the system on June 26, 1995, type 95/06/26.

- DD/MM/YY where DD is the day, MM is the month, and YY is the year.

For example, to start the system on June 26, 1992, type 26/06/95.

- YY/DDD where YY is the year and DDD is the Julian date.

For example, to start the system on June 26, 1995, type 95/178. June 26 is the 178th day of the year.

**Note:** The format is set with the system value QDATFMT. The separator is set with the system value QDATSEP. The separator is optional.

2. Type the time in the format HH:MM:SS where HH is the hour, MM is the minute, and SS is the second. Use the 24-hour clock.

For example, if you want to start the system at 8:16 a.m., type 08:16:00, or if you want to start the system at 8:16 p.m., type 20:16:00.

#### Notes:

1. The time separator format is set with the system value QTIMSEP. The separator is optional.
2. If you are using the automatic power schedule, you can force the power schedule to update the QIPLDATTIM system value by entering the following command on any command line.

```
CHGPWRSCDE DAY(*TODAY) PWROFFTIME(*SAME) PWROFFTIME(*SAME)
```

## Changing Your System During IPL (Attended IPL)

### QIPLSTS

The IPL status system value displays the way the system did the last IPL. You cannot change this system value. Use option 5 (Display) on the Work with System Values display to display it.

- 0 An IPL from the control panel of the system unit.
- 1 An unattended IPL automatically after a power failure (QPWRRSTIPL set to 1).
- 2 An unattended IPL after using the Power Down System (PWRDWSYS) command with the Restart after power down (RESTART) parameter set to \*YES.
- 3 A unattended scheduled IPL (QIPLDATTIM set to the date and time for the IPL to occur).
- 4 An unattended remote IPL from another location (QRMTIPL set to 1).

### QIPLTYPE

The IPL type system value defines the type of IPL the system does from the control panel.

- 0 An unattended IPL. Start the system without an operator (see "Normal Operations (Unattended IPL)" on page 2-2). If the mode is set to Manual, an attended IPL is performed instead.
- 1 An attended IPL with Dedicated Service Tools (DST) Start the system with an operator (see "Changing Your System during IPL (Attended IPL)" on page 2-7.) An unattended IPL is done if it is done remotely, by date and time, or after power failure.
- 2 An attended IPL in debug mode. Start the system with an operator. The console description, QCONSOLE, is left varied on. You should only use this for problem analysis because it prevents other devices on the work station controller from being used.

### QPWRRSTIPL

The automatic IPL system value allows the system to start automatically when power is restored after a power failure.

- 0 Does not do an automatic IPL after a power failure.
- 1 Does an automatic IPL after a power failure.

### QRMTIPL

The remote IPL system value allows you to start the remote system by using your telephone and a modem or the SPCN signal.

- 0 Does not allow a remote IPL.
- 1 Allows a remote IPL.

### QUPSDLYTIM

QUPSDLYTIM stands for Uninterruptible Power Supply Delay Time. It is the UPS delay timer. The value of QUPSDLYTIM controls the length of time the system will wait, before saving main storage and power down the system. If utility power is restored before the time ends, the system ends the timer. If the timer ends first, the system begins to save main storage or goes into CPM.

There are three choices for the QUPSDLYTIM value.

## Changing Your System During IPL (Attended IPL)

<b>*BASIC or *CALC</b>	The default value for QUPSDLYTIM is *CALC. Leaving QUPSDLYTIM set to *CALC may defeat the purpose of having a UPS. *BASIC or *CALC provide the same function in systems using PowerPC technology. After a fixed interval delay (typically 45 seconds), high end systems enter CPM, while entry systems equipped with a UPS perform a controlled shutdown. Users with a UPS who prefer a shorter IPL may wish to use a numeric value.
<b>*NOMAX</b>	*NOMAX is used when a user supplied program is controlling the power down of the system or a generator is providing unlimited UPS power.
<b>0</b>	Automatic system power down when the system utility power fails.
<b>1 – 99999</b>	Specifies delay time in seconds before the system powers down.

See the *Backup and Recovery – Advanced* book, SC41-4305, for more detailed information about QUPSDLYTIM.

### QUPSMMSGQ

The uninterruptible power supply message queue system value allows you to specify where you want your messages sent when the power to the system is interrupted.

#### QSYS/QSYSOPR

Sends the messages to the system operator's message queue when power to the system is interrupted.

#### message queue

Specifies another message queue (in addition to the system operator's message queue) where messages are sent when power to the system is interrupted.

#### library

Specifies the library where the other message queue is located.

### Editing Access Paths During Attended IPL

You can have the system turn the power on and restart an IPL automatically after a power failure. The system value QPWRRSTIPL should be set to 1 (see "System Values that Control IPL" on page 2-11).

**Note:** The mode must be set to Normal or Auto for the system to do an IPL automatically.

When power is restored, there may be access paths to rebuild. **Access paths** define the order that records in a database file are organized for processing by a program. If there are access paths to rebuild, the Edit Rebuild of Access Paths display is shown as in Figure 2-7 after the IPL Options display (Figure 2-5 on page 2-8).

## Changing Your System During IPL (Attended IPL)

```

Edit Rebuild of Access Paths                                RCHAS331
                                                           05/11/94 13:49:34

IPL threshold . . . . . 50 0-99

Type sequence, press Enter.
Sequence: 1-99, *OPN, *HLD

-----Access Paths-----
Seq  Status      File      Library  Member  Unique  Rebuild
-----
25   IPL          QAPZSYM2  QSYS     QAPZSYM2 NO      00:00:01
25   IPL          QAPZREQ2  QSYS     QAPZREQ2 NO      00:00:01
25   IPL          QAPZPTF3  QSYS     QAPZPTF3 NO      00:00:01
25   IPL          QAPZPTF2  QSYS     QAPZPTF2 NO      00:00:01
25   IPL          QAPZOBJ2  QSYS     QAPZOBJ2 NO      00:00:01
*OPN OPEN          QTWALL    QSYS     QTWALL    NO      00:00:06
*OPN OPEN          QASULTEL  QSYS     QASULTEL  NO      00:00:01
*OPN OPEN          QASULE05  QSYS     QASULE05  NO      00:00:01
*OPN OPEN          QASULE03  QSYS     QASULE03  NO      00:00:01
*OPN OPEN          QASULE01  QSYS     QASULE01  NO      00:00:01
More...
F5=Refresh  F11=Display member text  F13=Change multiple  F15=Sort by
F16=Repeat position to  F17=Position to

```

Figure 2-7. Edit Rebuild of Access Paths Display

**Note:** Use the online help information on this display to learn more about each column and field.

A message is sent notifying you that there is access path recovery to be performed by a **journal**. Any access path which can be recovered because it was recorded will not be shown on this display. A journal is a system object used to record entries in a journal receiver when a change is made to the database files associated with the journal. The **IPL threshold** is a value from 1 through 99 that can be set (default is 50), which indicates that access paths with a sequence less than or equal to the number specified will be rebuilt at IPL time. If the IPL threshold changes, all access paths with a status of IPL and AFTIPL will be changed to reflect the new status of the IPL threshold.

To change the sequence of access paths that will be rebuilt, make any changes to the *Seq* column and press the Enter key.

If you do not want to change the sequence, press the Enter key and the Display Access Path Status display is shown (Figure 2-8 on page 2-15) if there are access paths left to be rebuilt.

**Note:** The Enter key must be pressed to continue with the IPL from the Edit Rebuild of Access Paths display.

If no access paths need to be rebuilt, the IPL continues.

## Changing Your System During IPL (Attended IPL)

Display Access Path Status						
IPL Threshold . . . . . : 88						
Status	-----Access Paths-----			Rebuild	Current	
	File	Library	Member	Build Time	Run Time	
RUN	F123456789	L123456789	MBR4567890		00:00:01	
JRN	F123456789	L123456789	MBR4567890			
JRN	F123456789	L123456789	MBR4567890			
JRN	F123456789	L123456789	MBR4567890			
JRN	F123456789	L123456789	MBR4567890			
JRN	F123456789	L123456789	MBR4567890			
JRN	F123456789	L123456789	MBR4567890			
SYS	F123456789	L123456789	MBR4567890	12:34:56		
SYS	F123456789	L123456789	MBR4567890	12:34:56		
IPL	F123456789	L123456789	MBR4567890	12:34:56		
						More...

Figure 2-8. Display Access Path Status Display

If you press F3 (Exit and continue IPL) the access paths will be rebuilt while the IPL continues. If you press F12 (Cancel), you return to the Edit Rebuild of Access Paths display.

Every 5 seconds, the display is updated with the current run time. After all the access paths have been rebuilt (access paths with a sequence less than or equal to the IPL threshold), the IPL continues.

### Editing Check Pending Constraints During Attended IPL

During an attended IPL, the Edit Check Pending Constraints display is shown if there are constraints to be verified. A **constraint** is an attribute that places restriction or limitation on a physical file.

Edit Check Pending Constraints						RCHAS331	
						05/12/94	13:49:34
IPL threshold . . . . . 50 0-99							
Type sequence, press Enter.							
Sequence: 1-99, *OPN, *HLD							
Seq	Status	Constraint	File	Library	Verify	Elapsed	
75	AFTIPL	CSTFIELD1	FILE567890	LIB4567890	00:00:56	00:00:00	
75	AFTIPL	CSTFIELD2	FILE567890	LIB4567890	00:00:56	00:00:00	
75	AFTIPL	CSTFIELD3 >	FILE567890	LIB4567890	00:00:56	00:00:00	
75	AFTIPL	CSTFIELD4 >	FILE567890	LIB4567890	00:00:56	00:00:00	
*HLD	INVAP	CSTFIELD5	FILE567890	LIB4567890	10:30:06	00:00:00	
*HLD	CHKPND	CSTFIELD6	FILE567890	LIB4567890	09:30:06	00:00:00	
*HLD	HELD	CSTFIELD7	FILE567890	LIB4567890	08:30:06	00:00:00	
							More...
F5=Refresh F13=Repeat all F15=Sort by F16=Repeat position to							
F17=Position to F22=Display constraint name							

Figure 2-9. Edit Check Pending Constraints Display

**Note:** Use the online help information on this display to learn more about each column and field.

## System Password

On the Edit Check Pending Constraints display, You can change the sequence (1 through 99) of the constraints to be verified. If the constraint has a sequence less than or equal to the IPL threshold, it is verified during the IPL. If a constraint has a sequence greater than the IPL threshold, it is verified after IPL. The sequence \*HLD indicates that the constraint is not verified until it is changed to a number from 1 through 99. When the IPL threshold changes, all constraints with a status of IPL or AFTIPL are changed to reflect the new status of the IPL threshold.

To change the sequence of check pending constraints, make any changes to the *Seq* column and press the Enter key.

If you do not want to change the sequence, press the Enter key. The Display Constraint Status display is shown if there are constraints left to be verified.

Display Constraint Status					
IPL Threshold . . . . . : 50					
Status	-----Constraints-----		Verify	Elapsed	
	Constraint	File	Library	Time	Time
RUN	CST1111111	L123456789	MBR4567890	00:00:04	00:00:01
RUN	CST2222222	L123456789	MBR4567890	00:00:04	00:00:01
IPL	CST3333333	L123456789	MBR4567890	00:00:04	00:00:00

Figure 2-10. Display Constraint Status

If you press F3 (Exit and continue IPL) the constraints are verified while the IPL continues. Every five seconds, the display is updated with the current run time. After all constraints with IPL status have been verified, the IPL continues. If you press F12 (Cancel), you return to the Edit Check Pending Constraints display.

## System Password

When you install the OS/400 licensed program, the licensed program runs a check to detect system model changes, certain service conditions, and ownership changes. If the licensed program detects these changes or conditions, you are prompted to enter the system password before the IPL can continue. If no changes or conditions are recognized, the IPL continues without a request for the system password.

You must enter the correct system password to complete the IPL. If the system password is not available, you or your service representative may temporarily bypass entering the system password for a limited time. When the bypass period starts, immediately contact your marketing representative, who will have IBM send you the correct system password. To order the system password, ask your marketing representative to order nonstandard RPQ S40345 if you are in the United States, Asia Pacific, Canada, Latin America, or Japan. If you are in Europe, Middle East, or Asia, request nonstandard RPQ S40346. For more information, see "Bypassing the System Password" on page 2-17.

### Changing the System Password

If you have just installed new hardware, you may need to change the system password during the first IPL. To do this:

1. Select option 1 (Change the system password) on the Verification of System Password Failed display.
2. The following system information on the Change the System Password display is shown:
  - System serial number
  - System type number
  - System model number
  - System password version
  - Processor card serial number

If you do not know the system password, use F12 (Cancel) and select option 2 (Bypass the system password) on the Verification of System Password Failed display. See "Bypassing the System Password" for information on how to do this.

3. Type the password in the blank field and press the Enter key.

To change the system password when your system is operational:

1. Perform an attended IPL.
2. Select option 1 (Change the system password) on the Verification of System Password Failed display.
3. Type the password in the blank field and press the Enter key.

### Bypassing the System Password

Use the Verification of System Password Failed display to bypass the system password when:

- You do not know or cannot find the system password.
- You guess the system password and get a message telling you the password you entered is incorrect.

**Note:** If you type the password incorrectly five times, you must do the IPL again.

To bypass the system password during the first IPL:

1. Select option 2 (Bypass the system password) on the Verification of System Password Failed display.
2. Read the information on the Bypass the System Password display. Remember to contact your marketing representative immediately to obtain the system password before the bypass period runs out.
3. Press F9 (Bypass) to continue the IPL.

When the IPL has finished, you will receive daily messages telling you how much time is left in the bypass period.

When you receive the password, you can enter it by:

- Doing an attended IPL and selecting option 1 (Change the system password) on the Verification of System Password Failed display.

## IPL Overview

- Doing an attended IPL and selecting option 1 (Change the system password) on the Bypass Period has Ended display.

## IPL Overview

Figure 2-11 on page 2-19 shows the system reference codes that are displayed and approximately how long they remain displayed while the IPL is progressing. If you notice a code being displayed longer than it should or a code not listed, see Chapter 6, “Handling and Reporting System Problems.”

**Note:** In the diagram, x can be any number 0 through 9 or letter A through F.



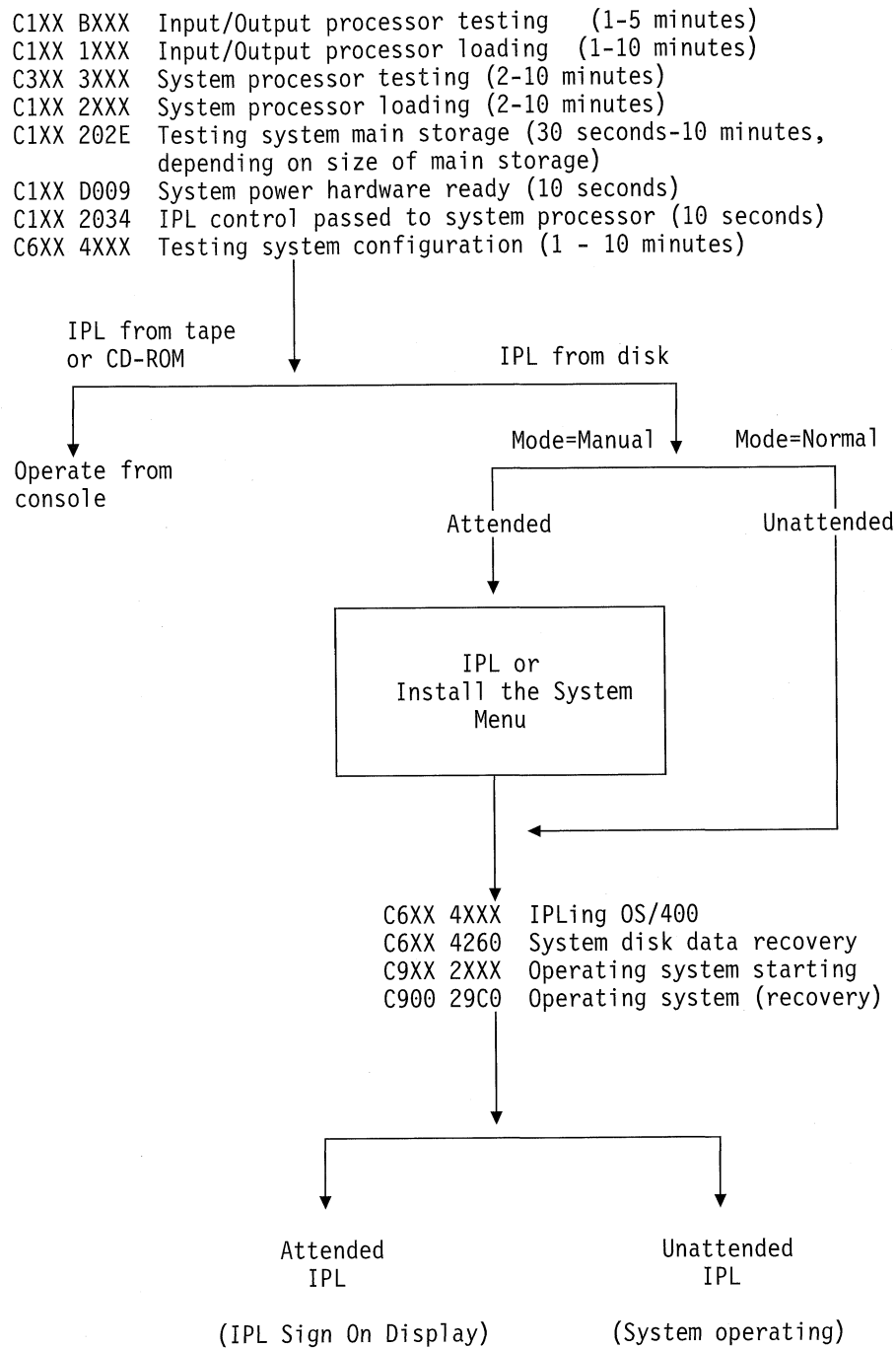


Figure 2-11. Overview of IPL System Reference Codes and Time Displayed

**Note:** You are allowed to sign on to the system before an IPL has finished, but certain functions may not be available until the IPL has completed. For example, use of the reclaim storage (RCLSTG) function, the save library (SAVLIB) function, the save system (SAVSYS) function, and attempting to power down the system immediately following an IPL fail.

You should allow sufficient time for an IPL to complete before attempting such functions. The time of completion for an IPL depends on such factors as your system model and configuration.

### What Causes an Abnormal IPL?

An abnormal IPL can be caused by any of the following:

- Using the End Job Abnormal (ENDJOBABN) command. To see if this command has been used, look for message CPC1124 in the job log.
- Using option 8 (Perform automatic installation of the operating system) on the Dedicated Service Tools (DST) menu
- Using the Power pushbutton instead of the PWRDWNSYS command.
- A power failure occurring before all data is written from main storage to disk.
- Any B900 xxxx system reference code (where xxxx is any number or letter) during the start of the operating system phase of the IPL.
- A Power Down System (PWRDWNSYS) command that did not complete, ending with a system reference code of B900 3F10.
- Any function check in the controlling subsystem causing the system to end.
- The system going down when database recovery has not completed during the IPL.

### Working with Subsystems

A **subsystem** is an operating environment where the system coordinates processing of jobs and resources for the jobs. If you use one of the default subsystem configurations supplied by IBM, all of your subsystems are automatically started when you do an IPL.

Once your system is successfully powered on, you may need to start additional subsystems to make your system ready to use if:

- You created a subsystem which is not automatically started, such as a subsystem which runs only at night.
- You ended all but the controlling subsystem to bring your system to a restricted state to back it up.

To start or end subsystems or display subsystem descriptions, use the Work with Subsystem Descriptions (WRKSBSD) command.

#### Starting Subsystems

To start a subsystem on the Work with Subsystem Descriptions display, use option 9 (Start subsystem). A message is displayed telling you the subsystem has started.

#### Ending Subsystems

To end a subsystem, on the Work with Subsystem Descriptions display, use option 10 (End subsystem). On the End Subsystem (ENDSBS) display, in the *How to end* field, type one of the following:

- \*CNTRLD** Jobs are ended in a controlled manner. This allows programs that are running to perform cleanup and finish completely, which may take 30 seconds or more. This is the default.
- \*IMMED** Jobs are ended immediately. This can cause problems if data has been partially updated. Use this option only if you have attempted a controlled end unsuccessfully.

Press the Enter key. A message is displayed indicating that the system has started to end the subsystem. Another message is sent when the subsystem has ended.

### Displaying Subsystem Descriptions

To display a subsystem description, on the Work with Subsystem Descriptions display, use option 5 (Display). The Display Subsystem Description menu is shown on which you can select options that give you more information about that subsystem.

---

## Stopping the System

Before you stop the system:

- Make sure all batch jobs are finished and users are signed off the system:
  1. Send a message that interrupts all users signed on the system telling them to sign off.
    - a. Type `go managesys` and press the Enter key.
    - b. Select option 12 (Work with signed-on users) on the Manage Your System, Users, and Devices (MANAGESYS) menu.

**Note:** If the Work with User Jobs display is shown, you need to switch to basic assistance level using F21 (Select assistance level).
    - c. Press F10 (Send message to all) on the Work with Signed-On Users display.
    - d. Type the message in the *Message text* field on the Send a Message display and press F10 (Send).
  2. Wait for the users to sign off.
  3. Check to make sure all users have signed off by pressing F5 (Refresh) on the Work with Signed-On Users display. When everyone is signed off the system, the display will show only your job. To sign someone off the system, use option 4 (Sign off).

**Note:** If you have separate interactive subsystems, other than the controlling subsystem, you may want to stop the interactive subsystems once the users have signed off. This prevents them from signing on again before you have stopped the system. See “Ending Subsystems” on page 2-20 for information on how to end a subsystem.
- Check the status of any batch jobs that might be affected if the system is powered down:
  1. Type `go managesys` on any command line and press the Enter key.
  2. Select option 11 (Work with jobs) on the Manage Your System, Users, and Devices (MANAGESYS) menu.

**Note:** If the Work with User Jobs display is shown, you need to switch to basic assistance level using F21 (Select assistance level).
  3. Press F14 (Select other jobs) on the Work with Jobs display.
  4. Type `*a11` in the *User* field.

## Stopping the System

5. Type an N in every field except the *Message waiting*, *Running*, and *Running job held* fields. The Work with Jobs display is shown again with the batch jobs listed.
  6. If any job queues have jobs waiting to run, press F22 (Work with job queues) to see the Work with Job Queues display.
  7. Hold any job queues that have jobs waiting to run on the Work with Job Queues display.  
**Note:** Do not forget to release these job queues when you start the system again.
  8. Press F12 (Cancel) to return to the Work with Jobs display.
  9. Press F5 (Refresh) every few minutes until all batch jobs have completed processing.
- Make sure there are no tapes in any of the tape units and no diskettes in any of the diskette units.

## Powering Off the System Immediately

- To power off the system immediately:
  1. Type go power on any command line to display the Power on and Off Tasks (POWER) menu.
  2. Select option 3 (Power off the system immediately) if you want to keep the power off until the next time the system is scheduled to power on. Figure 2-12 shows the Confirm Power Off of System display.

```
Confirm Power Off of System                               System:  SYSTEM01
Next scheduled power on:
Date . . . . . : 05/19/95
Time . . . . . : 05:40:00

To confirm immediate power off, press F16.
To cancel, press F12.
```

Figure 2-12. Confirm Power Off of System Display for Immediate Power Down

When you press F16 (Confirm), an immediate power down occurs that causes the subsystems to end all active jobs.

- To power off the system and restart immediately:

To restart the system right after the power is turned off, select option 4 (Power off the system immediately and then power on) on the Power On and Off Tasks (POWER) menu. Figure 2-13 shows the Confirm Power Off of System display.

```
Confirm Power Off of System

To confirm immediate power off and then immediate power on, press F16.
To cancel, press F12.
```

Figure 2-13. Confirm Power Off of System Display for Immediate Power On

When you press F16 (Confirm), the system stops running and then starts again automatically.

**Note:** Do not turn the modem on or off when the system is turned off and is made ready for remote IPL. Otherwise, the system may start unexpectedly, although it turns itself off in a few minutes.

### Important Note

If you stop the system using the automatic power schedule or one of the options on the Power On and Off Tasks (POWER) menu, the IPL date and time system value (QIPLDATTIM) is checked and, if necessary, reset to the next scheduled power-on time. This checking does not occur if you power off in another way, so the system may not power on automatically. To force the power schedule to update the QIPLDATTIM system value, enter the following command on any command line.

```
CHGPWRSCDE DAY(*TODAY) PWRONTIME(*SAME) PWROFFTIME(*SAME)
```

## Using the Power Pushbutton

If you cannot use option 3 (Power off the system immediately) or option 4 (Power off the system immediately and then power on) on the Power On and Off Tasks (POWER) menu to stop the system, you can turn the power off using the Power pushbutton to turn off the system when the mode is set to Manual.

### Attention

Using the Power pushbutton to turn off the system may cause results that cannot be predicted in your data files, and the next IPL will take longer to complete.

Make sure that there are no tapes in the tape units or diskettes in the diskette units, and that the mode is set to Manual.

Do not turn the modem on or off when the system is turned off and is made ready for remote IPL. Otherwise, the system may start unexpectedly, although it turns itself off in a few minutes.

To turn the power off using the Power Pushbutton, do the following:

1. Press the Power pushbutton. The Data/Function display blinks with **O?** (the international power off symbol).

**Note:** To cancel the power off operation, press any other pushbutton on the control panel.

2. Press the Power pushbutton again. The Power On light blinks as the system is being powered off. When power off is complete, the light goes off.

If the system does not turn the power off within 30 minutes, wait for the System Attention light to come on. When the System Attention light comes on, go to Chapter 6, "Handling and Reporting System Problems" and follow the steps necessary to solve the problem.

## Stopping the System

---

## Chapter 3. The Operational Assistant Displays

The Operational Assistant displays are a menu-driven interface that allows you to do common system tasks quickly and easily. To display the Operational Assistant menu, type `go assist` on any command line and press the Enter key.

**Note:** You must have at least a user class of system operator (\*SYSOPR) to see all of the options on this menu.

When you install the current release of the OS/400 licensed program, the Operational Assistant function is ready to use.

You can display the Operational Assistant menu by typing `go assist` on any command line and pressing the Enter key (unless you are unable to display a command line). You can also enable users to access the Operational Assistant displays by:

- Pressing the Attention (Attn) key.
- Selecting option 50 on the OfficeVision for OS/400\* menu.
- Selecting an option on your application menus.

For information on how to set up the Operational Assistant display, see the *Security – Basic* book.

---

### Using Assistance Levels

There are three levels of assistance:

#### **1=Basic**

Shows the displays that provide the most assistance. Basic assistance level supports the more common operator and user tasks and does not use computer terminology.

#### **2=Intermediate**

Shows the displays that support all system tasks and uses computer terminology. Complicated tasks can be done using this level.

#### **3=Advanced**

Shows the displays that provide the same functions as the intermediate assistance level. However, the displays contain as much information as possible by not displaying the allowed function keys and options.

**Note:** The advanced assistance level is only available for some displays.

You can change from one assistance level to another on most Operational Assistant displays by using F21 (Select assistance level).

You can also change the assistance level by typing the command you want to run followed by `astlvl(*xxxxx)`, where \*xxxxx is \*basic for the basic assistance level, \*intermed for the intermediate assistance level, and \*advanced for the advanced assistance level. You can designate the assistance level for the following CL commands:

- Display Messages (DSPMSG)
- Display System Status (DSPSYSSTS)

## Using Assistance Levels

- Work with Configuration Status (WRKCFGSTS)
- Work with Messages (WRKMSG)
- Work with Spooled Files (WRKSPLF)
- Work with System Status (WRKSYSSTS)
- Work with User Jobs (WRKUSRJOB)
- Work with User Profiles (WRKUSRPRF)
- Work with Writers (WRKWTR)

You can also change the default assistance level in your user profile. To do this, change the *Assistance level* field using the Change User Profile (CHGUSRPRF) command.

The Operational Assistant function keeps track of what assistance level you have requested for each of the following groups of displays:

- Printer output
- Printers
- Jobs
- Handling messages
- Device status
- User enrollment
- System status

The assistance level is set for each command, so you can use the basic assistance level for some displays and the intermediate assistance level for other displays. For each command, select the assistance level you feel most comfortable working with and that allows you to get your work done the easiest way.

**Note:** Your current assistance level for each command is stored so when you sign on again, your assistance level remains the same.

### Using the GO Command

To get to any menu on the AS/400 system quickly, type go plus the menu ID on any command line, then press the Enter key.

To find a list of all of the menus on the system, type the following on any command line and press the Enter key:

```
WRKMNU *ALL
```

or

```
GO *ALL
```

When a menu name is mentioned, the menu ID is shown in parentheses next to the menu name.

For more information about using the Operational Assistant displays, see the *System Operation* book, and the *System Operation for New Users* book.



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## Chapter 4. Using Media

The AS/400 system uses the following media for saving or restoring data:

- Tape
- Diskette
- Optical library
- CD-ROM

To ensure a successful backup, it is important to handle and maintain the media properly.

---

### Using Tapes and Tape Units

There several types of tape cartridges and tape units commonly used on the AS/400 system:

- 1/4-inch tape cartridge and tape unit
- 1/4-inch mini tape cartridge and tape unit
- 8-mm tape cartridge and tape unit
- 1/2-inch tape cartridge and tape unit

You can also use 1/2-inch tape reel and tape unit on the AS/400 system.

**Tape Cartridge:** A tape cartridge is a case containing a reel of magnetic tape that can be put into a tape unit without stringing the tape between reels.

**Tape Reel:** A tape reel is a round device on which magnetic tape is wound.

**Tape Drive:** A tape drive is a device used to move the tape and read and write information on magnetic tapes.

**Tape Unit:** A tape unit is a physical enclosure containing the tape drive.

**Tape Library:** The complete collection of tapes available for use on the system (including all new, scratch, used tape cartridges, or reels) is a tape library.

For all tapes, you need to establish a procedure for maintaining a tape library which includes:

- Assigning each tape a unique volume ID.  
Each tape must have a unique volume ID to maintain the accuracy of tape volume statistics as shown in "Monitoring Tape Volume Statistics" on page 4-22.
- Establishing a temperature and humidity controlled tape media storage area.
- Maintaining records for each tape volume including:
  - Date the tape was purchased
  - Problems encountered
  - Corrective action taken

## Using Tapes

Regardless of the type of tape you are using, follow these guidelines to avoid damage and loss of the data on the tape.

### **Remember:**

- Leave the reels or cartridges in their protective container until you use them.
- Place reels or cartridges in the computer room for 24 hours before using them.
- Remove the reel or cartridge from the tape unit when it is not in use.
- Store reels or cartridges in the protective container.
- Copy and then throw away reels and cartridges that are over four years old or that have a high number of temporary errors. See "Monitoring Tape Volume Statistics" on page 4-22 for information on how to obtain the number of errors.

Apply an external label to the outside of each reel or cartridge and to the protective container when you store data on a tape. These labels can be ordered separately. Record information such as:

- Name or number of the reel or cartridge
- Type of data stored on the reel or cartridge
- Date the data was stored on the tape
- Tape volume ID

### **Do Not:**

- Carry cartridges loosely in a box or basket because the leader blocks can catch on other tapes and become unlatched.
- Stack more than six cartridges on top of each other.
- Open a cartridge.
- Release the leader block and pull the tape from the cartridge.
- Touch any exposed tape.
- Expose the tape to direct sunlight, moisture, or high magnetic fields.
- Drop the tape reel or cartridge.

Tapes, tape units, and diskettes are used primarily for saving and restoring system data. A tape unit is the physical enclosure that holds the tape drive.

## Verifying that Your Tape Unit Works Correctly

To verify that your tape unit is working correctly, do the following:

1. Remove the reel or cartridge from the tape unit.
2. Type the `WRKCFGSTS *DEV *TAP` command on any command line and make the tape unit unavailable to the AS/400 (vary off).
3. Clean the tape unit. Refer to the cleaning instructions for the tape unit you are using.
4. Type the Verify Tape (`VFYTAP`) command on any command line and press the Enter key.

## Errors that Can Occur with Tape Units

If an error message appears during tape usage, you can put the cursor under the message, and press F1 or HELP key. Then follow the instruction in the help text to resolve the problem.

## Using 1/4-Inch or 1/4-Inch Mini Tape Units

**Cleaning the 1/4-Inch Tape Unit:** The 1/4-inch or 1/4-inch mini tape unit requires periodic head cleaning. When using IBM tape cartridges, the head should be cleaned after every 8 hours of use. Other tape media may require more frequent cleaning. For example, if you are doing daily backups to a single cartridge, cleaning should be scheduled every week. When using tapes that were not written by a tape unit attached to your system, the drive should be cleaned more frequently. It is better to clean the tape unit too often than not often enough.

Use the IBM Cleaning Cartridge Kits as recommended below:

- For all 1/4-inch tape units, except the QIC-3040, use part number 21F8570.
- For the QIC-2GB or QIC-1000 tape unit, you can use part 46G2675 in the United States and Canada. Outside of the United States and Canada, you can use part 8191177. If the cleaning cartridge (part 46G2675 or part 8191177) did not come with the QIC-2GB or QIC-1000 tape unit, a PTF must be applied before using the cleaning cartridge.
- For the 1/4-inch mini tape unit (QIC-3040), use part 16G8576 in the United States and Canada. Outside of the United States and Canada, use part 16G8585.

**Note:** Parts 46G2675 and 8191177 do not work in the IBM QIC-525 and QIC-120 tape units.

While cleaning the heads using part 21F8570, the status light on the 1/4-inch tape unit indicates the device is in use. Clean the heads for approximately 20 seconds. Open the tape unit door *even though the status light is still lit*. Remove the cleaning cartridge.

For the QIC-2GB, QIC-1000, and QIC-3040 tape units (except part 21F8570), the cleaning cycle takes place automatically after the cleaning cartridge is inserted. The status light flashes at a rate of 1 cycle per second during the cleaning operation. After the flashing stops, remove the cleaning cartridge.

**Note:** See the cleaning kit instructions when using non-IBM cleaning cartridges.

## Using 1/4-Inch or 1/4-Inch Mini Tape Cartridges

Figure 4-1 shows a 1/4-inch tape cartridge and the box used for storage.

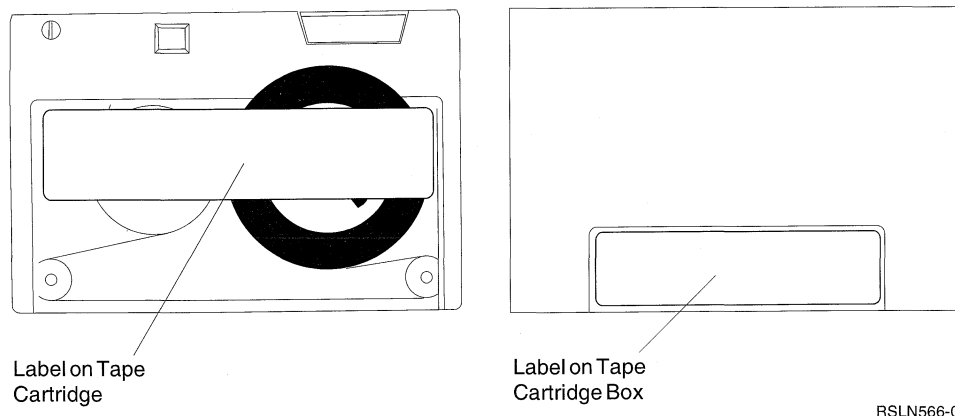


Figure 4-1. 1/4-Inch Tape Cartridge

### Attention

Do not attach labels to the edges of the 1/4-inch tape cartridges as this may interfere with the cartridge sensors and cause the tape to run off the end of the spools.

### Tape Cartridge and 1/4-Inch and 1/4-Inch Mini Tape Unit Compatibility

For full read/write capability, follow the guidelines in Table 4-1 to determine which tape cartridges can be used for each tape unit. This table shows the QIC format of tape cartridges and the tape unit required to process each QIC format. For example, for a QIC-1000 format, the tape cartridge must be 9120 or 9120SL and the tape unit type must be QIC-1000 or QIC-2GB.

<i>Table 4-1. Compatibility Between Tape Cartridges and Tape Units</i>	
<b>Tape Cartridge</b>	<b>Tape Unit to Use</b>
QIC-2GB Compatible (9250, 9250SL and 9150SL)	QIC-2GB
QIC-1000 Compatible (9120 and 9120SL)	QIC-1000 or QIC-2GB
QIC-525 Compatible (6525, 6320, 6080)	QIC-525, QIC-1000 or QIC-2GB
QIC-120 Compatible (6150, 6037) <sup>1</sup>	QIC-120, QIC-525, QIC-1000, QIC-2GB
QIC-3040 Compatible (MC3000, MC3000XL, MC3000SL)	QIC-3040 (MC)
<sup>1</sup> The error correction code (ECC) is not available when tape cartridges are recorded in QIC-120 format	

Error messages are displayed if the QIC format and the tape cartridge are not compatible. Errors that can occur are:

- Selecting a QIC format that cannot be written on the tape. For example, inserting a QIC-120 tape cartridge and specifying a QIC-1000 format.
- Attempting to process a high density tape cartridge in a low density tape unit. For example, you try to process a QIC-1000 tape cartridge in a QIC-525 or QIC-120 tape unit.
- Attempting to add a file and selecting a QIC format different from the format previously recorded on the tape. For example, inserting a tape cartridge recorded in QIC-525 format and specifying a QIC-120 format.

### Remember

For full read/write compatibility, follow the guidelines in Table 4-1.

When purchasing non-IBM tape cartridges, purchase a small quantity to verify the tape quality. Quality tape reduces the possibility of tape cartridge problems.

### Loading 1/4-Inch or 1/4-Inch Mini Tape Cartridges

To load a 1/4-inch tape cartridge:

1. Push the pushbutton on the tape unit door to release the door.
2. Pull the tape unit door out, then push it down.
3. Insert the tape cartridge into the tape unit.

The cartridge should be inserted firmly until it cannot go any further into the tape unit (about 10-mm (3/8 inch) of the cartridge remains outside the tape unit).

4. Lift up the tape unit door, then push it closed.

**Attention**

The cartridge does not go all the way into the tape unit until the tape unit door is closed. Use moderate force to close the door. Slamming the door shut may damage the tape unit.

Push the door until the latch holds the door closed.

To load a 1/4-inch mini tape cartridge, insert a tape cartridge through the cover door until the loading mechanism pulls the cartridge into the drive allowing the door to close.

If a tape cartridge is in the 1/4-inch tape unit, whenever the door is closed, the tape unit automatically runs a **retension operation** which is included in the load sequence. Retension means that the tape unit moves the tape to the end-of-tape position and rewinds it to the beginning-of-tape position. The approximate retension times are as follows:

Table 4-2. Retension Times for 1/4-Inch Tape Cartridges

Tape Unit	Tape Cartridge	Approximate Retension Time
QIC-2GB	9250 (1200 feet)	Less than 6 minutes
	9250SL (155 feet)	Less than 1 minute
QIC-1000	9120 (950 feet)	Less than 4 minutes
	9120SL (155 feet)	Less than 1 minute
QIC-525	6525 (1020 feet)	Less than 4 minutes
	6320 (620 feet)	Less than 3 minutes
	6080 (150 feet)	Less than 1 minute
QIC-120	6150 (620 feet)	Less than 3 minutes
	6037 (150 feet)	Less than 1 minute
QIC-3040	MC3000 (305 feet)	Less than 2 minutes
	MC3000XL (400 feet)	Less than 3 minutes
	MC3000SL (100 feet)	Less than 1 minute

### Unloading 1/4-Inch or 1/4-Inch Mini Tape Cartridges

#### Attention

Do not remove a tape cartridge if the tape unit status light is green (only a cleaning cartridge can be removed when the light is green).

If you remove a tape cartridge while the green light is on:

- A system message indicates an error has occurred and the tape job must be repeated.
- You may not be able to retrieve data already on the cartridge because end-of-tape processing did not complete

To unload 1/4-inch mini tape cartridges, wait until the tape status light is off. Press the eject button. The tape drive rewinds the tape, unloads and ejects the tape cartridge.

To unload 1/4-inch tape cartridges:

1. Push the pushbutton on the tape unit door to release the door.
2. Pull the tape cartridge unit door out, then push it down.

Moderate force is necessary to fully open the door with the tape cartridge in the tape unit. Excessive force damages the tape unit.

3. Grasp the tape cartridge and pull the cartridge straight out of the slot.

#### Attention

Turning the cartridge or pulling too hard may damage the door mechanism.

4. Lift up the tape unit door, then push it closed.

Little force is required to close and latch the door when the tape unit is empty. Moderate force is required when a tape cartridge is in the tape unit.

If you remove the tape cartridge while the green light is on, turn the light off by:

- Inserting the cartridge again.
- Run the Check Tape (CHKTAP) command and specify \*REWIND for the End of tape option (ENDOPT) parameter.

**Remember:** Do not remove a tape cartridge from the tape unit unless the last command was run with \*REWIND or \*UNLOAD specified for the End of tape option (ENDOPT) parameter.

If the last command ends with \*LEAVE, the tape unit heads might be over a data area. To avoid this, specify \*REWIND or \*UNLOAD for the End of tape option (ENDOPT) parameter of the last tape command. You may also use the Check Tape (CHKTAP) command with \*REWIND specified for the End of tape option (ENDOPT) parameter.

Tape cartridges can be left in the drive for several hours or overnight if:

- The green light is off (\*REWIND is specified for the End of tape option (ENDOPT) parameter).
- The room temperature does not vary by more than 9.5°C (15°F).

- Humidity levels are within the range shown in the table in “Shipping, Storage, and Operating Environments for the 1/4-Inch Tape Cartridges or 1/4-Inch Mini Tape Cartridges” on page 4-8.

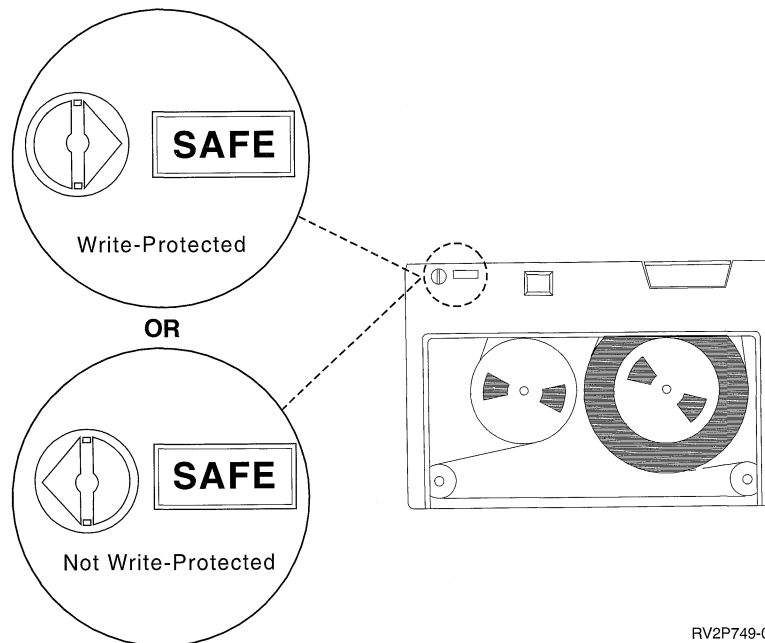
### Protecting Data Stored on 1/4-Inch Tape Cartridges or 1/4-Inch Mini Tape Cartridges

To protect data from being overwritten:

- Set the pointer toward **SAFE** for QIC-525 and QIC-120 tape cartridges.
- Set the pointer toward the locked padlock icon for the QIC-1000 and QIC-2GB tape cartridges,
- Slide the Record tab to the right for the QIC-3040 tape cartridges.

To not protect the data:

- Set the pointer away from **SAFE** for the QIC-525 and QIC-120 tape cartridges, as shown in Figure 4-2.
- Set the pointer toward the unlocked padlock icon, for the QIC-1000 and QIC-2GB tape cartridges, as shown in Figure 4-3 on page 4-8.
- Slide the Record tab to the left for the QIC-3040 tape cartridges.



RV2P749-0

Figure 4-2. Write-Protect Positions for a 1/4-Inch Tape Cartridge (QIC-525 and QIC-120)

## Using 8-Millimeter Tape Units

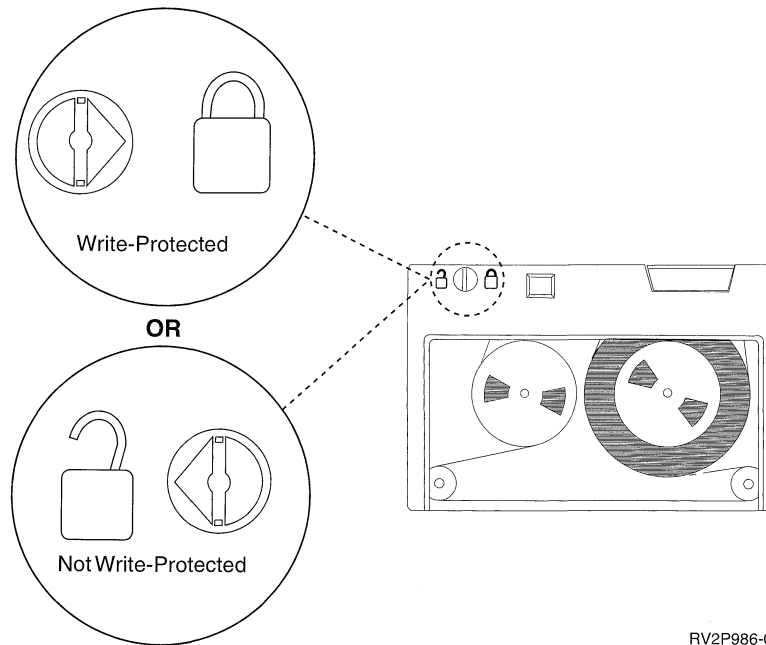


Figure 4-3. Write-Protect Positions for a 1/4-Inch Tape Cartridge (QIC-1000 and QIC-2GB)

### Shipping, Storage, and Operating Environments for the 1/4-Inch Tape Cartridges or 1/4-Inch Mini Tape Cartridges

The recommended environment for operation, storage, and shipment of 1/4-inch tape cartridges is a temperature of 15 to 25°C (59 to 77°F), and a relative humidity of 40 to 60%. Table 4-3 provides maximum and minimum environmental conditions for safe shipment, storage, and use of the tape cartridges for an AS/400 tape unit. A hyphen (–) indicates that the dry bulb temperature is outside the recommended range for safe operation, storage, or shipment.

Table 4-3. Environment Ranges for 1/4-Inch and 1/4-Inch Mini Tape Cartridges

Dry Bulb Temperature Degrees		Relative Humidity (Percent)		
Celsius	Fahrenheit	Operating	Storage	Shipping
-40	-40.2	–	–	20 to 80
10	50	20 to 80	20 to 80	20 to 80
20	68	20 to 80	20 to 80	20 to 80
30	86	20 to 55	20 to 73	20 to 73
40	104	–	20 to 32	20 to 32
45	113	–	20 to 21	20 to 21

## Using 8-Millimeter Tape Units

The AS/400 system supports the following tape units:

- 7208 Models 002, 012, 222, 232 and 234
- 9427 Models 210, 211
- Feature Code 6390



The 7208 Models 002, 012, 222, 232 and 234 are external tape units for the AS/400 System Units.

For the 7208 Model 002, refer to the following publication:

- *IBM 7208 Model 002 2.3GB External 8mm Tape Operator Guide, SA23-2675.*

**Attention**

Mark a box on the 8-mm Cleaning Cartridge (part 21F8593) after each cleaning. The Model 002 does not clean properly after 12 cleanings.

The 160 tape may work in the 7208 Model 002. It will not be ejected when loaded in the 7208 Model 002. However, it is not recommended that you use 160-meter tape in the Model 002 as this may cause tape damage (due to the tape load mechanism).

For the 7208 Model 012, refer to the following publication:

- *IBM 7208 5.0GB External 8mm Tape Unit Model 012 Operator Guide, SA26-7036.*

You can prepare tapes on the Model 012 with the Initialize Tape (INZTAP) command.

It is not necessary to mark the boxes on a cleaning cartridge that is used only with Model 012 tape drives. You can use the 8-mm Cleaning Cartridge (part 21F8593) more than 12 times in a Model 012 (until the amber status light on the Model 012 does not turn off).

The 7208 Models 012 does not support the 160-meter tape. The 160-meter tape is automatically ejected when loaded in the 7208 Models 012.

For the 7208 Model 222, refer to the following publication:

- *IBM 7208 7.0GB External 8mm Tape Unit Model 222 Operator Guide, SA26-7117.*

For the 7208 Model 232 and 234, refer to the following publication:

- *IBM 7208 External 8mm Tape Subsystem Models 232 and 234 operator's Guide, SA26-7104.*

Models 232 and 234 can be attached with one or two cables to: a single AS/400 system or two separate AS/400 systems that have different AS/400 tape addresses. These models can be configured for mirroring or extended unattended save capability. Model 234 initializes either a 5.0 gigabyte or 7.0 gigabyte tape cartridge. However, both tape lengths are reported as FMT 5.0 gigabyte tape cartridges by the AS/400 system.

The 7208 Models 232 does not support the 160-meter tape. The 160-meter tape is automatically ejected when loaded in the 7208 Models 232.

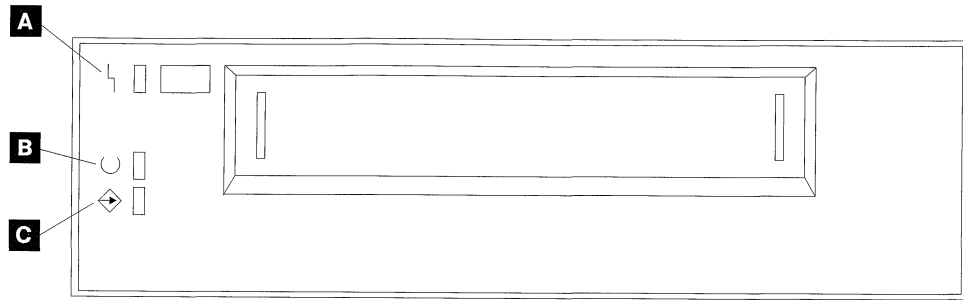
For the 9427 Models 210 and 211, refer to the following publication:

- *IBM 7208 External 8mm Tape Subsystem Models 210 and 211 operator's Guide, SA26-7108.*

The feature code 6390 is an 8mm tape unit that is internal to the AS/400. The 6390 supports the 7GB format when the 160-meter tape is used.

### Status Lights

The 8mm tape units that support the 5.0GB or 7.0GB format have three indicator lights: two green and one amber. These status lights are turned on and off in various combinations to indicate the status of the tape units.















































RV3P177-0

Figure 4-4. The 8MM 5.0GB or 7.0GB tape unit

The symbols located next to the status lights are the International Organization for Standardization (ISO) symbols that define the general function of the status lights as follows:

- A** Disturbance. The amber status light flashes whenever the tape unit encounters an unrecoverable fault. It is on solid whenever the tape drive requires cleaning.
- B** Ready. The green status light is on solid whenever the tape unit is ready to receive the tape backup commands.
- C** Read-Write. The green status light flashes whenever the tape unit is moving the tape.

The various on/off combinations of the status lights are shown in the following chart.

Status Lights	State	Status
     	On On On	The Power-on Self Test (POST) is running or the system has issued a reset to the drive.  <b>Note:</b> The POST condition can occur either when the power is first applied or after use of the diagnostic cartridge.
     	Off Off Off	One of the following has occurred:  1. The power is off.  2. The POST has completed successfully but no tape cartridge was inserted.
     	Off Off Flashing	A tape cartridge has been inserted and the tape drive is performing a tape load/unload operation.
     	Off On Off	The tape load operation has completed and the tape drive is ready to receive commands from the system.
     	Off On Flashing	The tape is in motion and the tape drive is busy running a device operation.
     	Flashing Off Off	The flash rate is fast (4 flashes per second) when using the test cartridge. The flash rate is slow (1 flash per second) when the tape drive has detected an internal fault that requires corrective action. Refer to your Service Guide or contact your service representative.
    or    or 	On Off or On Off or Flashing	The tape path requires cleaning.

RV3P176-1

Figure 4-5. Status lights on the 8MM 5.0GB or 7.0GB tape units

## Using 8-Millimeter Tape Cartridges

The following are the cartridges you can use in the 8-mm tape unit:

**Test Cartridge #21F8577:** Test Cartridge #21F8577 is used to write test data onto a tape cartridge. The tape unit reads the recorded data to check the write operation. Do not use this cartridge to save programs or data.

## Using 8-Millimeter Tape Cartridges

**Note:** This test cartridge may be used with all 8-mm tape units.

**Diagnostic Cartridge #46G2660:** Only use the Diagnostic Cartridge when the system is not available and you are not able to use Test Cartridge #21F8577. This diagnostic cartridge contains a program that tests only the read capability of the tape drive.

**Note:** Diagnostic Cartridge #46G2660 may not be used with the 7208 Model 002 tape unit. Call your service representative for additional copies of the Diagnostic Cartridge.

**8-mm (112-m) Tape Cartridge #21F8595:** Use this cartridge to save your programs or data. Each tape cartridge provides up to 2.3GB of storage with the 7208 Model 002 or 5.0GB of storage on the 8-mm 5.0GB or 7.0GB tape units.

**8-mm (160-m) Tape Cartridge #87G1601:** Use this cartridge to save your programs or data. Each tape cartridge provides up to 7.0GB of storage with the 7208 Models 222 and 234, 9427 Models 210 and 211, and Feature Code 6390.

**Cleaning Cartridge #21F8593 and #16G8467:** Use this cartridge for cleaning the 8-mm tape unit heads. #16G8467 is an abrasive cleaning tape and should be used whenever tape unit problems are encountered.

### Loading the 8-Millimeter Tape Cartridge

To load a tape cartridge, push the blue load/unload pushbutton on the tape drive.

- For the 7208 Model 002 tape unit, the tape drive opens and a cartridge tray ejects. After a tape cartridge is inserted, push the tape drive door until the mechanical latch holds the door closed. The tape drive loads the tape from the tape cartridge.
- For all the other 8mm tape units, insert a tape cartridge through the cover door into the tape drive. The tape drive loads the tape from the tape cartridge.

If you need more information, see the books listed in topic "Using 8-Millimeter Tape Units" on page 4-8.

The tape takes about 25 seconds to load. When the green ready light comes on, the drive is ready for data operations.

You can type commands on your display station while the tape is loading. Any commands to the tape unit start running once the tape has finished loading. Commands not requiring the tape cartridge are run immediately.

### Unloading the 8-Millimeter Tape Cartridge

You can unload a tape cartridge by a system command or by pushing the load/unload pushbutton on the tape drive. Depending on the position of the tape, the time for rewind and unload is between 18 seconds and 3 minutes.

The drive rewinds the tape within the cartridge.

- The 7208 Model 002 tape unit ejects the tray containing the tape cartridge. After a cartridge is removed, another cartridge may be inserted. To keep dust and other contaminants out of the tape drive, push the drive door closed until the mechanical latch holds the door closed.

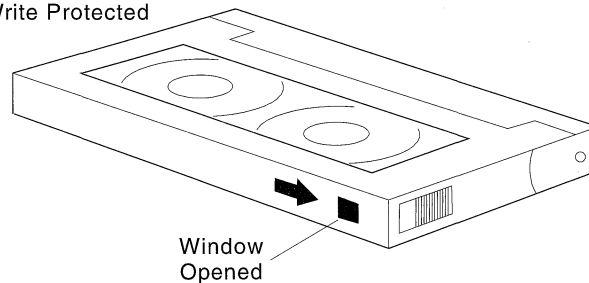
- The 7208 Models 012, 222, 232, 234 or the 6390 tape unit ejects the tape cartridge, which can then be removed.

If the tape cartridge cannot unload and has to be removed manually from the drive, contact your service representative.

### Protecting Data Stored on 8-Millimeter Tape Cartridges

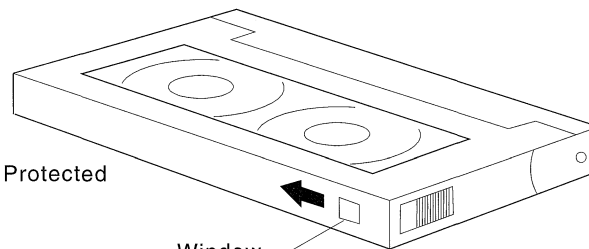
The window on the tape cartridge shown in Figure 4-6 controls write protection. To prevent data from being written on the tape cartridge, slide the tab so that the window is closed. To allow data to be written on the tape cartridge, slide the tab so that the window is open.

Not Write Protected



Window  
Opened

Write Protected



Window  
Closed

RV2P718-0

Figure 4-6. Write Protection of 8-mm Tape Cartridges

### Erasing Data on the 8-Millimeter Tape Cartridge

To erase data on an 8-mm tape cartridge, use a tape erasing device that has a magnetic coercivity strength of 1500 oersteds or more.

**Note:** You may also erase the tape by specifying \*YES for the *Clear* parameter on the Initialize Tape (INZTAP) command. However, this method takes up to 3.5 hours. For the 160-m tape unit, it may take up to 5 hours.

## Using 1/2-Inch Tape Units

AS/400 supports the following 1/2-inch tape units:

- 3480
- 3490
- 3490E
- 3494
- 3590

**1/2-Inch Tape Unit Automatic Cartridge Loader Operation:** There are two ways that tape cartridges can be loaded into the 1/2-inch tape unit:

## Using 1/2-Inch Tape Units

<b>Manual Mode</b>	You insert tape cartridges one at a time.
<b>Auto Mode</b>	You can preload up to six tape cartridges. The tape cartridges will automatically load when the previous cartridge is unloaded.

**Sharing Systems with a 3480, 3490, 3490E, or 3590 Tape Unit:** The 3480, 3490, 3490E, or 3590 tape units can be attached to:

- One or two input/output processors on the same AS/400 system.
- Two AS/400 systems.
- An AS/400 system and a System/390\*.

You can choose whether or not you want your 3480, 3490, 3490E, or 3590 tape unit assigned to an AS/400 system when the tape unit is varied on (made available for intended use). Assigning a tape unit reserves the tape unit specifically for one system.

### To assign a 3480, 3490, 3490E, or 3590 tape unit:

1. Use the Work with Device Description (WRKDEVD \*TAP) command to work with a tape device description.
2. Type \*YES in the *Assign device at vary on* field and press the Enter key to assign the tape unit to the system.

**Note:** \*YES is the default for Version 2 Release 3. For Version 2 Releases 1 and 2, the assign device at vary on parameter was not optional. For releases prior to Version 2 Release 1, the assign function did not exist.

3. Use the Vary Configuration (VRYCFG) command to vary off the tape unit.

**Note:** The Vary Configuration (VRYCFG) command can be run by using the VRYCFG command or by using the Work with Configuration Status (WRKCFGSTS) command. To use the Work with Configuration Status command, type WRKCFGSTS \*DEV \*TAP and press the Enter key.

4. Use the VRYCFG command to vary on the tape unit and assign it to the system.

If the tape unit is being used by the other system, a message is displayed that indicates the tape unit is assigned elsewhere. The tape unit must be varied off (made unavailable) at the other system before it can be varied on (made available) at a new system.

### To leave a unassigned:

1. Use the Work with Device Description (WRKDEVD \*TAP) command to work with a tape device description.
2. Type \*NO in the *Assign device at vary on* field and press the Enter key to leave the tape unit unassigned.

#### Attention

A tape unit that is unassigned may be varied on to both systems. The operator must control the tape application programs so that the two systems do not interfere with each other. The results of failing to control the tape application programs may be unpredictable.

3. Use the Vary Configuration (VRYCFG) command to vary off the tape unit.
4. Use the VRYCFG command to vary on the tape unit.

**Remember:**

- When a tape unit is being shared by two AS/400 systems, the tape unit can only be in VARY ON status on one system at a time. To use a drive, vary it on by typing the following on any command line and pressing the Enter key:

```
VRYCFG CFGOBJ(TAPxx) CFGTYPE(*DEV) STATUS(*ON)
```

- If you do not want to vary on tape units during future IPLs, type the following on any command line and press the Enter key:

```
CHGCTLAP CTLD(TAPCTLxx) ONLINE(*NO)
```

After doing an IPL, to vary on only the controller, type the following on any command line and press the Enter key:

```
VRYCFG CFGOBJ(TAPCTLxx) CFGTYPE(*CTL) STATUS(*ON) RANGE(*OBJ)
```

**1/2-Inch Tape Cartridge Unit Addressing:** The 370-attached tape units can be set at any controller and device address except when the 370-tape subsystem is used for initial program load. Then the controller address must be set to 7 and the device address must be set to 0.

**Note:** For the 2644 tape input/output processor only, the device address may be set to 8 for alternate IPL if no device exists at address 0.

**Backing Up and Restoring Data with the 1/2-Inch Tape Cartridge Unit:** The 3480, 3490, or 3490E attached tape unit is most often used to back up and restore data. You can use multiple tape units to back up and restore data plus the automatic cartridge load function to do an unattended backup. When using multiple tape units, the sequence of tape media used is across the tape units: the first tape is on tape unit 1, and the second on tape unit 2.

For example, if you use the 3490 tape unit (model D32) with the automatic cartridge load function to back up the data, 12 cartridges can be loaded using the automatic cartridge load function. When the job is complete, tapes 1, 3, 5, 7, 9, and 11 are in tape unit 1. Tapes 2, 4, 6, 8, 10, and 12 will be in tape unit 2. To restore the data, the odd-numbered tapes must be loaded into tape unit 1 and the even-numbered tapes in tape unit 2.

Before backing up data, all tapes should be initialized on the model and type of tape unit that will be used to do the backup. Tapes that are initialized on other tape units may not be recognized by the AS/400 system. Tapes that are initialized on a 3490 D3x tape unit cannot be used on 3490E D4x or Cxx tape units.

**Cleaning the 1/2-Inch Tape Cartridge Unit except 3590:** On the average, clean the tape path on each drive every seven days. If you use an unusually large amount of tape, clean the tape path more often. If the drive displays a \*CLEAN message, clean the tape unit path as soon as possible. You should also clean the tape path after each initial program load (IPL), after a drive is reset, or whenever the power on the tape drive has been interrupted.

To clean the tape path, insert the special cleaning cartridge (IBM part 4780527 or equivalent) as you would a normal tape cartridge. Keep track of the number of

## Using 1/2-Inch Tape Cartridges

uses on the label provided with each cleaning cartridge and then throw the cartridge away after 500 uses.

### Notes:

1. Do not use a grease pencil on the label.
2. The cleaning cartridge should be undamaged and clean when it is inserted into a tape unit.

If your tape unit has the automatic cartridge loader feature, put the cartridge into the feed position and press the start pushbutton. The cleaning cartridge can also be put into the input stack, and the cleaning procedure takes place whenever the cleaning cartridge is loaded into the drive. If you start cleaning during a job, an inquiry message is displayed. After responding to the message, the drive threads the cleaning tape, cleans the read/write head, and then rewinds and unloads the cleaning cartridge. When the cartridge has been unloaded, remove it and mark the usage label.

**Cleaning the 3590 Tape Cartridge Unit:** If your tape unit has a Random Access Cartridge Loader and the Cartridge Loader detects that cleaning is needed, the tape unit will perform the cleaning operation automatically, if the cleaning cartridge is in the internal cell (known only to the Random Access Cartridge Loader). The tape unit keeps track of the number of cleaning operations performed by the cleaning cartridge and ejects the cleaning cartridge through the priority cell when the cleaning cycles allowed for the cleaning cartridge have been used up.

## Using 1/2-Inch Tape Cartridges

### Before You Start

Inspect the cartridge and do not use it if:

- The cartridge case is cracked or broken.
- The leader block or the latch is broken.
- The file-protect selector is damaged.
- The cartridge case contains any liquid.
- The cartridge case has any other obvious damage.
- The tape is wound completely out of the cartridge onto the machine reel and then reattached to the cartridge reel by the service representative. This repair is temporary and permits the cartridge to be loaded one time so that the data can be copied on a replacement cartridge.

**Note:** If you have a damaged cartridge, substitute a backup version of the data from another cartridge. If the cartridge has a detached leader block but no other damage, you can repair the cartridge with the *IBM Leader Block Repair Kit*.

If dirt appears on the external surface of a cartridge, lightly moisten a lint-free cloth (IBM part 2108930) with IBM cleaning fluid (IBM part 8493001), or its equivalent, and wipe the outside surfaces.

### Attention

Do not allow anything wet, including the cleaning fluid, to contact the tape.



Make sure all cartridge surfaces are dry and the leader block is snapped into place before you load the tape cartridge.

### Protecting Data Stored on 1/2-Inch Tape Cartridge

To protect the data, roll the thumbwheel selector on the side of the cartridge left or right until it is in the correct position.

**Note:** For more detailed information about using 1/2-inch tape cartridges, see *Care and Handling of the IBM Magnetic Tape Cartridge, GA32-0047*.

## Using 1/2-Inch Tape Reels

A magnetic tape reel consists of a 1/2-inch continuous strip of plastic that is coated with a layer of oxide.

Use the following tape and reel recommendations for maximum performance and reliability:

### **Tapes:**

1.5 mil thick

A maximum of 733.7 meters (2400 feet)

### **Reels:**

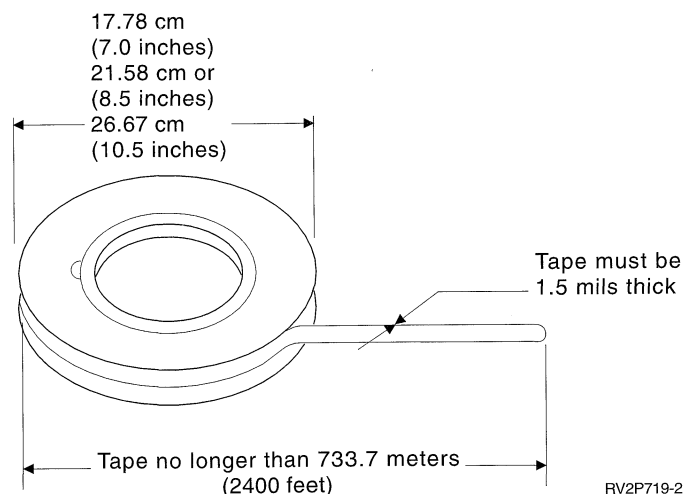
15.24 cm (6.0 inches)

17.78 cm (7.0 inches)

21.58 cm (8.5 inches)

26.67 cm (10.5 inches)

Using tapes that are longer than 2400 feet is not recommended. Using these tapes will cause the tape unit head to wear incorrectly. You could have an increase in read and write errors.



Follow these tips to ensure your tape reels are used correctly:

### **Remember:**

- Secure the end of the tape with a tape end fastener when not in use.
- Keep the reel protected with a locking collar when not in use.

## Using 1/2-Inch Tape Reels

- Store tapes in a vertical position.

### **Do Not:**

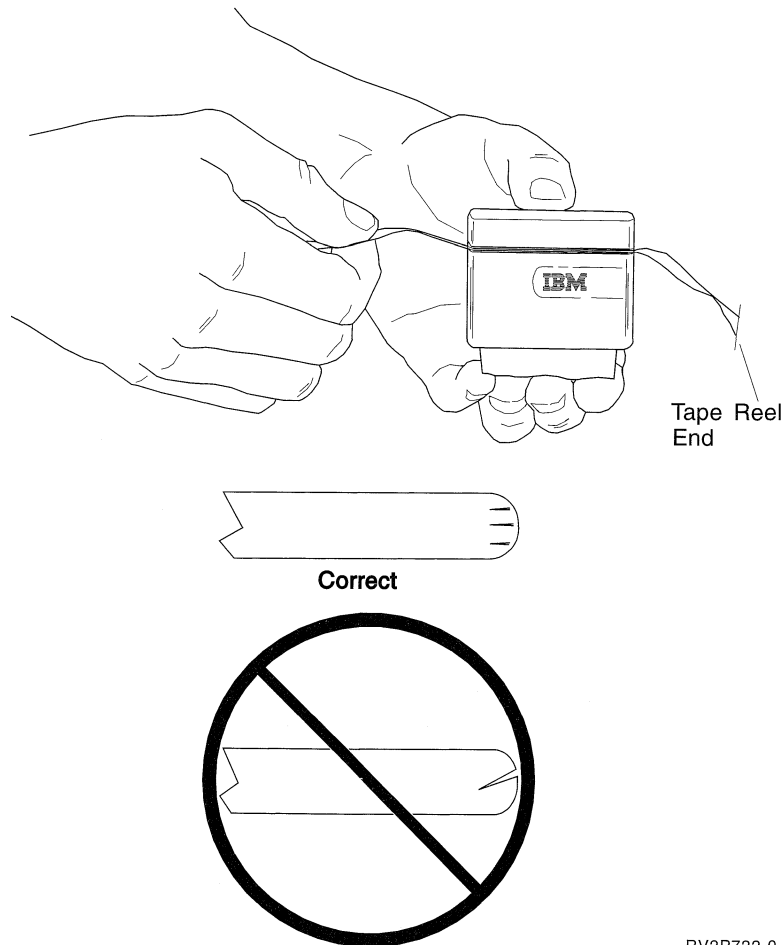
- Squeeze the outer flanges of the reels when handling and loading tape (hold the tape evenly around the outer edge by the palm of your hand).
- Allow tape ends to drag on the floor and get dirty.
- Touch the tape surface.

### **Preparing a Tape Leader**

A tape leader that is square or damaged can cause the tape to load incorrectly in units that automatically load tapes. When using this type of tape unit, ensure that the tape loads correctly by:

- Preparing the tape leader with the tape leader tool (IBM part 2512063).
- Pressing hard when cutting the tape. This prevents static problems on the tape leader.

Figure 4-7 shows how to correctly prepare a tape leader.



RV2P722-0

Figure 4-7. Preparing a Tape Leader

### Loading the 1/2-Inch Tape Reel

When loading 6-inch and 10-inch reels of tape on the 9348, carefully place the tape reel on the center of the hub.

When loading a tape reel, ensure that the loose end of the tape is on the tape reel and not under the reel.

### Protecting Data Stored on the 1/2-Inch Tape Reel

To prevent the drive from writing data, remove the write enable ring as shown in Figure 4-8. To allow the drive to write on the tape, install the write enable ring.

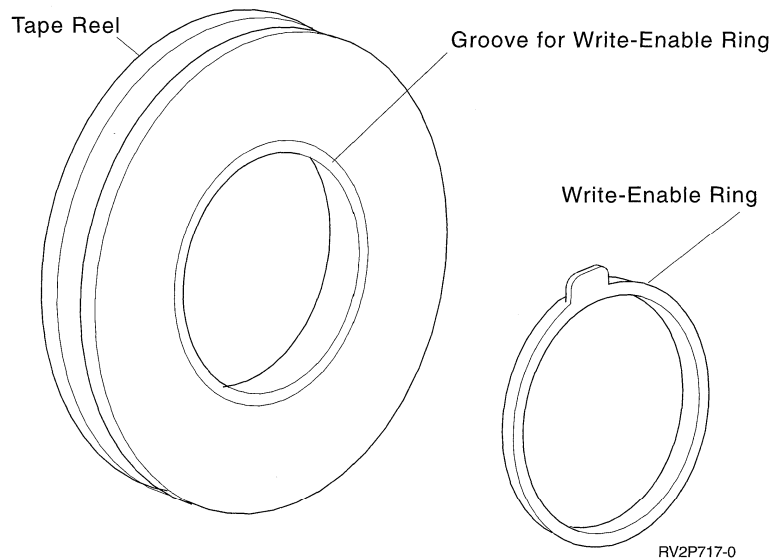


Figure 4-8. 1/2-Inch Tape Reel Write Protection

### Cleaning the 1/2-Inch Tape Reel Unit

Use Table 4-4 as a guide to establish how often to clean your tape reel unit.

Table 4-4. Cleaning the 1/2-Inch Tape Reel Unit

When:	Clean the tape path:
Less than ten reels are used in eight hours.	Every eight hours.
More than 10 reels are used in eight hours.	Every one to two hours of running.
Particles appear on the tape path or you are using new or seldom used tapes.	After each reel.

Use the following cleaning supplies:

- Tape cleaning kit, IBM part 352465 or equivalent
- Cleaning fluid, IBM part 8493001, 13F5647, or equivalent
- Lint-free cloth, IBM part 2108930
- Rigid cleaning tool, IBM part 2200574 or equivalent

## Using 1/2-Inch Tape Reels

To clean the tape reel unit:

1. Set the power switch to the Off position.
2. Clean the following areas using a lint-free cloth or swab and cleaning fluid:

- Read/write head
- Tape cleaner block
- Tape guides
- General tape path

Pay particular attention to the read/write head and tape cleaner block. Push hard against the read/write head. Dry the areas with a lint-free cloth until the cloth comes away clean.

If the tape unit is cleaned thoroughly and a particular tape is causing errors, discard the tape.

## Tape Volume, Initialization, and Volume ID

A **volume** is a 1/2-inch tape reel, a 1/2-inch tape cartridge, a 1/4-inch or 8-mm tape cartridge, or a diskette. Each volume must be initialized before data files can be recorded on the tape (or diskette) magnetic medium. A tape **volume ID** is a name or number identification that is recorded in a standard volume label at the beginning of the tape when a tape is initialized.

### Initializing Tape

Use the Initialize Tape (INZTAP) command to initialize a tape. When you run this command, a standard volume label is recorded at the beginning of the magnetic tape medium.

- When a tape is initialized, any information previously recorded on the tape medium is erased and written over with new information. Information is also written over when new data files are appended to the newly recorded volume label.

#### Note

Do not reuse an old tape volume if permanent read or write errors have been detected more than two times. Also do not reuse an old tape volume if temporary read or write errors for that volume are excessive. To determine if temporary errors are excessive, see "Monitoring Tape Volume Statistics" on page 4-22.

### Commonly Used Parameters of the INZTAP Command

The most commonly used INZTAP parameters are:

- New volume identifier (Volume ID)
- Check for active files
- Tape density

#### *New volume identifier (Volume ID)*

Use the new volume identifier parameter to provide a unique volume identification (ID) for a tape being initialized for use as a standard labeled tape. This parameter is required for 1/4-inch, 8-mm tape cartridges and 1/2-inch tape cartridges. This option is not required by 1/2-inch tape reels.

- On the Initialize Tape display, type the volume identifier of your choice in the new volume identifier parameter. The identifier can be no longer than six characters in length and should not start with a \*.

### **Check for active files**

An active file has an expiration date that is equal to or later than the current date.

Select one of three options to complete the parameter:

- Type \*YES in the check for active files parameter if you want all data files on the tape to be checked before the tape is initialized. If an active file is found, the tape volume is not initialized and you receive an error message.

#### **Attention**

**Check for active files=\*YES** is the default option. The processing of tapes that have a large file, or tapes that have many files, may take a long time. The processing of 8-millimeter tapes may take up to 3.5 hours.

- Type \*NO in the check for active files parameter if you want the tape to be initialized immediately without checking for active files. Use \*NO when:
  - The tape or data cartridge is new.
  - You are sure you want the volume initialized and you want the INZTAP processing to complete in the minimum amount of time.
  - You are sure you want the volume initialized and the INZTAP command failed when you entered \*YES or \*FIRST in the parameter field.

#### **Attention**

If you type \*NO in the Check for active files parameter, the system writes over all data that is on your tape. Make sure the tape cartridge you are using is new. If the tape you are using is not new, be certain that you want the tape volume initialized regardless of the data that is on the tape.

- Type \*FIRST in the check for active files parameter if you want to check only the first file on the tape. If this file is active, the tape volume is not initialized. The processing time for this parameter option depends on the size of the first file on the tape.

### **Tape density**

The tape density parameter determines the amount of data recorded per inch of tape. The choice of density also changes the format of 1/4-inch and 8-mm tape cartridges.

If you are initializing two or more reels or cartridges for a multi-volume SAVE operation, the density and format of all volumes must be the same.

### **Clear**

The clear parameter is used to erase all of the data on the tape medium that follows the standard volume label record at the beginning of the tape. The 1/2-inch and 1/4-inch tape drives have an erase head that erases all data tracks in one

## Using 1/2-Inch Tape Reels

pass. The 8-mm tape drive erases at the normal write speed. This can take a very long time.

**Note:** Using the clear parameter to erase 8-mm tapes is not recommended because the process time for erasing 8-mm tapes can be up to 3.5 hours.

## Copying Tapes

To copy a tape:

1. You must have two tape drives.
2. Make sure the tape units are turned on.
3. Load the tape to be copied into one tape unit.
4. Load the tape receiving the information in the other tape unit.

**Note:** If the tape that receives the information is new, you must initialize it before continuing. See “Tape Volume, Initialization, and Volume ID” on page 4-20 for information on how to initialize a tape.

5. Enter the Duplicate Tape (DUPTAP) command and press F4 (Prompt).
6. Specify the name of the tape unit from which the information is to be copied in the From device (FROMDEV) parameter.
7. Specify the name of the tape unit to which the information is to be copied in the To device (TODEV) parameter.
8. Press the Enter key. A message is displayed when it is time to insert a new tape.

## Monitoring Tape Volume Statistics

To ensure that your tapes are in good condition, you should monitor the tape volume statistics on your AS/400 system.

1. Use the Start System Service Tools (STRSST) command.
2. Select option 1 (Start a service tool) on the System Service Tools menu.
3. Select option 1 (Error log utility) on the Start a Service Tool menu.
4. Select option 4 (Work with tape/diskette lifetime statistics) on the Error Log Utility menu.
5. Select the type of removable media for which you want data on the Select Media Option display. The Work with Lifetime Statistics display appears.

```

Work with Lifetime Statistics
Removable media . . . . . : 1/4 inch cartridge tape
Type options, press Enter.
  4=Delete entry  6=Print entry

Option  Volume      -----Errors-----      -----K Bytes-----
      ID          Read      Write      Read      Written
>>PHB021      23452450      23450      23457123      97689690
      THB021          2          0          14307          0
      AIPL            0          3          214494          137546
      AD0000          0          0           3           0
      AIPL            0          0           2          27620
      IVIHE          0          0           1           0
      MM             0          0          361           0
      PHB031          0          0           2           0
      PTFFIX         0          0           3          432

F3=Exit          F5=Refresh          F10=Delete all
F11=Print all    F12=Cancel

(C) COPYRIGHT IBM CORP.

```

Figure 4-9. Work with Lifetime Statistics Display

6. If you see the following symbols preceding the volume ID on the Work with Lifetime Statistics display, take the appropriate action:

Symbol	Explanation	Action to take
>>	Media replacement recommended	Copy the contents of the media to a new tape and discard the old tape.
>	Media approaching replacement criteria	<ul style="list-style-type: none"> <li>Replace the tape if the tape format is: <ul style="list-style-type: none"> <li>– QIC-120</li> <li>– 7208 2.3GB</li> <li>– 6250 bpi density</li> </ul> </li> <li>If the tape format does not fulfill the above conditions, continue to monitor this tape to ensure that media replacement is not necessary.</li> </ul>

**Notes:**

To ensure accurate statistics, each tape cartridge or reel must have a unique volume ID.

## When to Clean

After 400 MB of data transfers have occurred for the volume ID, the Error Log Utility uses the following guidelines to determine whether a particular tape should no longer be used.

- Discard tape reels and tape cartridges that have a read or write error.

## Using Diskettes

- If all tapes used in a single drive exceed the criteria that follows this list, the read/write head are probably dirty and should be cleaned.
- If a tape reel or cartridge exceeds the criteria that follows this list, copy the contents to a new tape and discard the old tape.

### ***1/4-Inch Tape Cartridge***

- Tape cartridges recorded in QIC-120 format
  - One temporary write error per 1,250KB written.
- Tape cartridges recorded in QIC-525, QIC-1000, or QIC-2GB format
  - One temporary write error per 890KB written.
- Tape cartridges recorded in QIC-3040 (6335) format
  - One temporary write error per 305KB written.

See Table 4-1 on page 4-4 for a list of tape cartridges.

### ***8-Millimeter Tape Cartridge:***

- 7208 2.3GB Format
  - One temporary write error per 50KB written.
- 7208 5.0GB or 6390 7.0GB Format
  - One temporary write error per 10KB written.

### ***1/2-Inch Tape Cartridge***

- 3480 and 3490
  - One temporary write error per 160,000KB written.

### ***1/2-Inch Tape Reel:***

- 9347
  - One temporary write error per 4,500KB written.
- 9348 and 2440
  - One temporary write error per 5,000KB written for 1600 bpi.
  - One temporary write error per 8,500KB written for 6250 bpi.
- 3422
  - One temporary write error per 8,500KB written.

---

## Using Diskettes

A **diskette** is a thin, oxide-coated disk that can turn freely while enclosed in a permanent jacket. A material inside the permanent jacket cleans the diskette as the diskette turns. When the diskette is not in use, it should be kept in its removable envelope for protection.

Before you use a diskette, check the diskette label to ensure that you are using the correct type of diskette.

The 8-inch diskette unit can use three types of 8-inch diskettes:



- Single-sided, single-density
- Double-sided, single-density
- Double-sided, double-density

The 5-1/4 inch diskette unit can use two types of 5-1/4 inch diskettes:

- Double-sided, high-density
- Double-sided, double-density

**Note:** Double-density, 5-1/4 inch diskettes can be read only. You cannot write to these diskettes.

IBM diskettes are designed to stand up to frequent, careful handling, but incorrect handling can cause damage.

## Handling Diskettes

Damage to a diskette can cause problems such as reading or writing errors, or more serious problems such as permanent loss of data.

When you take a diskette out of its removable envelope, handle the diskette correctly as shown in Figure 4-10.

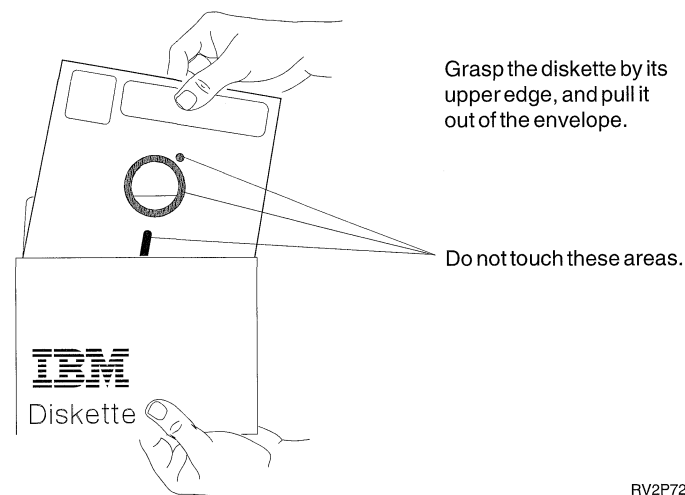


Figure 4-10. Handling Diskettes

### Remember:

- Write on the diskette label with a felt tip pen.
- Keep the diskette in a clean environment (away from smoke and dust).
- Keep the diskette away from direct sunlight.

### Do Not:

- Touch the diskette surface.
- Use clips or rubber bands on a diskette.
- Place heavy books on a diskette.
- Put a diskette near magnetic materials.

### Initializing Diskettes

**Initializing a diskette** means that identification information is written on it and it is given a specific format for storing information. Initializing also includes:

- Checking for files that are still active and that should not be cleared.
- Testing each track for physical defects on the recording surface.
- Initializing each track to a specified sector size (128, 256, 512, or 1024 Kbytes) and a recording mode (single density or double density).

To initialize a diskette:

1. Load the diskette into the diskette unit.
2. Enter the Initialize Diskette (INZDKT) command and press F4 (Prompt).  
**Note:** If the diskette is already formatted but contains active files, you can clear the diskette to delete the active files (see page 4-26). Because clearing a diskette does not involve reading or formatting the entire diskette, clearing a diskette takes less time than formatting a diskette.
3. Specify the name of the diskette unit for the Diskette device (DEV) parameter, on the Initialize Diskette (INZDKT) display.
4. Specify the format to be used to initialize the diskette for the Diskette format (FMT) parameter. If the diskette is to be used for a save or restore operation, use \*SAVRST.
5. If you want the system to check for active files before formatting the diskette, leave \*YES for the Check for active files (CHECK) parameter. If you choose to check for active files, make sure you respond to the messages sent to the system operator message queue (QSYSOPR).

**Note:** To respond to system operator messages while you are initializing diskettes, press the System Request (SysReq) key and then the Enter key to display the System Request menu. From the System Request menu, select option 6 (Display system operator messages).

If there are some active files on the diskette, the diskette is not formatted and a message is displayed indicating that active files were found. You can respond to that message by indicating whether you want the formatting to continue (active files are deleted) or to end.

6. If you want the diskette formatted regardless of its current contents, specify \*NO for the Check for active files (CHECK) parameter. When the diskette is formatted, the contents of the diskette are deleted.
7. Change the default values for the other parameters if you want.
8. Press the Enter key. Diskette formatting begins.

### Clearing Diskettes

To clear a diskette:

1. Enter the Clear Diskette (CLRDKT) command and press F4 (Prompt).
2. Specify the name of your diskette unit for the Diskette device (DEV) field.
3. If you want the diskette cleared regardless of its current contents, specify \*NO for the Check for active files (CHECK) parameter. When the diskette is cleared, the contents of the diskette are deleted.
4. Press the Enter key. The diskette is cleared.

## Labeling Diskettes

A permanent label is attached to the permanent jacket of each diskette before it is shipped. This label indicates the type of diskette and has space for you to write information describing the diskette. This information may include the date the diskette was first used and if the diskette is single-sided or double-sided.

You can order temporary labels to record changing items, such as:

- The name or number of the diskette.
- The kind of data stored on the diskette.
- The date the data was stored on the diskette.
- Who stored the data on the diskette.

If you write information on a label after it is on the diskette, use a felt-tip pen and press lightly. You should write on the temporary label before you place it on the diskette jacket.

Attach the temporary label next to the permanent label on the diskette jacket. The labels also help position the diskette correctly when placing it in the diskette unit.

## Copying Diskettes

To copy a diskette:

1. Make sure the diskette unit is turned on.
2. Make sure both diskettes are of the same type (1, 2, or 2D) and of the same format.
3. Load the diskette to be copied in the diskette unit and close the latch.
4. If you have more than one diskette unit, place each diskette receiving the information in one of the other diskette units and close the latch.

**Note:** If the diskette that receives the information is new, you must initialize it before continuing. See “Initializing Diskettes” on page 4-26 for information on how to initialize a diskette.

5. Enter the Duplicate Diskette (DUPDKT) command and press F4 (Prompt).
6. On the Duplicate Diskette (DUPDKT) prompt display, type the name of the diskette unit from which the information is to be copied.
7. Type the name of the diskette unit to which the information is to be copied. If you have only one diskette unit, repeat the name of your one diskette unit here. A message is displayed when it is time to remove the original diskette and insert the new diskette.

8. Type the number of copies you want.

**Note:** If you specify more than one copy, you must specify more than one diskette unit.

9. For the Reorganize volume (RGZVOL) parameter, specify:
  - \*YES if you want the unused space between the files deleted.
  - \*NO if you do not want the unused space between the files deleted. The diskette copies will be exactly like the original diskette.
10. Press the Enter key. The information is copied.

---

## Storage Device Ready Conditions

Use Table 4-5 on page 4-29 if you are having trouble making a device ready. All the conditions listed for each device must be correct for the device to be ready.

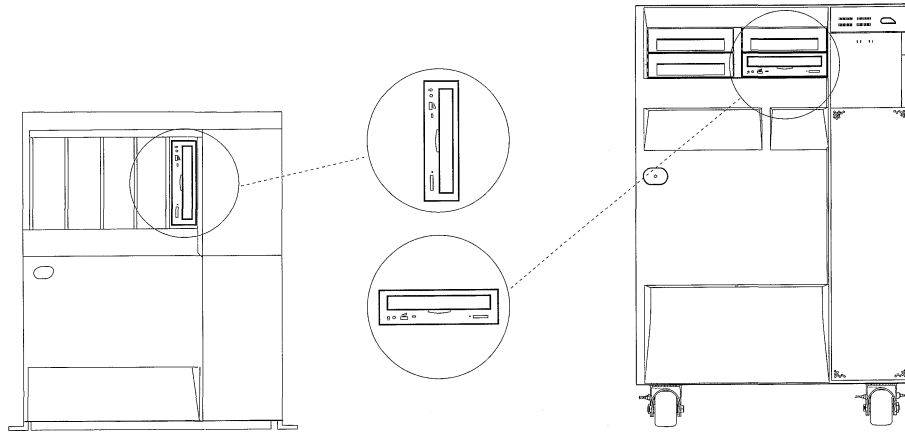
If you are not able to make a device ready, contact your service representative.

Table 4-5. Storage Device Ready Conditions

Storage Device	Ready Description	Reference Information
Tape Unit		
2440	<ul style="list-style-type: none"> <li>• Power light is on</li> <li>• Tape is loaded</li> <li>• Status display shows A 0</li> <li>• Online light is on</li> </ul>	<i>IBM 2440 Magnetic Tape Subsystem Operator's Manual, G571-0149.</i>
1/4-inch	<ul style="list-style-type: none"> <li>• Tape cartridge is inserted. <ul style="list-style-type: none"> <li>– The tape cartridge must be changed or, to reuse the same cartridge, the tape drive must be opened and closed again under the following conditions: <ul style="list-style-type: none"> <li>- The tape unit was made unavailable (varied off).</li> <li>- The tape application program ended with the *UNLOAD option.</li> </ul> </li> <li>– If the tape unit is inserted into the 5032 Removable Storage Unit, the 5032 power switch must also be on.</li> </ul> </li> </ul>	
7208/6390 8mm	<ul style="list-style-type: none"> <li>• Power light is on</li> <li>• Tape cartridge is inserted</li> <li>• Ready light is on</li> </ul> <p>The 7208 Model 002 and 012 are table top tape units. If a tape unit has been moved, ensure that the external signal cable is properly connected.</p>	<ul style="list-style-type: none"> <li>• <i>7208 2.3GB External 8mm Tape Drive Model 002 Operator's Guide, SA23-2675.</i></li> <li>• <i>7208 5.0GB External 8mm Tape Drive Model 012 Operator's Guide, SA26-7036.</i></li> </ul>
9347	<ul style="list-style-type: none"> <li>• Power light is on</li> <li>• Load/Rewind light is on</li> <li>• Online light is on</li> </ul>	
9348	<ul style="list-style-type: none"> <li>• Power light is on</li> <li>• Tape is loaded</li> <li>• Status display shows 00 A002</li> <li>• Online light is on</li> </ul>	<i>9348 Customer Information, SA21-9567.</i>
3422/3430	<ul style="list-style-type: none"> <li>• Power light is on</li> <li>• Enable/Disable switch is set to the Enable position</li> <li>• Tape is loaded</li> <li>• Ready light is on</li> </ul>	<i>IBM 3422 Magnetic Tape Subsystem Operator's Guide, GA32-0090.</i>
3480/3490/ 3490E	<ul style="list-style-type: none"> <li>• Power light is on</li> <li>• DC Power light is on</li> <li>• Control unit Online switch is set to the Online position</li> <li>• Control unit Normal/Test switch is set to the Normal position</li> <li>• Control unit channel Enable/Disable switch is set to the Enable position</li> <li>• Tape unit Online/Offline switch is set to the Online position</li> <li>• Tape is loaded</li> <li>• Tape unit displays Ready U or Ready F</li> </ul>	See the appropriate operator's guide for your specific model.
Diskette Unit		
9331	<ul style="list-style-type: none"> <li>• Power light is on</li> <li>• Unit Ready light is on</li> </ul>	

## Using CD-ROM

The CD-ROM drive is a read-only drive. The feature code for the AS/400 system CD-ROM disc is 6320. Figure 4-11 shows the CD-ROM drives on the 9402/9404 Models 4xx and 9404/9406 Models 5xx.



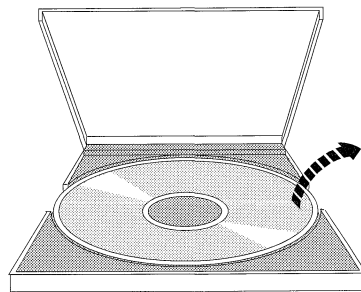
RV3P171-1

Figure 4-11. CD-ROM drives on the 9402/9404 Models 4xx (left) and 9404/9406 Models 5xx (right)

**Note:** The CD-ROM drive on the AS/400 system is not enabled for the digital audio disc.

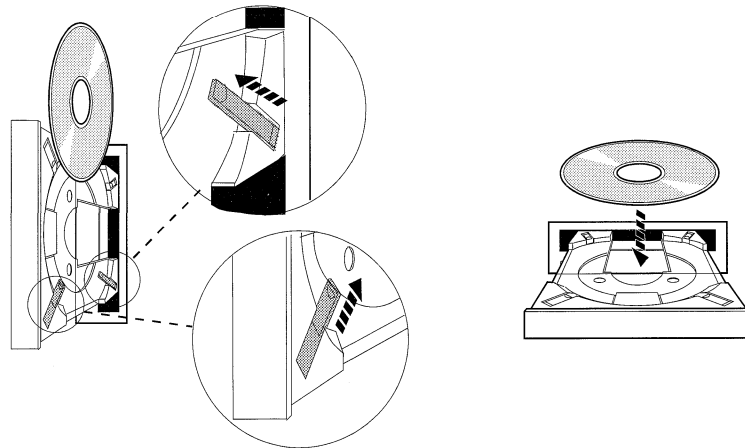
## Loading and unloading a CD

1. Remove the CD from the protective case.



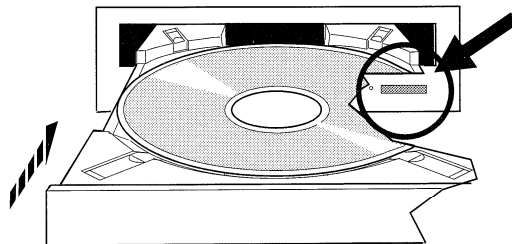
RV3P172-0

2. Slide the CD into the CD tray with the label side showing. If your CD-ROM is vertically positioned, make sure that the CD is secured by the two tabs at the bottom of the CD tray as shown on the left in the following illustration.



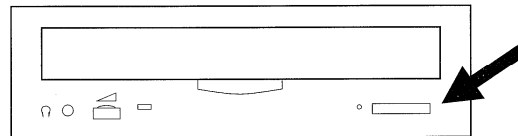
RV3P173-1

3. When you have properly positioned the CD in the CD tray, press the Eject button or push the tray into the CD-ROM drive.



RV3P174-0

4. To remove the CD from the CD-ROM drive, press the Eject button.



RV3P175-0

## Cleaning

No preventive maintenance is necessary for the CD-ROM drive. Always handle discs by the edges to avoid finger prints. 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.

## Verify Optical Device

The Verify Optical(VFYOPT) command can be used to detect hardware errors, or verify whether a problem has been resolved. This function can be used to verify a CD-ROM drive or a directly attached optical media library device.

To use this function, do the following:

1. On any command line, type

## Using Optical Media Libraries

VFYOPT DEV(xxxxxxxxxx)

where xxxxxxxxxxx is the device name.

A display is shown with instructions on how to perform verification test.

2. Follow the instructions, and press the Enter key. The verification test is run.

If the test completes successfully, you will receive a message about the successful completion. If hardware errors occur during the test, you will receive an error message.

---

## Using Optical Media Libraries

The IBM 3995 Optical Library Dataserver is a storage device for the AS/400 system that provides removable and permanent storage of information on optical media. The 3995 Optical Library lets you access data right at your work station. It is an alternative to retrieving data that is traditionally kept on paper, stored on diskette, stored on microfilm, or stored on magnetic tape.

If you are using the 3995 Optical Media Library and would like more information, see the following manuals:

- *IBM 3995 AS/400 Optical Library Dataserver: Operator's Guide Models 142 and 042*, GA32-0140
- *Optical Support*, SC41-4310



---

## Chapter 5. Working with Program Temporary Fixes (PTFs)

IBM periodically creates program temporary fixes (PTFs) to correct problems or potential problems found within a particular IBM licensed program. PTFs may fix problems that appear to be hardware failures, or they may provide new functions.

PTFs are designed to replace one or more objects in the licensed program. Generally, PTFs are incorporated in a future release of the system.

PTFs packaged using the SystemView\* System Manager/400 licensed program may also be available for non-IBM programs. See the *System Manager/400 Use*, SC41-4321 for information on this licensed program.

The program maintenance strategy discussed in this chapter applies specifically to IBM AS/400 system service and delivery.

---

### AS/400 Program Maintenance Strategy

The AS/400 program maintenance strategy consists of preventive service and corrective service.

#### Preventive Service (Cumulative PTF Packages)

**Preventive service** helps you avoid problems that have been resolved since the start of the current release.

**Cumulative PTF packages** contain PTFs which affect the general system population. If a PTF provides a change for a limited set of users or requires special handling, it may not be included in the package. Cumulative PTF package application is useful for ensuring you have key changes and improvements for your system. The entire cumulative PTF package should be installed after you first load or reload Version 3 Release 6 Modification 0 on your system. Cumulative PTF packages can be ordered electronically or by telephone and are always sent by mail on a CD-ROM or tape

Cumulative PTF packages should be installed every three to four months if there is no change to the equipment or programs on your system. Between releases of cumulative PTF packages, IBM service support provides PTFs that may be important to your system. For information about these PTFs, see "Ordering Preventive Service Planning (PSP) Information" on page 5-9. You should periodically order preventive service planning information and review the PTFs listed. If any of these PTFs are needed for your system, you should order and install them.

#### Corrective Service

**Corrective service** corrects problems reported to IBM service support. If you have a problem with an IBM licensed program, you can describe the problem using the Analyze Problem (ANZPRB) command or the Work with Problem (WRKPRB) command. You can report the problem electronically or by calling your service support representative. You can also have the system analyze or report any problems automatically. For more information on reporting problems, see Chapter 6, "Handling and Reporting System Problems."

---

### Ordering PTFs and PTF Information

Table 5-1 shows how to use the Send PTF Order (SNDPTFORD) command to order PTFs and PTF information. Details on how to order a PTF follow this table.

To process your PTF order in batch, use the Submit Job (SBMJOB) command.

---

*Table 5-1. Getting PTFs and PTF Information*

<b>PTF Information</b>	<b>Command</b>
Specific PTFs and cover letters	SNDPTFORD <i>nnnnnnn</i> <sup>1</sup>
PTF cover letter only	SNDPTFORD <i>nnnnnnn</i> <sup>1</sup> PTFPART(*CVRLTR)
PTF cross-reference summary list	
V2R3M0 to V3R6M0	SNDPTFORD SF97072
V3R0M5 to V3R6M0	SNDPTFORD SF97081
V3R1M0 to V3R6M0	SNDPTFORD SF97010
Cumulative PTF packages	SNDPTFORD SF99 <i>vrm</i> <sup>2</sup>
PSP information for licensed programs	SF98 <i>vrm</i> <sup>2</sup>
PSP information for Licensed Internal Code	MF98 <i>vrm</i> <sup>2</sup>
PTF summary list	SF97 <i>vrm</i> <sup>2</sup>

**Notes:**

<sup>1</sup> *nnnnnnn* is the PTF identifier. You can order up to 20 PTFs at a time.

<sup>2</sup> *v* is the version, *r* is the release, and *m* is the modification level of the system. For Version 3 Release 6, type 360.

---

## Ordering Individual PTFs and Cover Letters

To order individual PTFs and cover letters electronically, type the following command on any command line and press the Enter key:

```
SNDPTFORD nnnnnnn
```

where nnnnnnn is the number of the individual PTF you want to order. You can order up to 20 PTFs at a time.

When you receive PTFs electronically on your service support communications line, they are placed in a save file in library QGPL. In most cases, the save file name is the PTF identifier prefixed with a **Q**. For example, the save file for PTF identifier SFnnnnn is QSFnnnnn.

### Notes:

1. If the PTF files are too large to be delivered electronically, they are delivered on CD-ROM or tape.
2. For non-IBM PTFs, there is a chance that duplicate PTF identifiers could be created. In this case, the first one will be **Q** plus the PTF identifier and the second one will be **Q** plus the timestamp. This may also happen to IBM PTFs if the user has put a PTF save file in library QGPL, but has not logged the PTF into \*SERVICE.
3. When you order a PTF that has been replaced (superseded) with another PTF, you receive the ordered PTF, not the replacement PTF. To identify PTFs that have been replaced (superseded), consult the PTF summary list.

### Ordering a PTF Cover Letter Only

To order a PTF cover letter without ordering the PTF, type the following command on any command line and press the Enter key:

```
SNDPTFORD nnnnnnn PTFPART(*CVRLTR)
```

### Specifying media for shipping PTF

You can specify the media for shipping PTFs by doing the following:

1. Type the Work with Contact Information (WRKCNTINF) command on any command line. The Work with Support Contact Information display appears.
2. Select Option 2 (Work with local service information). The Work with Local Service Information display appears.
3. Select Option 2 (Change service contact information). Page down to the next display.
4. Specify the PTF medium type by entering the corresponding number.

## Copying PTF Cover Letters from CD-ROM or Tape

PTFs on CD-ROM or tape are sent by mail. A shipping information letter is included with the CD-ROM or tape. Each PTF on the CD-ROM or tape may also have a cover letter

Copy the cover letter into file QAPZCOVER in library QGPL. Make sure the product that you are copying cover letter for is installed.

### Copying Cover Letters from Tape

- If the tape contains multiple PTFs:
  1. Type the following on any command line:

```
LODPTF LICPGM(XXXXXXX) DEV(TAPYY) COVER(*ONLY) ENDOPT(*LEAVE)
```

where XXXXXX is the licensed program number found in the shipping information letter and YY is the tape unit ID.
  2. Repeat step 1 for each licensed program PTF cover letter on the tape except the last licensed program PTF cover letter.
  3. For the last PTF cover letter on the tape, change ENDOPT(\*LEAVE) to ENDOPT(\*REWIND).

**Note:** If you are using this function to simultaneously load PTFs and copy PTF cover letters, change COVER(\*ONLY) to COVER(\*YES). This loads the PTF and copies the cover letter into a physical file. If there are multiple PTF files on the tape and the \*LEAVE option is not specified, you must then specify the PTF sequence number for the Sequence number (SEQNBR) parameter. Your PTF sequence number is in the cover letter that comes with your tape. For each PTF package, you need to specify the correct sequence number.

- If the tape contains only one PTF, type the following on any command line:

```
LODPTF LICPGM(XXXXXXX) DEV(TAPYY) COVER(*ONLY)
```

where XXXXXX is the licensed program number, and YY is the tape device ID.

### Copying cover letters from CD-ROM

To copy cover letter from CD-ROM, do the following:

1. Type the following on any command line:

```
LODPTF LICPGM(XXXXXXX) SELECT(zzzzzzz)  
DEV(OPTY) COVER(*ONLY) PATHID(*FIRST)
```

where XXXXXX is the licensed program number found in the shipping information letter, YY is the CD-ROM unit ID, and zzzzzzz is the PTF ID for the cover letter you want.
2. Repeat step 1 for each licensed program PTF cover letter on the CD-ROM.

## Displaying and Printing PTF Cover Letters

There are two ways to display or print PTF cover letters. You should use the first method in most cases. If you are unable to display or print a cover letter using the first method, use the second method. This may be necessary, for example, when you want to print or display a cover letter for a product that has not been installed or supported on your system.

### Method 1

1. Enter the Display Program Temporary Fix (DSPPTF) command and press F4 (Prompt).

**Note:** The DSPPTF command only works for products that are installed and supported.

2. Specify the product, PTF identifier, and release for the appropriate parameters on the Display Program Temporary Fix (DSPPTF) display.

3. Specify \*YES for the Cover letter only (COVERONLY) parameter and press the Enter key to display the cover letter.

You can also print a PTF cover letter using the following command:

```
DSPPTF LICPGM(xxxxxxx) SELECT(yyyyyy) COVERONLY(*YES) OUTPUT(*PRINT)
```

where xxxxxx is the licensed program number, and yyyyyy is the PTF identification number.

For example, if you wanted to print the PTF Summary List, type the following command on any command line:

```
DSPPTF LICPGM(5716SS1) SELECT(SF97305) COVERONLY(*YES) OUTPUT(*PRINT)
```

**Note:** Your output will be placed in the output queue that is associated with your job. The output is stored under the file name QSYSPRT. For more information on how to print your output, see chapter 3 of the *System Operation* book.

### Method 2

#### *Printing the Cover Letter*

1. Type the following on any command line:

```
copyf fromfile(QGPL/QAPZCOVER) tofile(QGPL/QPRINT) frommbr(nnnnnnn)
```

where nnnnnnn is the name of the file member in which the PTF cover letter is stored.

**Note:** The member containing the cover letter is usually named Qnnnnnnnxx, where nnnnnnn is either the associated PTF number or a time stamp, and xx is the last two digits of the language code for the cover letter. For cover letters in English, the last two digits of the language code do not appear and the member name is the same as the corresponding PTF number. This is also the case when you are displaying a cover letter.

2. Press the Enter key. The file member is copied to the QPRINT print file.
3. On the Operational Assistant menu, select option 1 (Work with printer output). The Work with Printer Output display is shown.
4. Look in the *Printer/Output* column for the file name QPRINT. This is the file that contains the cover letter.
5. If the file is held, you can print the cover letter by selecting option 6 (Release).

***Displaying the Cover Letter:*** To read the PTF cover letters:

1. Type dsppfm (the Display Physical File Member command) on any command line.
2. Press F4 (Prompt). The Display Physical File Member display is shown.
3. Specify the member name in file QAPZCOVER in library QGPL.
4. Press the Enter key. The cover letter is shown.

Figure 5-1 on page 5-6 shows the contents of a typical PTF cover letter from IBM. PTF cover letters from systems using the SystemView System Manager/400\* licensed program appear different.

# Ordering PTFs and PTF Information

```

5716SS1 5050 0000 SF04400 2924 R06M00
XPF-DSP0BJD-CPF9999-DSP0BJD FUNCTION CHECKS WITH LIN(*) PARM

PTF/FIX # SF04400 - OS/400 - BASE SYSTEM
LICENSED PROGRAM: 5716SS1

-----
| SYSTEM | MODELS | RELEASE | RECOMPILE | LIBRARY | MRI | APAR |
|        |        |         |            |         | FEATURE | FIXED |
| AS/400 | *ALL  | V3R6M0 | N         | QSYS   | 2937 | SA45678 |
|-----|
PRE/CO-REQUISITE PTF/FIX LIST
-----
REQ  LICENSED  PTF/FIX
TYPE PROGRAM  NUMBER  LICENSED PROGRAM DESCRIPTION
-----
PRE  5716SS1  SF00000  OS/400 - BASE SYSTEM
PRE  5716999  MF11111  AS/400 - LICENSED INTERNAL CODE
CO   5716SS1  SF11111  OS/400 - EXTENDED BASE SUPPORT
CO   5716CM1  SF22222  COMMUNICATIONS UTILITIES/400

DESCRIPTION OF PROBLEM FIXED FOR APAR SA45678:
-----
USERS CANNOT RECEIVE PTFS FOR PRODUCTS NOT INSTALLED
ON THEIR SYSTEMS.

CORRECTION FOR APAR SA45678:
-----
ELECTRONIC CUSTOMER SUPPORT PROGRAM CODE WILL BE CHANGED SO THAT
PTFS WILL BE REQUESTED EVEN IF THE CORRESPONDING PRODUCTS ARE NOT
INSTALLED ON THE REQUESTING SYSTEM.

CIRCUMVENTION FOR APAR SA45678:
-----
NONE.

ACTIVATION INSTRUCTIONS:
-----
NONE.

SPECIAL INSTRUCTIONS:
-----
NONE.

DEFAULT INSTRUCTIONS :
-----
THIS PTF MUST BE APPLIED AT IPL TIME.

SUPERSEDES
PTF/FIX NO(S).  APAR TITLE LINE
-----
SF04322        OSP-RSTS36F-MSGCPA2C6C RESTORING ALL FILES FROM SYSTEM/34

```

Figure 5-1. Sample PTF Cover Letter

### Description

The following is a description of the information contained in a PTF cover letter:

<b>PTF/Fix #</b>	The alphanumeric identifier for the program temporary fix (PTF) or Licensed Internal Code fix.
<b>Licensed Program</b>	The alphanumeric identifier for the licensed program.
<b>System</b>	The IBM system for which this PTF is valid.
<b>Models</b>	The particular system model identifiers for which this PTF is valid.
<b>Release</b>	The version, release, and modification number of the system for which this PTF is valid. For example, with V3R6M0, the following is true: <ul style="list-style-type: none"> <li>V3 is Version 3</li> <li>R6 is Release 6</li> <li>M0 is Modification 0</li> </ul>
<b>Recompile</b>	<p>Y (Yes) means a recompile of affected objects is necessary after this PTF is applied.</p> <p>N (No) means a recompile is <u>not</u> necessary after this PTF is applied.</p>
<b>Library</b>	The library the PTF is intended for.
<b>MRI Feature</b>	The numeric identifier for the language feature of the language sensitive object affected by the PTF. <i>None</i> means language sensitive object is not affected.
<b>APAR Fixed</b>	The number of the authorized program analysis report (APAR) for which this PTF was created.
<b>Prerequisite PTF/Fix List</b>	The information about the PTFs that must be applied on the system <i>before</i> this PTF can be applied.
<b>Co-requisite PTF/Fix List</b>	The information about other PTFs that must be installed <u>at the same time</u> as this PTF. <p><b>Note:</b> The AS/400 allows you to install this PTF without the co-requisite PTFs installed. Therefore, you should check to ensure that the co-requisite PTFs are installed at the same time.</p>
<b>Description of Problem Fixed</b>	A brief description of the problem this PTF fixes.
<b>Correction</b>	A brief description of what has been done to correct the problem.
<b>Circumvention</b>	A description, if applicable, of how to work around the problem and continue your operation without applying the PTF.
<b>Activation Instructions</b>	Actions you must perform in order to activate PTFs without an IPL of the system. Activation instructions are limited to actions that would normally be accomplished by an IPL of

## Ordering PTFs and PTF Information

	the system, such as stopping and restarting a subsystem, varying devices offline and back online, etc.
<b>Special Instructions</b>	Any special information pertaining to this PTF.
<b>Default Instructions</b>	Tells when the PTF can be applied; either at the next IPL (delayed) or immediately.
<b>Supersedes PTF/Fix No(s)</b>	The numbers of the PTFs that this PTF replaces or supersedes.
<b>APAR Title Line</b>	The title of the authorized program analysis report (APAR) for the superseded PTF.

## Printing Information APARs

Information APARs are created when there is a need to provide worldwide access to information. Typically, information APARs are created to describe pervasive user errors, provide recovery actions for non-defect situations, or explain system operation.

To print an Information APAR, do the following:

**Note:** Make sure the INFOAS4 program is supported in the current release.

1. Type the following on any command line:

```
DSPPTF LICPGM(INFOAS4) SELECT(xxxxxxx) OUTPUT(*PRINT)
```

where xxxxxx is the name of the information APAR you are printing.

2. Press the Enter key. Your printer output will be placed in the output queue that is associated with your job.
3. On the Operational Assistant menu, select option 1 (Work with Printer Output). The Work with Printer Output display is shown.
4. Look in the Printer/Output column for the name of your spooled file or printer output. This file contains the information APAR.
5. If the file is held, you can print the information APAR by selecting option 6 (Release).

## Ordering a Cumulative PTF Package

To order a cumulative PTF package electronically:

1. Identify your licensed program release level:
  - a. Type G0 LICPGM on any command line and press the Enter key.
  - b. Select option 10 (Display installed licensed programs) on the Work with Licensed Programs display.
  - c. The current version, release, and modification level is shown in the *Installed Release* column where **V** is the version, **R** is the release, and **M** is the modification level.

**Note:** If a version number is not displayed, you are using version 1.

2. Type SNDPTFORD SF99VRM, where VRM is the version, release, and modification level you found in step 1.

For example, for Version 3 Release 6 Modification 0, type SNDPTFORD SF99360.



3. Verify the shipping information on the Verify Contact Information display. If any of the information is incorrect, change it and press the Enter key.
4. Select option 1 (Send service request now) on the Select Reporting Option display. This places the PTF order.

## Ordering the PTF Cross-Reference Summary List

The **PTF cross-reference summary list** itemizes PTFs from an earlier release that are included in the current release. Use this list to make sure you order any PTFs for the new release that you had at the previous release, but are not included in the list. These PTFs will not have the same number, but they correct the same problem.

To order this list electronically, select the version and release you are moving from and use the corresponding command.

	<b>Moving From</b>	<b>Command</b>
	Version 2 Release 3	SNDPTFORD SF97072
	Version 3 Release 0.5	SNDPTFORD SF97081
	Version 3 Release 1	SNDPTFORD SF97010

## Ordering Preventive Service Planning (PSP) Information

Preventive service planning (PSP) information is a collection of information that is used when installing a licensed program, cumulative PTF package, or hardware. PSP information should be reviewed before installing a licensed program, a cumulative PTF package, or hardware. You should periodically order preventive service planning information and review the PTFs listed. If any of the PTFs are needed for your system, you should order and install them.

To order PSP information, use the following commands:

Licensed programs	SNDPTFORD SF98 <i>vrm</i>
Licensed Internal Code	SNDPTFORD MF98 <i>vrm</i>

where *vrm* is version, release, and modification level. For Version 3 Release 6 Modification 0, use 360.

To print preventive service planning (PSP) information, use the instructions for printing and displaying PTF cover letters found in “Displaying and Printing PTF Cover Letters” on page 5-4. The PSP information is placed in QAPZCOVER when it is sent to you.

Preventive service planning information is available for:

- Licensed programs installation
- Licensed Internal Code
- System equipment
- Cumulative PTF packages
- PTFs in error (PE)
- High impact or pervasive (HIPER) problems

These PSPs can be ordered through your software service provider or by using the electronic customer support function.

Preventive service planning information includes the following:

## Ordering PTFs and PTF Information

Installation Information	Information concerning upgrade and new installation, including information about cumulative PTF package installation.
General Information	Hints or tips for working with PTF packages or products.
PTFs in error	Information about all PTFs found to have a problem, the users that will be affected by the problem, and recommendations on how to avoid the problem.
Service recommendations	Detailed information about critical PTFs you need to install.

You should get this information before you install or upgrade system equipment and licensed programs. This ensures that you have all the latest information that is applicable for the new program or cumulative package.

Carefully review the following sections of the PSP before installing the cumulative package:

**Service Recommendations:** This section lists those High Impact PERvasive (HIPER) problems that have been discovered in the base code since shipment and not included in this cumulative package. As before, these recommendations should be reviewed based on your system's setup and configuration.

**PTFs in Error (PE):** This section contains a list of PTFs that are included on this cumulative package that, since shipment, have been found to be defective. You have two options: install the cumulative package without applying the PTFs in error, or you can install the corrective PTFs for the PTFs in error, if available. This section lists the defective PTF, the users affected, the reason the PTF is defective, and the recommended action to take.

The PSP information also contains a list of PTF identifiers to order PSP information for Licensed Internal Code and system equipment, licensed programs installation, and PSPs for older cumulative packages.

## Ordering the PTF Summary List

A **PTF summary list** is a cover letter that contains a list of PTFs that affect most system users. Use the PTF summary list to identify PTFs you may want to order. The PTF summary list also identifies the current PTF package and what package each PTF was included in.

To order the PTF summary list, use the following command:

```
SNDPTFORD SF97vrm
```

where vrm is version, release, and modification level. For Version 3 Release 6 Modification 0, use 360.

## Finding the Status of PTF Orders

To find the status of PTF orders:

1. Use the Work with Problem (WRKPRB) command.

2. All PTFs that you requested and have been sent (either electronically or through the mail) are identified in the *Problem Description* column as *Fix Request* on the *Work with Problems* display.
3. Use option 5 (Display details) for the problem with the problem description *Fix Request*.
4. Press F9 (Display PTFs) on the *Display Problem Details* display.

All PTFs related to the problem you selected are shown on the *Display PTF information* display. This includes the PTFs you ordered, in addition to any others requested that are not already on your system.

---

## Installing PTFs

PTF installation includes two steps: load and apply. With the following instructions, PTFs are loaded and applied for you automatically.

### Before You Start

- Have a current backup of your operating system and licensed programs. If you have backed up the operating system and licensed programs since the last time you applied PTFs, that backup is acceptable.
- Have all users sign off the system. If you fail to have all users sign off the system and someone else is doing a PTF operation, the cumulative PTF package will not load.
- Be sure you have security officer (\*SECOFR) user class. You need it to do the following steps.

## Installing Licensed Internal Code Fixes

The system maintains two copies of all Licensed Internal Code on the system. One copy is considered the permanent copy and is stored on system **storage area A**. The other copy is considered the temporary copy and is stored on system **storage area B**. When the system is running, it uses the copy that was selected before the last IPL.

A **B** in the *Data* display on the front panel of the system unit indicates that the next system IPL will be made from the **B** or temporary storage area. The **B** storage area contains any Licensed Internal Code fixes that have been temporarily or permanently applied. Temporarily applied Licensed Internal Code fixes can be applied permanently (copied to the **A** storage area) or be permanently removed.

For the system to use the latest Licensed Internal Code fixes that are temporarily applied, you must be running on the **B** storage area. If you are already running on the **B** storage area, you do not need to perform an IPL to the **A** storage area to temporarily apply Licensed Internal Code fixes. Immediate Licensed Internal Code fixes can be applied immediately on either the **A** or the **B** side. For delayed Licensed Internal Code fixes, the system does an IPL to the **A** storage area and then to the **B** storage area automatically. This is done when delayed Licensed Internal Code fixes are set to be temporarily applied and a normal IPL to the **B** storage area has been started. In this case, an IPL to the **B** storage area takes longer. If you are not running on the **B** storage area, type the following command on any command line and press the Enter key:

## Installing PTFs

```
PWRDWSYS *IMMED RESTART(*YES) IPLSRC(B)
```

To install Licensed Internal Code fixes received on CD-ROM, tape, electronically, or previously loaded, follow the instructions below:

1. Print and read each cover letter. For information on how to do this, see “Displaying and Printing PTF Cover Letters” on page 5-4.
2. If there are any pre-installation special instructions in any of the cover letters, follow those instructions first.

**Note:** Do not cancel any of the following steps once they are started. Allow each step to complete normally.

If shipping information letters are included with the PTF tape or CD-ROM you received, follow the instructions in the letters to install the PTFs. If the shipping information letters are not included with the CD-ROM or tape, continue with the following instructions.

3. Determine the storage area you are currently using:

- a. Type `dsptf 5716999` on any command line and press the Enter key.
- b. On the Display PTF Status display, the storage area is identified in the *IPL source* field. `##MACH#A` is the **A** storage area and `##MACH#B` is the **B** storage area.
- c. If you are not running on the **B** storage area, type the following command on any command line and press the Enter key:

```
PWRDWSYS *IMMED RESTART(*YES) IPLSRC(B)
```

4. Type `go ptf` on any command line and press the Enter key.
5. Select option 8 (Install program temporary fix package) on the Program Temporary Fix (PTF) display. The Install Options for Program Temporary Fixes display is shown.
6. If the PTF was delivered electronically, type `*service` in the *Device* field. If the PTF was delivered on a tape, type `tapyy`, where *yy* is the name of the tape unit (for example, `tap01`) where you loaded the PTF tape. If the PTF was delivered on CD-ROM, type `optyy`, where *yy* is the name of the CD-ROM drive unit (for example, `opt01`) where you loaded the PTF CD-ROM.
  - If you do not want to install certain PTFs, you can omit those PTFs by using the procedure in topic “Omitting Individual PTFs from a Cumulative Package” on page 5-13.
  - If you have additional PTFs to install at this time, type an **N** (No) in the *Automatic IPL* field and install the additional PTFs. If you do not have additional PTFs to install at this time, type a **Y** (Yes) in the *Automatic IPL* field.
7. Press the Enter key.

After the IPL has finished, see “Verifying PTF Installation” on page 5-14 to verify that the PTFs are installed. If there are any post-installation special instructions in the cover letter, follow those instructions at this time.

### Omitting Individual PTFs from a Cumulative Package

The omit function allows you to specify individual PTFs that you do not want to install from the cumulative package. To use the omit function, do the following:

1. On the Install Options for Program Temporary Fixes display, specify Y for the Other options field, and press the Enter key. The Other Install Options display is shown.
2. Specify Y for the Omit PTFs field, and a value for the Apply Type field, and then press the Enter key. The Omit Program Temporary Fixes display is shown.
3. In the Opt Column, type a 1 next to each product and release for which you want to omit specific PTFs from being installed, and press the Enter key. The PTFs to Omit display is shown for each product that was selected on the previous display. This display shows the list of PTFs that are to be omitted from being loaded for the specified product and release.
4. To add PTFs to the list on the PTFs to Omit display, type a 1 on the first line of the Opt column and specify the PTF ID in the PTF ID column. Press the Enter key.
5. Repeat step 4 until you have specified all the PTFs you want to omit from being installed for the product and release. Press the Enter key again and repeat the procedure for the next product and release you selected on the Omit Program Temporary Fixes display. When you are done with the last product and release you have selected, the Omit Program Temporary Fixes display is shown again. The > symbol next to the product and release indicates that you have specified PTFs to be omitted. Press the Enter key. The Confirm to Omit PTFs panel is shown.
6. It lists each of the PTFs that have been specified to be omitted from being installed. If the list is correct, press the Enter key. Normal PTF installation process continues from this point.

### Installing Licensed Program PTFs

To install licensed program PTFs received on CD-ROM, tape, electronically, or previously loaded, follow the instructions below:

1. Print and read each cover letter. For information on how to do this, see "Displaying and Printing PTF Cover Letters" on page 5-4.
2. If there are any pre-installation special instructions in any of the cover letters, follow those instructions first.
 

**Note:** Do not cancel any of the following steps once they are started. Allow each step to complete normally.
3. Type `go ptf` on any command line and press the Enter key.
4. Select option 8 (Install program temporary fix package) on the Program Temporary Fix (PTF) display.
5. If the PTF was delivered electronically, type `*service` in the *Device* field. If the PTF was delivered on a tape, type `tapyy`, where *yy* is the name of the tape unit (for example, `tap01`) where you loaded the PTF tape. If the PTF was delivered on CD-ROM, type `optyy`, where *yy* is the name of the CD-ROM drive unit (for example, `opt01`) where you loaded the PTF CD-ROM.

## Installing PTFs

- If you do not want to install certain PTFs, you can omit those PTFs by using the procedure in topic “Omitting Individual PTFs from a Cumulative Package” on page 5-13.
- If you have additional PTFs to install at this time, type an N (No) in the *Automatic IPL* field and install the additional PTFs. If you do not have additional PTFs to install at this time, type a Y (Yes) in the *Automatic IPL* field.

6. Press the Enter key.

After the IPL has finished, see “Verifying PTF Installation” to verify that the PTFs are installed. If there are any post-installation special instructions in the cover letter, follow those instructions at this time.

## Verifying PTF Installation

To verify that your Licensed Internal Code and licensed program PTFs have been installed correctly, do the following:

1. Type `G0 LICPGM` command on any command line and press the Enter key. The Work with Licensed Programs display appears.
2. Select Option 50 (Display log for messages). The Display Install History display appears.
3. Fill in the start date and start time on the Display Install History display and press the Enter key. The messages about PTF installation are shown.

## Installing a Cumulative PTF Package

If your system changes, order and install the current cumulative PTF package to keep your system at the most current PTF level.

To install cumulative PTF packages:

- Read the PTF shipping information letter thoroughly and follow the instructions contained in it.

### Displaying or Printing the Cumulative PTF Package Summary

To print or display the summary of PTFs contained in a cumulative PTF package on tape:

1. Load the cumulative PTF package tape in the tape unit, and on any command line type:  

```
CPYFRMTAP FROMFILE(QTAPE) TOFILE(QPRINT) FROMSEQNBR(3) FROMDEV(TAPYY)  
FROMREELS(*SL)
```

where YY is the tape unit ID (for example, TAP01) in which you loaded the PTF tape.
2. A copy of the PTF summary is put into a system output queue from which you can print or display the PTF summary information.

To print or display the summary of PTFs contained in a cumulative PTF package on CD-ROM

1. Load the cumulative PTF package CD-ROM in the CD-ROM drive, and on any command line type:

```

LODPTF LICPGM(5716999) DEV(OPTYY) SELECT(*ALL) PATHID(*FIRST)
COVER(*ONLY)
where YY is the unit ID for the CD-ROM drive
in which you loaded the PTF CD-ROM.

```

For information about printing the cumulative PTF package summary, see “Displaying and Printing PTF Cover Letters” on page 5-4.

2. A copy of the PTF summary is put into file QAPZCOVER in Library QGPL.

### Installing High-Impact Pervasive (HIPER) PTFs from a Cumulative PTF Package

To install both high-impact pervasive (HIPER) PTFs and HIPER Licensed Internal Code fixes, follow the PTF installation instructions in the shipping information letter. When you are on the Install Options for Program Temporary Fix display, specify 2 for the *PTF type* field. To install only HIPER Licensed Internal Code fixes, specify 3 for the *PTF type* field.

### Verifying Installation of the Cumulative PTF Package

After completing the last IPL in the installation instructions, to verify that the PTF package was properly installed:

1. Type `go licpgm` on any command line and press the Enter key.
2. Select option 50 (Display log for messages) on the Work with Licensed Programs display.
3. Fill in the start date and start time on the Display Install History display and press the Enter key.
4. On the Display History Log Contents display, if the cumulative PTF package was installed successfully, you see messages like the following:

```

Licensed program or PTF installation process started.
Loading of PTFs completed successfully.
Marking of PTFs for delayed application started.
Marking of PTFs for delayed application completed successfully.
Apply PTF started.
Applying of PTFs for product 5716xxx completed successfully.
Applying of PTFs for product 5716xxx completed successfully.
Applying of PTFs for product 5716xxx completed successfully.
:
Applying of PTFs completed.

```

If the cumulative PTF package was not installed successfully, you see error messages like the following.

```

Licensed program or PTF installation process started.
Loading of PTFs failed.
Marking of PTFs for delayed application started.
Marking of PTFs for delayed application failed.
Apply PTF started.
:
Applying of PTFs failed for product 5716xxx.
:
Applying PTFs failed.

```

### When Your PTFs Do Not Install

To determine the cause of the failure, place the cursor on the previous message and press F10 (Display all).

**Note:** If F10 (Display all) is not available, switch to intermediate assistance level using F21 (Select assistance level) and try again.

A new message is shown that helps you find out what errors occurred. Use the Help key to display additional message information.

PTF activity does not occur during an unattended IPL that immediately follows an abnormal system end. For information on what causes an abnormal IPL, see “What Causes an Abnormal IPL?” on page 2-20. If an abnormal IPL occurs, and Licensed Internal Code fixes were ready to be applied, the Licensed Internal Code fixes will not be applied. Do one of the following:

- To apply the Licensed Internal Code fixes after an abnormal IPL to storage area **A**:

1. Enter the following command:

```
APYPTF LICPGM(5716999)
```

2. Enter the following command to do an IPL to the **B** storage area:

```
PWRDWSYS *IMMED RESTART(*YES) IPLSRC(B)
```

This applies to all of the remaining Licensed Internal Code fixes.

- To apply the Licensed Internal Code fixes after an abnormal IPL to storage area **B**:

1. Enter the following command:

```
PWRDWSYS *IMMED RESTART(*YES) IPLSRC(B)
```

If the Licensed Internal Code (LIC) PTFs are not immediate, the system does an IPL to the **A** storage area to temporarily apply the Licensed Internal Code PTFs. (The system will not do an IPL to the **A** storage area if the LIC PTFs are immediate.) The system then automatically does an IPL back to the **B** storage area.

#### **Remember:**

- Licensed Internal Code fixes are not applied if PWRDWSYS RESTART(\*NO) is specified.
- Use of the Power On and Off Tasks (POWER) menu to apply a PTF will not run the appropriate PWRDWSYS command. You must specify PWRDWSYS RESTART(\*YES) IPLSRC(B) to perform an IPL to the system.
- Print the SCPF job log and keep it for reference if your PTFs do not install. For information on how to print a job log, see chapter 2 of the *System Operation* book. Any error messages sent during the IPL are recorded in this job log.



## Displaying PTF Status

To determine the status of the PTFs for products that are installed and supported on your system:

1. Enter the Display PTF (DSPPTF) command and press F4 (Prompt).
2. Specify the licensed program number and PTF identifier for the product (LICPGM) parameter and for the PTF numbers to select (SELECT) parameter. If you want to see the status for all the products on the system, specify \*ALL for both parameters and press the Enter key until all the licensed programs are displayed.
3. The Display Program Temporary Fix display shows the action that will be taken for a PTF at the next unattended IPL.

The status of a PTF can be:

On order	Ordered but not received by the system. They may reside on a tape, CD-ROM, be sent electronically, or copied from a tape.
Cover letter only	A cover letter exists for the PTF.
Save file only	PTF exists in a save file in library QGPL.
Not applied	Loaded but not applied.
Temporarily applied	Applied temporarily
Temporarily applied - PND	Applied temporarily - Pending
Temporarily applied - ACN	Applied temporarily - Action
Permanently applied	Applied permanently
Permanently applied - PND	Applied permanently - Pending
Permanently applied - ACN	Applied permanently - Action
Temporarily removed	Removed temporarily
Temporarily removed - PND	Removed temporarily - Pending
Temporarily removed - ACN	Removed temporarily - Action
Superseded	PTF is replaced by another.
Damaged	A PTF object cannot be found (perhaps accidentally removed). The PTF must be loaded again before you can apply it or remove it.

The pending and action status indicate that additional actions need to be taken to make the PTF active or inactive. PND means the PTF status will be updated after the actions are taken. ACN means the PTF status will not be updated until the next IPL as no exit program was provided to verify that the actions were actually performed.

### Displaying the Cumulative PTF Package Level of Your System

The cumulative PTF package level of your system refers to the latest cumulative PTF package installed on your system. To determine the cumulative PTF package level of your system:

1. Enter the following command:

```
DSPPTF LICPGM(5716SS1)
```

2. The *PTF ID* column on the Display PTF Status display lists the identifiers for all of the cumulative PTF packages installed on your system. Cumulative PTF package identifiers start with the letter T.

If you are using Version 3 Release 6 Modification 0, and you have PTF TC94178 installed on your system, your cumulative PTF package level is C4178360 (360 is added to the end of the package ID to indicate Version 3 Release 6 Modification Level 0). The last four digits of the cumulative package ID indicate the release date of the package, using the Julian calendar. The latest cumulative PTF package is the one where the last four digits are the highest.

**Note:** PTF IDs that start with the letters TC indicate that the entire CD-ROM or tape has been applied. PTF IDs that start with the letters TA indicate that the HIPER PTFs and HIPER Licensed Internal Code fixes have been applied. PTF IDs that start with the letters TL indicate that the HIPER Licensed Internal Code fixes have been applied. To find the level of Licensed Internal Code fixes on your system, enter DSPPTF 5716999.

---

### System Storage Areas A and B

For the system to use the latest Licensed Internal Code fixes that are temporarily applied, you must be using the **B** storage area. The **B** storage area is what you normally will be using. Select the **A** storage area if the IPL to the **B** storage area fails because of a temporarily applied Licensed Internal Code fix.

### Selecting the A or B Storage Area

The PTF process described in “Installing PTFs” on page 5-11 controls the storage areas for you. However, you can change the storage area on the command line or the control panel:

- Command line:

```
PWRDWN SYS *IMMED RESTART(*YES) IPLSRC(X)
```

Where X is the storage area you want to select.

**Note:** A PTF can only be applied during an IPL using the previous command. A PTF does not apply during an IPL you perform using the power on and off schedule on the Power On and Off Tasks (POWER) menu.

- Control panel:

1. For the 9404/9406 Models 5xx, use mode pushbutton to set the system to the Manual mode. For the 9402/9404 Models 4xx, start at step 2.
2. Press the Select pushbutton (increment or decrement) until 02 is displayed in the Function/Data display on the control panel.
3. Press the Enter pushbutton on the control panel.

4. For 9404/9406 Models 5xx, press the Select pushbutton (increment or decrement) until the character that represents the storage area you want to use for your IPL source (A or B) appears in the Function/Data display. For the 9402/9404 Models 4xx, press the Select pushbutton (increment or decrement) until you see Normal and the character for the IPL storage area you want appear in the Function/Data display.
5. Press the Enter pushbutton on the control panel. The character disappears from the Function/Data display.
6. For the 9404/9406 Models 5xx, set the mode to Normal.
7. Power off the system using option 4 (Power off the system and immediately power on) on the Power On and Off Tasks (POWER) menu.

Wait for the system to power down and automatically start an IPL. You see the Sign On display when the IPL is complete. The storage area is now changed.

---

## Advanced PTF Topics

This section includes information on how to load and apply PTFs, remove PTFs, and distribute PTFs to remote systems.

PTF installation includes two steps: **load** and **apply**. The easiest way to install PTFs is to follow the instructions found in "Installing PTFs" on page 5-11. If you follow these instructions, the PTFs are loaded and applied for you automatically.

Occasionally, you may need to install PTFs by loading them first and applying them later. The following sections give you information on how to load and apply PTFs under special circumstances. If you do not need to use the load and apply steps separately, use "Installing PTFs" on page 5-11 to install your PTFs.

## Loading PTFs

The PTF packages on CD-ROM, tape, or in a save file can contain many PTFs. You can load one, some, or all of them using the Load Program Temporary Fix (LODPTF) command. As PTFs are loaded, the system verifies that the release of the product is correct. PTF status is `Not applied` after the PTF has been loaded on the system. Use the Apply Program Temporary Fix (APYPTF) command to apply the PTF. For most of the applied PTFs, the status is `Temporarily applied - ACN`. There also some applied PTFs that show a status of `Temporarily applied - PND`. For these PTFs, you need additional actions to make them active.

### Loading Individual PTFs from a Cumulative PTF Package

To load one PTF from a cumulative package:

1. Enter the Load PTF (LODPTF) command and press F4 (Prompt).
2. Specify the parameter values according to the PTF you are loading.
3. Specify the PTF identifier you want to load in the PTF numbers to select (SELECT) parameter and press the Enter key.
4. Repeat the Load PTF (LODPTF) command for each PTF you want loaded from the cumulative CD-ROM or tape.

## Advanced PTF Topics

For PTFs on a CD-ROM, the system will automatically find the PTF file in the cumulative package that contains the selected individual PTFs when you specify PATHID(\*FIRST). All PTFs to be loaded must exist in the same path identifier. Otherwise, you need to load the PTFs separately.

For PTFs on a tape, you can also use the Load PTF (LODPTF) command to specify the PTFs by the sequence number found in the cover letter that comes with the tape. In the PTF numbers to select (SELECT) parameter, specify the PTF you want. Specify the sequence number for the sequence number (SEQNBR) parameter. You need to specify the correct sequence number for each PTF in the cumulative package. When loading individual PTFs from the package on tape, you can also specify ENDOPT(\*LEAVE) on the Load Program Temporary Fix (LODPTF) command and repeat the command until the desired PTF is found.

### Loading PTFs that Supersede Other PTFs

If the PTF being loaded replaces (supersedes) existing PTFs (identified in the PTF cover letter) the following considerations apply:

- If the PTF to be replaced is *not applied* to the system, the new PTF can be loaded successfully. A record is kept indicating that the replaced PTF has been superseded.
- If the PTF to be replaced is *permanently applied*, it is considered to be a part of the operating system or licensed program to which it was applied. The new PTF can be loaded successfully.
- If the PTF to be replaced is *temporarily applied*, the load operation will automatically permanently apply any replaced (superseded) PTFs. If you do not want the PTF function to permanently apply any replaced (superseded) temporarily applied PTFs automatically, specify \*NOAPY for the Superseded PTFs (SPRPTF) parameter on the Load Program Temporary Fix (LODPTF) command. The PTFs to be replaced must either be permanently applied or permanently removed before PTFs that are replacing them can be loaded.

**Note:** IBM service support does not support the ordering of PTFs that replace other PTFs. Use the summary list to identify a PTF you need to order. Scan the summary list for PTFs that replace the PTF in question and then order the PTF. For more information on how to order a PTF, see “Ordering PTFs and PTF Information” on page 5-2.

## Applying PTFs

Some PTFs cannot be applied immediately because the operating system or licensed programs they affect are active. These PTFs are called **delayed** PTFs and can be applied at the next system initial program load (IPL). **Immediate** PTFs can be applied without doing an IPL if the licensed program they affect is not in use, or may be applied like delayed PTFs when you do the next IPL.

A PTF does not apply during an IPL when you use the power on and off schedule on the Power On and Off Tasks (POWER) menu. A PTF can only be applied during an IPL when you use the following command to IPL the system:

```
PWRDWNSYS *IMMED RESTART(*YES) IPLSRC(B)
```

When you use the Power On and Off Tasks (POWER) menu to apply a PTF during an IPL, the system does not run the appropriate PWRDWNSYS command.

PTFs can be **applied** (made active) on either a **temporary** or **permanent** basis. If the PTF is applied temporarily, a copy of the object being changed is saved. If the PTF is applied permanently, the old object is removed. Permanently applied PTFs cannot be removed.

PTFs generally should be applied temporarily when received. Applying PTFs temporarily allows you to test them in your operational environment. You should ensure that the new PTFs operate properly on your system before applying them permanently. As long as the PTFs are applied temporarily, they can be removed. Once they have been applied permanently, they cannot be removed.

When you are sure that the PTFs work properly, it is recommended that you apply them permanently to reduce the time required to install the next cumulative PTF package, and to make available the storage for future PTF applies. If this storage is not made available, you may be required to reload the Licensed Internal Code to recover. Temporarily applied Licensed Internal Code fixes are only in effect when you use the **B** storage area to perform an IPL.

#### Notes:

1. You cannot apply or remove PTFs with mandatory special instructions when \*ALL is specified on the PTF numbers to select (SELECT) parameter of Apply Program Temporary Fix (APYPTF) or Remove Program Temporary Fix (RMVPTF) commands. These PTFs are only applied or removed when they are specified by a number on the SELECT parameter. This protects against applying or removing PTFs without reading the mandatory special instructions.
2. The term PTF, in this context, refers to Licensed Internal Code fixes and licensed program fixes, including OS/400 licensed program fixes.

### Applying PTFs Temporarily or Permanently during an Unattended IPL

You can apply both delayed and immediate PTFs temporarily or permanently that have a status of Not applied during an unattended IPL.

To apply delayed PTFs temporarily, type the following command on any command line and press the Enter key: APYPTF LICPGM(\*ALL) SELECT(\*ALL) APY(\*TEMP) DELAYED(\*YES) IPLAPY(\*YES)

To permanently apply all PTFs that are temporarily applied (status of Temporarily applied) during the next unattended IPL, or to permanently apply all immediate PTFs that have a status of Not applied during the next IPL, type the following command on any command line and press the Enter key:

```
APYPTF LICPGM(*ALL) SELECT(*ALL) APY(*PERM) DELAYED(*YES) IPLAPY(*YES)
```

Type the following command and press the Enter key to perform an IPL on the system.

```
PWRDOWNSYS *IMMED RESTART(*YES) IPLSRC(B)
```

If you use the Power On and Off Tasks (POWER) menu to apply a PTF during an unattended IPL, the system will not run the appropriate PWRDOWNSYS command. You must specify PWRDOWNSYS RESTART(\*YES) IPLSRC(B) to perform an IPL on the system.

**Note:** You must specify LICPGM(\*ALL) and SELECT(\*ALL) to ensure that PTF dependency checking takes place for prerequisite Licensed Internal Code fixes.

### Applying PTFs Temporarily or Permanently during an Attended IPL

You can apply both delayed and immediate PTFs temporarily or permanently that have a status of Not applied during an attended IPL.

To apply a delayed PTF temporarily, you only need to do one IPL. To apply a delayed PTF permanently after it has been applied temporarily and tested, you need to do another IPL.

#### Before You Start

- Send a message to users notifying them to sign off the system.
  1. Type `go managesys` on any command line and press the Enter key.
  2. Select option 12 (Work with Signed-On Users) on the Manage Your System, Users, and Devices (MANAGESYS) menu.
  3. Press F10 (Send message to all) on the Work with Signed-On Users display.

**Note:** If the Work with User Jobs display is shown, you are in the intermediate assistance level. To get to the Work with Signed-On Users display, press F21 (Select assistance level) and select the basic assistance level.
  4. Type the message in the *Message text* field and press F10 (Send).
- Use the Work with User Jobs display to determine if there are other jobs or programs running on the system.
  1. Enter the Work with User Jobs (WRKUSRJOB) command.
  2. Use option 4 (End) for the jobs you want to end on the Work with User Jobs display.

To apply a PTF temporarily or permanently during an attended IPL:

1. Switch the system unit to the Manual mode.

If you are temporarily applying 5. Licensed Internal Code fixes, select storage area **A**. If you are permanently applying Licensed Internal Code fixes, select storage area **B**.

2. Type `PWRDWSYS *IMMED RESTART(*YES) IPLSRC(x)`, where *x* is your storage area, on any command line and press the Enter key.
3. Select option 1 (Perform an IPL) on the IPL or Install the System display.
4. Type your user ID and password on the Sign On display.
5. Select the licensed program for which you want to apply the PTF on the Select Products to Work with PTFs display.
  - If PTFs are not applied or are temporarily applied, the Work with PTFs display is shown. This display is used to apply and remove PTFs and shows the current status of each PTF that you can work with.
  - If you want to keep the same status for any of the PTFs displayed, leave the *Opt* column empty.

- PTFs that are not applied can be either temporarily applied using option 1 or permanently removed using option 4.
- PTFs that are temporarily applied can be either permanently applied using option 2 or temporarily removed using option 3.

**Note:** For an explanation of “permanently removed” and “temporarily removed” PTFs, see “Removing PTFs” on page 5-25.

6. After typing the option number you want for each of the PTFs displayed, press the Enter key.
7. Repeat step 5 on page 5-22 and step 6 for each licensed program for which you want to apply PTFs.
8. Press F3 (Exit) to continue with system operations.

### Applying Immediate PTFs Temporarily or Permanently Without Doing an IPL

To apply immediate PTFs temporarily or permanently without doing an IPL:

1. Make sure the licensed programs to which the PTFs are being applied are not in use.

**Note:** If you are applying PTFs to the Licensed Internal Code or to the Operating System/400, be sure to follow any special instructions, including activation instructions, in the cover letter to ensure that the system is in the correct state.

2. Enter the Apply Program Temporary Fix (APYPTF) command and press F4 (Prompt). Press F9 (All parameters) to display all of the fields on the Apply Program Temporary Fix (APYPTF) display.
3. Specify the number that corresponds to the licensed program you are applying PTFs for the Product (LICPGM) parameter.

4. Specify the release level for the Release (RLS) parameter.

**Note:** The release parameter is only required if more than one release of the product is installed.

5. Select the PTFs you want applied by doing one of the following:

- Specify the identifiers of the PTF you want to apply in the PTF numbers to select (SELECT) parameter. To apply all PTFs, specify \*ALL in the PTF numbers to select (SELECT) parameter.
- Specify \*ALL for the PTF numbers to select (SELECT) parameter, and the numbers of specific PTFs you do not want to apply for the PTF numbers to omit (OMIT) parameter.

6. To temporarily apply the PTFs, specify \*TEMP for the Extent of change (APY) parameter. To permanently apply the PTFs, specify \*PERM.

**Note:** PTFs applied temporarily can be removed; PTFs applied permanently cannot be removed (see “Removing PTFs” on page 5-25).

7. Specify \*NO for the Delayed PTFs (DELAYED) parameter.

**Note:** To apply all immediate PTFs right now and all delayed PTFs on the next IPL, specify \*ALL for the Product (LICPGM) parameter, and \*ALL for the Select (SELECT) parameter.

8. Press the Enter key. The system applies the PTFs to the specific licensed program.
9. Repeat steps 2 on page 5-23 through 8 until the PTFs are applied for all the selected licensed programs.

### Applying Licensed Internal Code Fixes at the Next Unattended IPL

To apply Licensed Internal Code fixes that have already been loaded at the next unattended IPL, you must be currently operating from the **B** storage area.

1. Make sure the system is in the Normal mode.
2. If you are not running on the correct storage area, type the following command on any command line and press the Enter key:

```
PWRDWNSYS *IMMED RESTART(*YES) IPLSRC(B)
```

3. Type the following commands on any command line and press the Enter key after each one:

```
APYPTF LICPGM(5716999) APY(*TEMP) DELAYED(*YES)
```

```
PWRDWNSYS *IMMED RESTART(*YES) IPLSRC(B)
```

**Note:** A Licensed Internal Code fix does not apply using the Power On and Off Tasks (POWER) menu. The Power On and Off Tasks (POWER) menu does not run the appropriate PWRDWNSYS command.

The system does an IPL on the **A** storage area, applies the Licensed Internal Code fixes temporarily, then returns to the **B** storage area.

**Note:** While applying Licensed Internal Code fixes, it may be necessary for the system to reorganize a portion of the Licensed Internal Code storage. This reorganization can take up to 1 hour. While this reorganization is taking place, system reference codes (SRCs) C600 434B and C600 435B are displayed.

### Applying Licensed Internal Code Fixes With No IPL

If you are using V3R1M0, you may be operating from either storage area to temporarily apply an immediate Licensed Internal Code fix without doing an IPL. If you are using an earlier version than V3R6M0, you must be operating from the **A** storage area to temporarily apply a loaded Licensed Internal Code fix without doing an IPL. You must be operating from the **B** storage area to permanently apply a temporarily applied Licensed Internal Code fix without doing an IPL.

To determine the storage area you are currently operating from, type DSPPTF 5716999 on any command line and press the Enter key. On the Display PTF Status display, the storage area is identified in the *IPL source* field. ##MACH#A is the **A** storage area and ##MACH#B is the **B** storage area.

If you are not running on the correct storage area, type the following command on any command line and press the Enter key:

```
PWRDWNSYS *IMMED RESTART(*YES) IPLSRC(X)
```

where IPLSRC(X) is A if you want to apply them temporarily or B if you want to apply them permanently.



To apply Licensed Internal Code fixes immediately, type the following on any command line:

```
APYPTF 5716999 APY(xxxxx) DELAY(*NO)
```

where xxxxx is \*TEMP or \*PERM, and press the Enter key.

## Removing PTFs

You can remove PTFs that are applied temporarily. Delayed PTFs applied temporarily can be removed temporarily when you do an IPL and then removed permanently without doing an IPL. Immediate PTFs applied temporarily can be removed either temporarily or permanently without doing an IPL. You can also remove immediate PTFs that have been loaded but not applied. PTFs applied permanently cannot be removed.

When PTFs are removed temporarily, the original objects that were replaced by the PTF are restored to the program library. The system again verifies that the PTF being removed is not required for any other currently applied PTF. If the PTF being removed is found to be required, the other PTF (that it is required for) must be removed first or at the same time.

### Note:

- Before you remove a PTF, be sure that the object affected by the immediate PTF is not in use.
- Licensed Internal Code PTFs can only be removed permanently.

## Removing Licensed Program PTFs

To remove one or more licensed program PTFs:

1. Enter the Remove Program Temporary Fix (RMVPTF) command and press F4 (Prompt).
2. On the Remove Program Temporary Fix (RMVPTF) display, type the character value of the licensed program (shown on the cover letter) for the Product (LICPGM) parameter.
3. Select the PTFs you want removed by doing one of the following:
  - Specify the numbers of the PTFs you want to remove for the PTF numbers to select (SELECT) parameter or \*ALL to remove all of them.
  - Specify \*ALL for the PTF numbers to select (SELECT) field and the numbers of specific PTFs you do not want to remove for the PTF numbers to omit (OMIT) parameter.
4. Specify \*TEMP for the Extent of change (APY) parameter to remove the PTFs temporarily or \*PERM to remove the PTFs permanently.
5. If you are removing immediate PTFs, specify \*NO for the Delayed PTFs (DELAYED) parameter.
6. If you are identifying delayed or immediate PTFs that are to be automatically removed during the next unattended IPL, specify \*YES for the Delayed PTFs (DELAYED) parameter and \*YES for the Remove on unattended IPL (IPLRMV) parameter.
7. Press the Enter key.

The Remove Program Temporary Fix (RMVPTF) command can also be used to identify delayed or immediate PTFs that are to be removed during the next unattended IPL.

### Removing OS/400 Licensed Program PTFs

To remove an immediate OS/400 licensed program PTF temporarily, use the following command:

```
RMVPTF LICPGM(5763SS1) SELECT(SFxxxxx) RMV(*TEMP)
```

where xxxxx is the PTF identifier.

**Note:** If the PTF is only temporarily removed, it will be applied again with the next cumulative PTF package.

To remove an immediate OS/400 licensed program PTF permanently, use the following command:

```
RMVPTF LICPGM(5763SS1) SELECT(SFxxxxx) RMV(*PERM)
```

where xxxxx is the PTF identifier.

To remove a delayed OS/400 licensed program PTF temporarily, do the following:

1. Use the following command:

```
RMVPTF LICPGM(5763SS1) SELECT(SFxxxxx) RMV(*TEMP) DELAYED(*YES)
```

where xxxxx is the PTF identifier.

2. Type the following command and press the Enter key to do an IPL to the B side:

```
PWRDWN SYS OPTION(*IMMED) RESTART(*YES) IPLSRC(B)
```

To remove a delayed OS/400 licensed program PTF permanently, do the following:

1. Temporarily remove the delayed PTF first.
2. Use the following command:

```
RMVPTF LICPGM(5763SS1) SELECT(SFxxxxx) RMV(*PERM)
```

where xxxxx is the PTF identifier.

### Removing Licensed Internal Code Fixes

To remove a PTF for the Licensed Internal Code(LIC), do the following:

1. Type the following command and press the Enter key to do an IPL to the A side:

```
PWRDWN SYS OPTION(*IMMED) RESTART(*YES) IPLSRC(A)
```

2. Type the following command and press the Enter key:

```
RMVPTF LICPGM(5763999) SELECT(MFxxxxx) RMV(*PERM)
```

where xxxxx is the LIC identifier.

3. Type the following command and press the Enter key to do an IPL to the B side:

```
PWRDWN SYS OPTION(*IMMED) RESTART(*YES) IPLSRC(B)
```

## Removing Individual PTFs in a Cumulative Package Before the Next IPL

To remove a PTF from a PTF cumulative package after you have already selected option 8 (Install program temporary fix package) on the Program Temporary Fix (PTF) menu, but before the IPL has been done, enter the following command:

```
APYPTF LICPGM(XXXXXXX) SELECT(YYYYYYY) DELAYED(*YES) APY(*TEMP) IPLAPY(*NO)
```

where XXXXXXX is the licensed program and YYYYYYY is the number of the PTF you want to omit.

This resets the IPL apply indicator to IPL Action NONE. If you receive an error message, check the job log. If you receive message CPF3608, this PTF has PTFs that depend on it. You must omit these dependent PTFs before omitting the original PTF. The status of the omitted PTFs will remain Not applied during subsequent IPLs. When you are finished omitting PTFs, enter the following command to complete the cumulative package installation:

```
PWRDWN SYS OPTION(*IMMED) RESTART(*YES) IPLSRC(B)
```

## Deleting PTF Save Files and Cover Letters

After you have permanently applied a program temporary fix (PTF), you may want to delete the PTF save file and cover letter if you do not need to distribute it to another system. By deleting the save file, you can make more room on your system for other files.

To delete a PTF save file, use the Delete Program Temporary Fix (DLTPTF) command. Do not use the Delete Physical File (DLTPF) command to delete PTF save files.

**Note:** PTF save files and cover letters for a previous release are removed during automatic cleanup if system logs are specified. See chapter 8 of the *System Operation* book, for more information on how to set up your system so they are removed automatically.

## Distributing PTFs to Remote Systems

You can distribute some or all the PTFs you receive to a remote system. PTFs that are in a save file can be sent to remote systems electronically. If you have the SystemView System Manager/400 licensed program installed, see the *System Manager/400 Use* book for information on how to use the Create PTF Package (CRTPTFPKG) command and the Send PTF (SNDPTF) command.

**Note:** When preparing a PTF package to send to a remote system, make sure that the model of the remote system unit is compatible with the model of system unit required for the PTFs (shown on the cover letter as *Models*).

PTFs that are on CD-ROM, tape, or received electronically can be packaged as follows:

- Combine some or all the PTFs you received electronically into a single PTF save file so you can send it electronically to a remote system.

**Note:** You cannot combine PTFs from different languages, releases, or superseded PTFs into one save file.

- Copy one or more PTF files from CD-ROM or tape to a PTF save file so you can send it electronically to a remote system.

If the PTFs are already in a save file, use object distribution to send the save files electronically to the remote system. See the *SNA Distribution Services* book for more information about using object distribution.

If you ordered and received a PTF electronically for another system that has a newer release than the one on your system, you cannot load, copy, or display that PTF on your system, but you can send that PTF to the remote system using object distribution.

### Loading, Applying, and Removing PTFs Automatically at Remote Systems

To load PTFs on remote systems follow the instructions in “Installing Licensed Program PTFs” on page 5-13.

To load PTFs received through the distribution services network, type the following on any command line:

```
LODPTF LICPGM(xxxxxxx) DEV(*SAVF) SELECT(nnnnnnn)
```

where xxxxxxx is the licensed program number and nnnnnnn is the PTF identifier. Next, use the Apply PTF (APYPTF) command to apply the PTFs.

To load PTFs from device \*SERVICE, do the following:

1. Use the QPZGENNM application program interface (API) to generate a name for the PTF save file.
2. Store the PTF save file in the library returned from the API.
3. Once the PTF exists in the save file, use the QPZLOGFX API to store the information about the PTF in the PTF database.
4. Type the following command on any command line to load the PTF:

```
LODPTF LICPGM(xxxxxxx) SELECT(nnnnnnn) FROMDEV(*SERVICE)
```

where xxxxxxx is the licensed program number and nnnnnnn is the PTF identifier.

**Note:** See the *System API Reference*, SC41-4801, for more detailed information about the QPZGENNM and QPZLOGFX APIs.

To have PTFs applied automatically at the next unattended IPL on a remote system, specify the delayed parameter value as \*YES. If the next IPL at the remote system is attended, the Select Products to Work with PTFs display is shown and the operator can choose to apply or not to apply the PTFs. If the operator chooses not to apply the PTFs, they are applied automatically during the next unattended IPL.

To remove delayed PTFs from remote systems (see “Removing PTFs” on page 5-25). Specify \*YES for the *Delayed PTFs* field to remove PTFs during the next unattended IPL. If the next IPL on the remote system is attended, the Work with PTFs display is shown and the operator can choose to remove or not to remove the PTFs. If the operator chooses not to remove the PTFs, they are removed automatically during the next unattended IPL.

## Building a Tailored PTF Package

The following example shows you how to build your own PTF package that can be used the same way as a PTF package supplied by IBM service support. This example combines a PTF package with individual PTFs into a tailored PTF package for distribution to other AS/400 systems in your network.

If you have the SystemView System Manager/400 licensed program installed on your system, use the Create Program Temporary Fix Package (CRTPTFPKG) command instead of this procedure. See the *System Manager/400 Use* book for more information on how to build your own PTF package using the SystemView System Manager/400 licensed program.

The order of a cumulative PTF package is:

1. High-impact pervasive (HIPER) Licensed Internal Code Fixes (5716999)
2. HIPER OS/400 PTFs (5716SS1)
3. HIPER licensed program PTFs (for example, OfficeVision for OS/400 licensed program)
4. A delimiter which divides the HIPER PTFs from the non-HIPER PTFs (5716111)
5. Non-HIPER Licensed Internal Code fixes
6. Non-HIPER OS/400 PTFs
7. OS/400 online information PTFs (if any)
8. Non-HIPER licensed program PTFs

For this example, assume that you want a tape that contains all but one (SF00600) of the PTFs from the most recent PTF package on CD-ROM or tape received from IBM service support, including the high-impact pervasive (HIPER) PTFs. In addition, you want to include four individual PTFs received electronically from service support. These four PTFs are MF00050, SF00480, SF00500, and SF00800.

Because the four individual PTFs were received from IBM service support, they already exist in save files in library QGPL. They exist in the library as object type \*file, as shown below:

File Name	Object Type
QMF00050	*FILE
QSF00480	*FILE
QSF00500	*FILE
QSF00800	*FILE

The following shows the procedures for building a tailored PTF package from CD-ROM or tape.

### ***Tailoring a PTF package from tape***

1. Find out the sequence number of the PTF file you want to copy from the PTF cumulative package by using the Display tape (DSPTAP) command:

```
DSPTAP DEV(TAP01) DATA(*LABELS) OUTPUT(*PRINT)
```

The Display Spooled File display is shown. The product identifier is listed in the Data File Label column, and the PTF file sequence number is listed in the File Seq column. For example, to copy PTF for product RPG/400, first find the data file label that identifies the product with an extension of A00, then find the corresponding sequence number. According to Figure 5-2, the product identifier is P5716RG1.A00 and the file sequence number is 7.

```

                                Display Spooled File
File . . . . . : QPTAPDSP                               Page/Line 1/1
Control . . . . . : _____                           Columns 1 - 78
Find . . . . . : _____
5716SS1 V3R6M0                                TAPE VOLUME INFORMATION          C4123360
Device . . . . . : TAP01                               Volume . . . . . : C4123360
Owner ID . . . . . : _____                       Density . . . . . : *QIC120
Type . . . . . : *SL                                  Code . . . . . : *EBCDIC

                                Record
Data File Label  File  Block  Recg  Record  Block  File  Mvol  Mvol
                  Seq   Format  Tech  Length  Length Length Ind  Seq
P5716999.A00    0001  *U           00000  32760  000002  0001  0001
P5716999.A01    0002  *U           00000  32760  000016  0001  0001
P5716999.A02    0003  *U           00080  32760  000066  0001  0001
P5716SS1.A00    0004  *U           00000  32760  000002  0001  0001
P5716SS1.A01    0005  *U           00000  32760  000013  0001  0001
P5716SS1.A02    0006  *U           00080  32760  000066  0001  0001
P5716RG1.A00    0007  *U           00000  32760  000002  0001  0001
P5716RG1.A01    0008  *U           00000  32760  000013  0001  0001
P5716RG1.A02    0009  *U           00080  32760  000066  0001  0001
                                                    More...

F3=Exit  F12=Cancel  F19=Left  F20=Right  F24=More keys
    
```

Figure 5-2. Display Spooled File display

```

                                Display Spooled File
File . . . . . : QPTAPDSP                               Page/Line 1/23
Control . . . . . : _____                           Columns 1 - 78
Find . . . . . : _____
P5716111.A00    0010  *U           00000  32760  000002  0001  0001
P5716111.A01    0011  *U           00000  32760  000016  0001  0001
P5716111.A02    0012  *U           00080  32760  000066  0001  0001
P5716999.A00    0013  *U           00000  32760  000002  0001  0001
P5716999.A01    0014  *U           00000  32760  000013  0001  0001
P5716999.A02    0015  *U           00080  32760  000066  0001  0001
P5716SS1.A00    0016  *U           00000  32760  000002  0001  0001
P5716SS1.A01    0017  *U           00000  32760  000016  0001  0001
P5716SS1.A02    0018  *U           00080  32760  000066  0001  0001

                                                    Bottom

F3=Exit  F12=Cancel  F19=Left  F20=Right  F24=More keys
    
```

Figure 5-3. Display Spooled File display - screen 2

2. Use the Copy Program Temporary Fix (CPYPTF) command to bring the HIPER PTFs from the cumulative PTF package into library QGPL. Two licensed programs are being used in this example (MF and SF PTFs).

```

I          CPYPTF LICPGM(5716999)
           FROMDEV(TAP01)
           TODEV(*SAVF)
I          FROMSEQNBR(1)
           FROMENDOPT(*LEAVE)
           TOSAVF(QGPL/PCUMH999)

```

```

I          CPYPTF LICPGM(5716SS1)
           FROMDEV(TAP01)
           TODEV(*SAVF)
I          FROMSEQNBR(4)
           FROMENDOPT(*LEAVE)
           TOSAVF(QGPL/PCUMHSS1)

```

### 3. Copy the product delimiter into a save file.

```

I          CPYPTF LICPGM(5716111)
           FROMDEV(TAP01)
           TODEV(*SAVF)
I          SELECT(*ALL)
           FROMSEQNBR(10)
           FROMENDOPT(*LEAVE)
           TOSAVF(QGPL/PCUMH111)

```

### 4. Copy the non-HIPER PTFs from the cumulative package into a save file omitting the unwanted PTFs.

```

I          CPYPTF LICPGM(5716999)
           FROMDEV(TAP01)
           TODEV(*SAVF)
I          FROMSEQNBR(13)
           FROMENDOPT(*LEAVE)
           TOSAVF(QGPL/PCUMP999)

```

```

I          CPYPTF LICPGM(5716SS1)
           FROMDEV(TAP01)
           TODEV(*SAVF)
I          OMIT(SF00600)
I          FROMSEQNBR(16)
           FROMENDOPT(*LEAVE)
           TOSAVF(QGPL/PCUMPSS1)

```

### ***Tailoring a PTF package from CD-ROM***

#### 1. Find out the path identifier for the PTF file you want to copy from the PTF cumulative package:

**Note:** A path identifier is a 1 to 6-digit number that identifies each PTF file on the CD-ROM. Each release of a licensed product on the CD-ROM has its own unique set of identifiers. Each set of path identifiers for the product begins with the number 1 indicating the first PTF file for the product and release. This first PTF file may or may not contain HIPER PTFs for the product.

To get the path identifier for each PTF file you want to copy from the cumulative PTF package for your product, use the Copy Program Temporary Fix (CPYPTF) command, and specify PATHID(\*SELECT). The Select PTF CD-ROM File display is shown.

Select PTF CD-ROM File					
Product . . . . . : 5716SS1					System: RCHAS400
Type option, press Enter.					
1=Select					
Opt	Release	Feature	Feature Type	Path Identifier	Hiper PTFs
-	V3R6M0	5050	*CODE	1	Yes
-	V3R6M0	5050	*CODE	2	No

Figure 5-4. Select PTF CD-ROM File display

2. Use the Copy Program Temporary Fix (CPYPTF) command to bring the HIPER PTFs from the cumulative PTF package into library QGPL. Two licensed programs are being used in this example (MF and SF PTFs). You can identify the HIPER PTF files on the Select PTF CD-ROM File panel by a Yes in the Hiper PTFs column.

```
CPYPTF LICPGM(5716999)
      FROMDEV(OPT01)
      TODEV(*SAVF)
      FROMPATHID(1)
      TOSAVF(QGPL/PCUMH999)
```

```
CPYPTF LICPGM(5716SS1)
      FROMDEV(OPT01)
      TODEV(*SAVF)
      FROMPATHID(1)
      TOSAVF(QGPL/PCUMHSS1)
```

3. Copy the product delimiter into a save file.

```
CPYPTF LICPGM(5716111)
      FROMDEV(OPT01)
      TODEV(*SAVF)
      SELECT(*ALL)
      FROMPATHID(1)
      TOSAVF(QGPL/PCUMH111)
```

4. Copy the non-HIPER PTFs from the cumulative package into a save file omitting the unwanted PTFs.

```
CPYPTF LICPGM(5716999)
      FROMDEV(OPT01)
      TODEV(*SAVF)
      FROMPATHID(2)
      TOSAVF(QGPL/PCUMP999)
```

```
CPYPTF LICPGM(5716SS1)
      FROMDEV(OPT01)
      TODEV(*SAVF)
      OMIT(SF00600)
      FROMPATHID(2)
      TOSAVF(QGPL/PCUMPSS1)
```

**Creating the tailored PTF cumulative tape:** Repeat the command for each licensed program with non-HIPER PTFs. The OMIT parameter was used to identify the PTF not included in the tailored package. The TOSAVF name must be 8 char-



acters in length and must start with the letter P. You can choose the remaining seven characters. The library on the TOSAVF parameter must be QGPL.

Library QGPL now contains:

File Name	Object Type
QMF00050	*FILE
QSF00480	*FILE
QSF00500	*FILE
QSF00800	*FILE
PCUMH999	*FILE
PCUMHSS1	*FILE (plus more for HIPERs of licensed programs)
PCUMH111	*FILE
PCUMH999	*FILE
PCUM PSS1	*FILE (plus more for non-HIPERs of licensed programs)

1. Initialize the tape for the tailored cumulative package.

```
INZTAP  DEV(TAP01)
        NEWVOL(CUMPKG)
```

2. Copy the Licensed Internal Code HIPER PTFs into one file and place it first on the tape.

```
CPYPTF  LICPGM(5716999)
        FROMDEV(*SERVICE)
        TODEV(TAP01)
        SELECT(CUMH999)
        TOENDOPT(*LEAVE)
```

The TOENDOPT(\*LEAVE) parameter is used to maintain tape position.

3. Copy the OS/400 HIPER PTFs onto the tape.

```
CPYPTF  LICPGM(5716SS1)
        FROMDEV(*SERVICE)
        TODEV(TAP01)
        SELECT(CUMHSS1)
        TOENDOPT(*LEAVE)
```

Repeat for each licensed program with HIPER PTFs.

4. Copy the delimiter to the tape.

```
CPYPTF  LICPGM(5716111)
        FROMDEV(*SERVICE)
        TODEV(TAP01)
        SELECT(CUMH111)
        TOENDOPT(*LEAVE)
```

5. Copy the non-HIPER Licensed Internal Code fixes into one file and place on the tape.

```
CPYPTF  LICPGM(5716999)
        FROMDEV(*SERVICE)
        TODEV(TAP01)
        SELECT(CUM999 MF00050)
        TOENDOPT(*LEAVE)
```

6. Copy the non-HIPER OS/400 PTFs into one file and place on the tape.

## Advanced PTF Topics

```
CPYPTF LICPGM(5716SS1)
        FROMDEV(*SERVICE)
        TODEV(TAP01)
        SELECT(CUMPSS1 SF00480 SF00500 SF00800)
        TOENDOPT(*LEAVE)
```

Repeat for each licensed program with non-HIPER PTFs.

The tape now contains the tailored PTF package. It can be used in the same way that your service support PTF packages are used.

PTFs can now be loaded on, applied to, or removed from a system.

---

## Chapter 6. Handling and Reporting System Problems

When you are analyzing your problem, in many cases you will be able to solve the problem yourself. Other times, you may need the help of a technical support person or a service representative. When you do need outside help, it is important for you to collect as much information about the problem as you can by following the steps in this chapter. For more information on how to report a detected problem, see “Reporting Hardware and Software Problems” on page 6-11.

### Before You Begin

Ask yourself the following questions:

**Attention**

If you suspect a problem with System Support Program (SSP), see *System Problem Determination—SSP*, SC21-8296.

- Has there been an external power outage or momentary power loss?
- Has the hardware configuration changed?
- Has system software been added?
- Have any new programs or program changes been recently installed?

To make sure your licensed programs and products have been properly installed, use the Check Product Option (CHKPRDOPT) command.

- Have any program temporary fixes (PTFs) been applied recently?

Some problems can be corrected by installing cumulative PTF packages. Even if there is no change activity to the equipment or programs on your system, you should install cumulative PTF packages every three or four months. If you are experiencing changes to your system, you should order and install the current cumulative PTF package and keep your system at the most current PTF level. See Chapter 5, “Working with Program Temporary Fixes (PTFs)” on page 5-1 for information on PTFs.

- Have any system values changed?
- Has any system tuning been done?

Keep these questions in mind while you are diagnosing the problem.

---

## 1

Can you power on your system?

**Yes No**

↓ Go to “Analyzing Problems with a Symptom” on page A-1.

---

### 2

Does the display on the system control panel start with Function 11-3, or is the System Attention light on?

**No Yes**

↓ Go to step 16 on page 6-8.

---

To verify which function is being displayed on a 9402/9404 Models 4xx, or 9404/9406 Models 5xx, press the Enter pushbutton to alternate between function and data.

### 3

Does the system console show a Main Storage Dump Manager display?

**No Yes**

↓ See "Performing a Main Storage Dump" on page A-7.

---

### 4

Does the display station that was in use when the problem occurred (or any display station) still appear to be operational?

**Yes No**

↓ If your system console can not vary on, go to "Procedure 11—Recovering When System Console did not Vary On" on page A-6. For all other workstations, go to "Procedure 5—Recovering from Workstation Failure" on page A-4.

---

The display station is operational if there is a sign-on display or menu with a command line. If another display station is operational, use that display station to solve the problem.

## 5

Is there a message related to this problem shown on the display station?

**Yes No**

↓ Go to step 10 on page 6-4.

## 6

Is this a system operator message?

**Yes No**

↓ Go to step 8.

A message is a system operator message if the display indicates that the message is in the QSYSOPR message queue. Critical message can be found in the QSYSMSG message queue. For information about QSYSMSG message queue, see chapter 4 of the *System Operation* book.

## 7

Is the system operator message either highlighted or does it have an asterisk (\*) by it?

**No** Go to step 12 on page 6-5.

**Yes** Go to step 15 on page 6-7.

## 8

Move the cursor to the message line and press the Help key, or use Option 5 (Display details and reply). Does the Additional Message Information display appear?

**Yes No**

↓ Go to step 10 on page 6-4.

See the *System Operation* book, SC41-4203, for information about messages.

### 9

| Record the message information  
| shown on the problem summary  
| form in Appendix B, "Problem  
| Summary Forms." If possible,  
| follow the recovery instructions on  
| the Additional Message Informa-  
| tion display. Did this solve the  
| problem?

| **No**   **Yes**

| ↓   **End of procedure.**

---

### 10

Type `dspmsg qsysopr` on any  
command line and press the Enter  
key to display system operator  
messages.

Did you find a message that is  
highlighted or has an asterisk (\*)  
by it?

**No**   **Yes**

↓   Go to step 15 on page 6-7.

---

### 11

Did you find a message at or near  
the time the problem occurred?

**Yes**   **No**

↓   Go to step 14 on page 6-6.

#### System Operator Messages

To determine the time a message occurred, display additional  
information about the message using option 5 (Display details and  
reply) on the Work with Messages display. The time that the  
message was sent is shown on the Additional Message Informa-  
tion display.

If the problem seems to affect only one display station, you might  
be able to use information from the Job (JOB) menu to diagnose  
and solve the problem. Type `go job` on any command line and  
press the Enter key to find this menu. For information on the Job  
menu, see chapter 2 of the *System Operation* book.

---

---

## 12

If the additional message information tells you to run problem analysis, go to step 15 on page 6-7.

Use option 5 (Display details and reply) for the message to display additional information about the message; otherwise, move the cursor to the message line and press the Help key. Record the message information shown on the problem summary form in Appendix B, "Problem Summary Forms." If possible, follow any recovery instructions shown. Did this solve the problem?

**No    Yes**

↓    **End of procedure.**

---

## 13

Were you instructed by the message information to look for additional messages in the system operator's message queue (QSYSOPR)?

**No    Yes**

↓    Press F12 (Cancel) to return to the list of messages, then look for other related messages. Go to step 10 on page 6-4.

---

# 14

To describe the problems that you have observed:

1. Type `go userhelp` on any command line and press the Enter key.
2. Select option 10 (Save information to help solve a problem) on the Information and Problem Handling (USERHELP) menu.
3. Type a brief description of the problem and press the Enter key on the Save Information to Help Resolve a Problem display.
4. Type notes about the problem on the blank lines provided on the Enter Notes display.
5. Report the problem. See "Reporting Problems Detected by the System" on page 6-12 for information about using the problem log to report a problem electronically.

**End of procedure.**

---

### Note

Use the Analyze Problem (ANZPRB) command if you suspect you are having a input/output device problem and know the device name. See "Analyzing a New Problem" on page 6-11 for information on how to use the Analyze Problem (ANZPRB) command.

### Creating Your Own Problem Record

This step helps you isolate and describe the problems that you observed.

You can store system and job-related information in spool files and create an entry (identified by the problem ID) in the system problem log. This information can be used to assist your technical support representative in solving the problem.

**Note:** Using this method, you can create a brief note describing the problem you observed. To describe your problem in greater detail, use the Analyze Problem (ANZPRB) command. Using the Analyze Problem (ANZPRB) command may also run a test to further isolate the problem.

See "Adding Notes to Your Problem Record" on page 6-17 for additional information about analyzing and reporting problems.



---

## 15

Use option 5 (Display) for additional information about the message. Or, move the cursor to the message line and press the Help key.

Press the F14 key, or use the Work with Problem (WRKPRB) command as instructed.

If this does not solve the problem, go to “Analyzing Problems with a Symptom” on page A-1.

### Running Problem Analysis

With problem analysis you can gather more information about the problem to either solve it or report it without the help of a service representative. You can run problem analysis on messages that are highlighted (basic assistance level) or have an asterisk (\*) next to them (intermediate assistance level). If you do not see any of these messages, you may not be authorized to the Work with Problem (WRKPRB) command, or the message does not support additional problem analysis.

**Note:** Use F14 (Work with problem) if it is available on your display; if F14 is not available, use the Work with Problem (WRKPRB) command to run problem analysis. For more information about problem analysis, see the online help. From this display, you can display the details of the problem and work directly with the problem.

See “Adding Notes to Your Problem Record” on page 6-17 for additional information about analyzing and reporting problems.

---

# 16

Record the system reference codes on the problem summary form in Appendix B, "Problem Summary Forms." Make sure that you have collected all of the codes.

Go to "Procedure 2—Recovering when attention light is on or SRC is displayed" on page A-2.

### Collecting System Reference Codes

If you have system expansion or extension tower attached to your system, select Function 05, and record the system reference code.

If 11-3 is shown in the Function/Data display on the control panel, then the numbers that follow are the system reference code.

If a number other than 11-3, is shown in the Function or Function/Data display, the number may not indicate a problem with the system. These codes may indicate functions you select from the control panel. For example, function 01 displays the type of IPL you did as follows:

Function	Description
----------	-------------

01 ..A. ....	The last IPL of the system did not include the installation of temporary program temporary fixes (PTFs).
--------------	--

01 ..B. ....	The last IPL of the system included the installation of temporary program temporary fixes (PTFs).
--------------	---

See "System Unit Control Panels" on page 1-2 for more information about the system unit control panel. See page 1-3 for information about the Function/Data display.

**Note:** If you have a display with *Type* and *Reference Code* columns on it, record the data under the *Type* column as the first 4 characters of function 11 on the problem summary form in Appendix B, "Problem Summary Forms." If an A, B, C, or D is displayed as the first digit in the *Type* column, use the data in the *Reference Code* column as the last four characters of function 11.

---

## Getting Help with Problems

The following table shows an overview of the AS/400 system support structure and gives you guidelines on who to call for your specific problem. Before calling for help, it is recommended that you fill out the appropriate form in Appendix B, "Problem Summary Forms" on page B-1. Your service representative may need the information you have filled in to further analyze the problem.

Type of Problem	Call	People/Areas That Can Help
<b>Question</b> <ul style="list-style-type: none"> <li>• Advice</li> <li>• Migrating</li> <li>• "How to"</li> <li>• Operating</li> <li>• Configuring</li> <li>• Ordering</li> <li>• Performance</li> <li>• General information</li> </ul>	<ul style="list-style-type: none"> <li>• IBM Marketing Team or IBM Business Partner</li> <li>• IBM AS/400 Support Line</li> </ul>	<ul style="list-style-type: none"> <li>• Marketing Representative or business partner</li> <li>• Systems Engineer (SE)</li> <li>• SE Technical Support - Local</li> <li>• SE Support Center</li> <li>• Customer Support Center</li> </ul>
<b>Software</b> <ul style="list-style-type: none"> <li>• PTF fix information</li> <li>• OS/400 problem</li> <li>• IBM application program</li> <li>• Loop, hang, or message</li> </ul>	IBM Software Service	<ul style="list-style-type: none"> <li>• Customer Services Coordinator</li> <li>• Level 1 Software Service</li> <li>• Level 2 Software Service</li> <li>• Programming Lab Change Team</li> </ul>
<b>Hardware</b> <ul style="list-style-type: none"> <li>• IBM system hardware broken</li> <li>• Hardware system reference code (SRC)</li> <li>• IBM input/output (I/O) problem</li> <li>• Upgrade</li> </ul>	IBM Hardware Service	<ul style="list-style-type: none"> <li>• Dispatch</li> <li>• Customer Assistance Group (CAG)</li> <li>• Your Customer Engineer (CE)</li> <li>• Support Customer Engineer (CE)</li> <li>• Support Center</li> <li>• Product Engineering</li> </ul>

## Calling IBM Marketing or Business Partner

Call your IBM Marketing Team or IBM Business Partner:

### Questions

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Call IBM AS/400 Support Line:

### Questions

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

## Calling Your Software Service Representative

Call your software service representative if you have not reported the problem.

Your software service representative is:

\_\_\_\_\_

### ***System Software***

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Customer #: \_\_\_\_\_

### ***Application Programs***

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Record the service request number (sometimes called program management record or PMR) on the problem summary form in Appendix B, "Problem Summary Forms."

## Calling Your Hardware Service Representative

Call your hardware service representative if you have not reported the problem.

Your hardware service representative is:

\_\_\_\_\_

### ***System Hardware***

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Customer #: \_\_\_\_\_

### ***Device or Other Equipment Manufacturer (OEM)***

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

### ***Communications Network***

Telephone Company Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Record the service request number (sometimes called program management record or PMR) on the problem summary form in Appendix B, "Problem Summary Forms."

---

## Analyzing a New Problem

A new problem is one that you detect while using the system and has not been recorded in the problem log or one that is in the problem log with a status of opened.

To analyze a new problem that has not been recorded in the problem log:

1. Use the Analyze Problem (ANZPRB) command.
2. Select the option that most closely corresponds to the problem you have encountered on the Analyze a New Problem display. A series of steps then guides you through problem analysis. As you progress through problem analysis, a symptom string is built from your responses.
3. When you complete problem analysis, the collected information is placed in the problem log.

To analyze a problem that has been recorded in the problem log with opened status:

1. Type `dspmsg qsysopr` on any command line and press the Enter key to see the system operator messages.
  - If the message is highlighted, use option 5 (Display details and reply) for the message. On the Additional Message Information display, press F14 (Work with problem).
  - If the message has an asterisk (\*) next to it, press F14 (Work with problem) on the Display Messages display.
2. Select Option 8 (Work with problem), and then Option 1 (Analyze problem). As you progress through problem analysis, a symptom string is built from your responses.
3. When you complete problem analysis, the collected information is placed in the problem log.

You can also use the following method to analyze a problem with open status in the problem log:

1. Enter the Work with Problem (WRKPRB) command on any command line.
2. Select Option 8 (Work with problem) for the problem, and then Option 1 (Analyze Problem).

For information on how to report the problem, See “Reporting Problems Detected by the System” on page 6-12.

---

## Reporting Hardware and Software Problems

For hardware failures that do not disable system operation, AS/400 electronic customer support provides a fast, electronic method for requesting the service of an IBM service representative with replacement parts. Using this method, you may report failures occurring on your AS/400 system and selected input or output devices.

For software or Licensed Internal Code problems, notification of the failure and related symptoms can be sent to the IBM service system. A file of known problems

## Problem Handling

is searched and, if available, a program temporary fix (PTF) is sent to your system for installation.

If a problem is new, a problem management record is created by the IBM service system. The PMR number is returned to your AS/400 system. Depending on your contract with IBM, you may or may not be entitled to voice support (telephone). If you have voice support, IBM service center personnel will contact you and work with you to resolve the problem. If you do not have voice support, you may view the response by using the Query Problem Status (QRYPRBSTS) command. For more information on the QRYPRBSTS command, see "Querying Problem Status" on page 6-18.

The problems that are detected by the system can be reported either manually or automatically. For information on how to report problems manually, see "Reporting Problems Detected by the System" on page 6-12. For information on how to report problem automatically, see "Automated Problem Management" on page 6-19.

### Reporting Problems Detected by the System

The system **problem log** allows you to display a list of all the problems that have been recorded on the system. You can also display detailed information about a specific problem, such as the product type and serial number of the device that had the problem, the date and time of the problem, the part that failed, where the part is found, and the problem status. You can also analyze and report a problem, or determine any service activity that was done.

To report a problem which has an entry created in the problem log:

1. Type the Work with Problems (WRKPRB) command on any command line and press the Enter key. The Work with Problems (WRKPRB) display appears. Figure 6-1 shows a typical Work with Problems display.

```
Work with Problems
System: SYSTEM01
Position to . . . . . _____ Problem ID
Type options, press Enter.
  2=Change  4=Delete  5=Display details  6=Print details
  8=Work with problem  9=Work with alerts  12=Enter notes

Opt Problem ID Status Problem Description
8_ 9033830106 READY User detected a software problem
__ 9033829765 PREPARED User detected a hardware problem on this AS/40
__ 9033756158 OPENED System cannot call controller . No lines avail
__ 9033745219 OPENED System cannot call controller . No lines avail
__ 9033456125 READY User detected a hardware problem on this AS/40
__ 9033455845 READY User detected a hardware problem on a differen
__ 9033455436 READY User detected a hardware problem not related t
__ 9033447351 OPENED System cannot call controller . No lines avail
__ 9033447270 OPENED No cable was detected on communications port 0
__ 9033446191 READY Test detected a hardware problem on a differen
__ 9033445335 READY User detected a hardware problem not related t
More...
F3=Exit F5=Refresh F6=Print list F11=View Display resource info
F12=Cancel F16=Report prepared problems F24=More keys
```

Figure 6-1. Work with Problems Display

**Note:** In Figure 6-1, the selections shown are based on the problem attributes. Other Work with Problems displays may look slightly different.

- If you have a problem ID, look for an entry with the same ID on the Work with Problems display. Select option 8 (Work with problem) for that problem you want to work with. Figure 6-2 shows the Work with Problem display that is shown after you press the Enter key.

```

                                Work with Problem
                                System:  SYSTEM01
Problem ID . . . . . : 9033830106
Current status . . . . . : READY
Problem . . . . . : User detected a software problem

Select one of the following:

    1. Analyze problem
    2. Report problem

    4. Verify problem corrected
    5. Answer problem

    20. Close problem

    30. Save APAR data to APAR library

Selection
   2
F3=Exit  F12=Cancel
                                Bottom
    
```

Figure 6-2. Work with Problem Display

**Note:** The options on your Work with Problems display may not look exactly as they look in this example. The options displayed depend on the status of the problem, the contents of the data in the problem log, and your security level.

- Select option 2 (Report problem) on the Work with Problem display. Figure 6-3 shows the Verify Contact Information display.

```

                                Verify Contact Information
                                System:  SYSTEM01
Type changes, press Enter.

Company . . . . . New Market RPL
Contact . . . . . John Smith
Mailing address:
  Street address . . . . . IBM Rochester
                               Hwy 52 and 37th Street
                               _____
  City/State . . . . . Rochester, MN
  Country . . . . . USA
  Zip code . . . . . 55901
Telephone numbers:
  Primary . . . . . 3-0000
  Alternative . . . . . _____
Language code . . . . . 2924 F4 for list

                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel
(C) COPYRIGHT IBM CORP. 1980, 1991.
    
```

Figure 6-3. Verify Contact Information Display

## Problem Handling

- To change any fields that appear on the Verify Contact Information display, type over the current information and press the Enter key. The new information is included in the service request.

To permanently change your default service support contact information, see Chapter 7 of the *System Operation* book.

- Select the severity level that closely relates to the severity of your problem on the Select Problem Severity display shown in Figure 6-4.

```

                                Select Problem Severity
                                System:  SYSTEM01
Problem ID . . . . . : 9033830106
Current status . . . . . : READY
Problem . . . . . : User detected a software problem

Select one of the following:

    1. High - Requires immediate solution
    2. Medium - Restricts function
    3. Low - Limits function
    4. None - Operates with full function

Selection
  2
F3=Exit  F12=Cancel
```

Figure 6-4. Select Problem Severity Display

The severity levels are:

Severity	Meaning
1	Inability to use the program resulting in a critical effect on operations. The condition requires an immediate solution that is not already available.
2	The program is usable but severely restricted.
3	The program is usable without some functions which are not critical to the overall operation.
4	A circumvention to the problem has been found.

- | Severity | Meaning  |
|----------|--|
| 1        | Inability to use the program resulting in a critical effect on operations. The condition requires an immediate solution that is not already available. |
| 2        | The program is usable but severely restricted.   |
| 3        | The program is usable without some functions which are not critical to the overall operation.  |
| 4        | A circumvention to the problem has been found.   |

- Select who should receive and process your request on the Select Service Provider display shown in Figure 6-5.



```

                                Select Service Provider
                                System:  SYSTEM01
Position to . . . . .          Control point
Network ID . . . . .
Type option, press Enter.
1=Select

Opt      Control
         Point      Network ID  Description
--
1_       *IBMSRV
         SOMEBODY   QAUSER1    IBM Service Support
         RCHASL1C   RPC        Some provider
         RCHAS110   RPC        System L1C
         RCHAS110   RPC        System 110

                                Bottom

F5=Refresh  F12=Cancel
(C) COPYRIGHT IBM CORP. 1980, 1992.

```

Figure 6-5. Select Service Provider Display

|  
|  
|  
|  
|  
|

**Note:** If a message appears indicating that the problem has not been analyzed, and your attempts at problem analysis fail, then do the following:

- a. Check the message queue to see if there are any messages concerning this problem. Follow the recovery instructions of these messages.
- b. Call your service representative if previous step does not apply.

7. Select when and how you want to send the service request on the Select Reporting Option display as shown in Figure 6-6.

```

                                Select Reporting Option
                                System:  SYSTEM01
Problem ID . . . . . : 9202829127
Current status . . . . . : OPENED
Problem . . . . . :

Select one of the following:

1. Send service request now
2. Do not send service request
3. Report service request by voice

Selection
—
F3=Exit  F12=Cancel

```

Figure 6-6. Select Reporting Option Display

If you want to send the service request now, see “Sending a Service Request Immediately” on page 6-16. To send the service request later, see “Sending a Service Request Later” on page 6-17. To report the problem by voice (telephone), see “Reporting Problems by Voice” on page 6-17.

### **Sending a Service Request Immediately**

If you decide to send the service request now, select option 1 (Send service request now) on the Select Reporting Option display. The problem log entry is packaged as a service request, your AS/400 system automatically dials the IBM service provider system, and the problem is transmitted to the service provider.

**Note:** Service requests can also be sent to other AS/400 systems that have the SystemView System Manager/400\* licensed program installed.

The service provider determines whether the request is for hardware or software service.

#### ***Hardware Service:***

If the service provider is IBM, and if no PTFs are found that match your problem symptoms, one of the following happens:

- Your request is sent to an IBM service representative.
- An IBM Customer Assistance Group representative calls you to assist in further problem definition.

The connection to the service provider system ends and the status of the problem in the problem log is changed to SENT.

#### ***Software Service:***

- A search is performed against the database of PTFs using the symptom string you created during problem analysis.
- If the service provider is IBM, a match is found, and a PTF is available, the PTF is transmitted to you electronically or a PTF tape is ordered and sent to you through normal mail channels. The size of the PTF and its requisites determine whether the PTF is sent electronically or mailed.

PTFs that you receive electronically are placed in QGPL library with a file name of the PTF number preceded by a Q and a file type of SAVF.

- If a match is not found or the PTF is not available, you see the Save APAR Data display, which saves the following information about your problem:
  - History log
  - Job information
  - Hardware and software resources
  - Error log entries
  - Vertical Licensed Internal Code log entries
  - Problem log entries
  - Pictures of displays

This information is forwarded to the IBM Software Support Center to help you solve your problem.

The connection to the service provider ends when you receive a PTF or when your problem is opened for further investigation. The status of the problem is changed to SENT or ANSWERED in the problem log.

### **Sending a Service Request Later**

If you decide to send a service request later, select option 2 (Do not send service request) on the Select Reporting Option display. The status of the problem in the problem log changes to PREPARED.

To submit a problem with PREPARED status follow the directions in “Reporting Problems Detected by the System” on page 6-12. When the problem is reported, the problem log entry is packaged as a service request, your AS/400 system automatically dials the service provider system, and the problem is transmitted to the service provider.

To report all problems in the problem log that have a status of PREPARED, do one of the following:

- On the Work with Problems display, press F16 (Report prepared problems).
- On any command line, type `sndsrvrqs *prepared` and press the Enter key.

The connection to the service provider system ends when you receive a PTF or when your problem is opened for further investigation. The status of the problem is changed to SENT or ANSWERED in the problem log.

### **Reporting Problems by Voice**

If you find that you are not connected to a telephone line, or your communications lines are down, you can report the problem by voice (telephone).

To report the problem by telephone, follow the directions in “Reporting Problems Detected by the System” on page 6-12. When you get to the Select Reporting Option display, select option 3 (Report service request by voice). The Report Service Request by Voice display gives you the telephone number of the service provider for your specific problem.

**Note:** If the service provider is IBM, IBM assigns a service number to the problem. To put this number in the problem log, press F14 (Specify service-assigned number) on the Report Service Request by Voice display.

### **Adding Notes to Your Problem Record**

To attach a note or add to an existing note in the problem record:

1. Use the Work with Problem (WRKPRB) command.
2. Select option 12 (Enter text) on the Work with Problems display. The Select Text Type display appears.
3. Select Option 1 (Problem description) to enter problem description. Only the text entered with this option are sent to the service provider along with the problem.

Notes should be done in the following format to keep a chronological record of events.

- On the first line, type a brief description of the problem.
- On the second line, type the current date.
- On the third line, type in the note that you want to send.

Use as many additional lines (up to 20) as you need.

Include in your notes:

## Problem Handling

- Any recent release update that you have applied to the system.
- Any changes you made in the system configuration.
- Any new program or feature that you are using.
- Anything that may be different since the last time the program was run.

### Finding a Previously Reported Problem

To find a previously reported problem, you need to know the IBM Service-assigned number, also known as the problem management record (PMR). Once you have this number, type the following on any command line:

```
WRKPRB SRVID(XXXXX)
```

where XXXXX is the PMR number and press the Enter key.

If you do not have the PMR number, use the Work with Problem (WRKPRB) command and search the list for the problems with a status of SENT, VERIFIED, ANSWERED, and CLOSED.

### Querying Problem Status

To retrieve the latest status of a previously reported problem, do the following:

#### *Method 1*

1. Type QRYPRBSTS on any command line, and press the F4 key. The Query Problem Status (QRYPRBSTS) display appears.

**Note:** Currently, the QRYPRBSTS command is not enabled for hardware problem query.

- 2.

- If you know the problem management record (PMR) number, type \*PMR in the Problem identifier field and press the Enter key. Additional fields appear on the display. Type the PMR number in the Service number field and press the Enter key.
- If you know the WRKPRB problem ID number, type the 10-digit ID number for the problem in the Problem identifier field and press the Enter key.

3. After the query is complete, enter:

```
WRKPRB xxxxxxxxxxxx
```

where xxxxxxxxxxxx is the 10-digit problem ID number. The Work with Problem display appears.

4. Type Option 12 (Enter text) next to the problem entry and press the Enter key. The Select Text Type display appears.
5. Select Option 10 (Query Status text). The Query results are shown.

#### *Method 2*

1. Type WRKPRB on any command line and press the Enter key. The Work with Problems display appears.
2. Find the problem entry for which you want to query the status. In order to start a query, the problem entry must have a status of Answered or Sent.
3. Type Option 8 (Work with problem) next to problem entry. The Work with Problem menu appears.

4. Select Option 41 (Query problem status text) The Results of the query are shown.

**Note:** The QRYPRBSTS command does not apply to problem entries that have Fix request specified in the problem description column of the Work with Problem display.

## Automated Problem Management

Automated Problem management functions provide automated problem analysis, as well as automated problem reporting for system detected problems.

### Automated Problem Analysis and Reporting

The automated problem analysis function runs problem analysis routines automatically when the system detects a problem. The problem reporting function notifies the service provider of the software problem. To run these functions, the appropriate service attributes must be set to \*YES. If these attributes are set to \*NO, you will need to run the problem analysis manually. The default value for service attributes is \*NO. For more information about running problem analysis manually, see “Reporting Problems Detected by the System” on page 6-12.

You may display the service attributes by using the Display Service Attribute (DSPSRVA) command, or change the service attributes by using the Change Service Attributes (CHGSRVA) command. Figure 6-7 shows the Display Service Attributes display.

```

                                Display Service Attributes (DSPSRVA)
                                System:  RCHAS730
System disabled reporting . . . . . : 18005551111
System disabled call back . . . . . : 18005553333
Analyze problem automatically . . . . . : *YES
Report problem automatically . . . . . : *YES
Report problem to:
  Control point name . . . . . : *IBMSRV
  Network Identifier . . . . . :
Service provider connection . . . . . : 18005552222
PTF install type . . . . . : *DLYIPL
Send data packet . . . . . : *YES
Critical messages to user . . . . . : *SYSOPR
                                       *SECOFR
                                       *SECADM
                                       *PGMR
                                       *USER

                                Bottom

Press Enter to continue.

F3=Exit  F12=Cancel
    
```

Figure 6-7. Display Service Attributes display

Figure 6-8 on page 6-20 shows the Change Service Attributes display.

```

Change Service Attributes (CHGSRVA)

Type choices, press Enter.

System disabled reporting . . . 18005551111
System disabled call back . . . 18005553333
Analyze problem automatically . *YES          *SAME, *NO, *YES
Report problem automatically . . *YES          *SAME, *NO, *YES
Report problem to:
  Control point name . . . . . *IBMSRV      Name, *SAME, *IBMSRV
  Network ID . . . . .          Name, *LCLNETID
Service provider connection. . . 18005552222
PTF install type . . . . .      *DLYIPL    *SAME, *DLYIPL, *DLYALL...
Send data packet . . . . .      *YES        *SAME, *NO, *YES
Critical messages to user . . . *SYSOPR    Name, *SAME, *SYSOPR...
                               *SECOFR
                               *SECADM
                               *PGMR
                               *USER

+ for more values

F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys
Bottom
  
```

Figure 6-8. Change Service Attributes display

To change service attributes, fill in the appropriate information in fields.

When \*Yes is specified in the Analyze problem automatically field, the problem determination procedures are run automatically at the time of the failure. The Problem determination procedures include programs that attempt to isolate or correct the problems. Automated problem analysis applies mostly to hardware problems, and some software problems in Licensed Internal Code. To determine which problems are analyzed automatically and which ones are not, use the Work with Problem (WRKPRB) command. If the status is Opened, it indicates that the problem has not been analyzed. For problems that are not analyzed automatically, you can use the Work with Problems (WRKPRB) command to run the problem analysis manually. See "Reporting Problems Detected by the System" on page 6-12 for more information on running problem problem analysis manually.

When \*Yes is specified in the Report problem automatically field, software problems are reported automatically to the service provider. Your service provider is specified in the Control point name field. For hardware problem reporting, contact your service provider.

For information about each field on the display, see the online help.

### Enabling Automated Remote System Reporting Options

With automated problem analysis and reporting functions, you can also set up automated remote service so that the problems can be reported to the remote service provider when your system is down. For example, your system stops working and a System reference code (SRC) such as B6000615 is shown on the control panel. This condition can automatically be reported to your service provider, who can then call you or send a service representative to help you with the problem. *PRPQ AS/400 remote Access Support for OS/2, 5799-FPH and Systemview System Manager/400*. For more details, contact your service provider. The remote service provider must have

| **Remote Access to Dedicated Service Tools (DST) and Remote**  
| **Control Panel**

| Remote access to DST and Remote Control Panel is available if you are using  
| *PRPQ AS/400 Remote Access for OS/2 Support, 5799-FPH.*

## Problem Handling



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## Appendix A. Problem Handling Tables and Procedures

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### Analyzing Problems with a Symptom

Please read the symptom index from top to bottom. Find the symptom that describes the problem and go to the procedure and page indicated.

Symptoms	Recovery Procedure and Page
You cannot power on the system.	Procedure 1 on page A-2
The system attention light is on, or a system reference code is displayed on the control panel	Procedure 2 on page A-2
A pushbutton or light on the control panel is not working properly	Procedure 3 on page A-3
You cannot perform an initial program load (IPL) or you suspect an operating system failure	Procedure 4 on page A-4
Your workstation or device (such as display or printer) is not working	Procedure 5 on page A-4
You are having a problem with a tape or optical device	Procedure 6 on page A-5
You are having a problem with a disk or diskette device	Procedure 7 on page A-5
You cannot communicate with another device or computer	Procedure 8 on page A-6
Your system seems to be in a loop or hang condition	Procedure 9 on page A-6
You are having an intermittent problem	Procedure 10 on page A-6
No symptom to match in the table	Go to "Getting Help with Problems" on page 6-9.

## Procedure 1–Recovering from System Power Problem

1. Make sure that the power that is supplied to the system is adequate. If your system units are protected by an emergency power off (EPO) circuit, check that the EPO switch is not activated.
2. Verify that your system power cables are properly connected to the electrical outlet.  
**Note:** When the power is available, the Function/Data display on the control panel is lit.
3. If you have uninterruptible power supply (UPS), verify that the cables are properly connected to the system, and the UPS is functioning.
4. Make sure all system units are powered on.
5. Turn on the system again.
6. Is a system reference code displayed on the control panel?

**Yes** Go to “Procedure 2–Recovering when attention light is on or SRC is displayed” on page A-2.

**No** Go to “Calling Your Hardware Service Representative” on page 6-10.

## Procedure 2–Recovering when attention light is on or SRC is displayed

In the table, xxxx can be any number 0 through 9 or letter A through F. If you cannot find the system reference code in this table, go to “Getting Help with Problems” on page 6-9.

Table A-1 (Page 1 of 2). List of System Reference Codes

System Reference Code Starting with 11-3	What You Should Do
0000 AABB 0000 AACC	You attempted a timed, remote, or automatic IPL with the system in the Secure or Manual mode. 1. Set the system to the Normal or Auto mode and do the IPL again. 2. If you are still not able to do an IPL, go to “Calling Your Hardware Service Representative” on page 6-10.
0000 AADD	You attempted a manual IPL with the system in the Secure or Auto mode. 1. Set the system to the Normal or the Manual mode and try the operation again. 2. If you are still not able to do an IPL, go to “Calling Your Hardware Service Representative” on page 6-10.
1xxx D101 1xxx D102	Battery Power Unit x failed. Battery Power Unit x test failed. Replace the battery power unit. See Appendix D, “Replacing Battery Power Unit” on page D-1 for information on how to replace the battery. If the battery still does not work after the replacement, Go to “Calling Your Hardware Service Representative” on page 6-10.
63xx xxxx	The tape unit failed. See “Procedure 6–Recovering from Tape or Optical Device Problem” on page A-5.
93xx xxxx	A disk or diskette Unit failed. See “Procedure 7–Recovering from Disk or Diskette Drive Problem” on page A-5.
A6xx 500x	Work station controller failure. See “Procedure 5–Recovering from Workstation Failure” on page A-4.
A1xx xxxx B1xx xxxx	IPL load device failure. See “Procedure 4–Recovering from IPL or System Failure” on page A-4.

Table A-1 (Page 2 of 2). List of System Reference Codes

System Reference Code Starting with 11-3	What You Should Do
A900 2000	<p>System Console may not have varied on, but the system console is still operational.</p> <p>If the system did not vary on, see "Procedure 11–Recovering When System Console did not Vary On" on page A-6.</p> <p>If the system varied on, check the QSYSARB job log for the message and follow the corrective actions indicated in the message. To view the QSYSARB job log, use the Work with Active Job (WRKACTJOB) command, and then select Option 10 (Display jobs) to view the job log. You need to have *QSECOFR authority to view the job log. If the same problem still exists, go to "Calling Your Hardware Service Representative" on page 6-10.</p>
B0xx xxxx	<p>Failure detected by communication Licensed Internal Code.</p> <ol style="list-style-type: none"> <li>1. Make sure the latest PTF package is installed.</li> <li>2. If this does not solve the problem, see "Calling Your Software Service Representative" on page 6-10.</li> </ol>
B6xx xxxx	<p>Not enough auxiliary storage.</p> <ol style="list-style-type: none"> <li>1. If your system unit has some disk storage space available, add more to auxiliary storage pool 1.</li> <li>2. If this does not solve the problem, go to "Calling Your Software Service Representative" on page 6-10.</li> </ol>
B9xx xxxx	<p>OS/400 installation failure</p> <p>Go to "Procedure 4–Recovering from IPL or System Failure" on page A-4.</p>
C1xx xxxx C3xx xxxx C5xx xxxx	<p>IPL status.</p> <p>This is a normal indication during the IPL. You may suspect a hang or loop condition if the SRC does not change during the two-minute period. See "Procedure 9–Recovering from System Hang or Loop Condition" on page A-6.</p>
D1xx xxxx	<p>Diagnostic status.</p> <p>This is a normal indication while the system main storage is being saved to disk.</p> <p>If the system is still not running correctly after 30 minutes, go to "Calling Your Hardware Service Representative" on page 6-10.</p>
D6xx xxxx	<p>Diagnostic status.</p> <p>This is a normal indication while the system is being powered down.</p> <p>If the system does not start normally after 30 minutes, go to "Calling Your Software Service Representative" on page 6-10.</p>

### Procedure 3–Recovering When Pushbutton or Light Is Not Working Properly

1. Is your control panel pushbutton working properly?
  - Yes** Continue with step 2.
  - No.** Try turning on the system again. If the same failure occurs, go to "Calling Your Hardware Service Representative" on page 6-10.
2. Is the control panel light working properly?
  - Yes** End of the procedure
  - No** Go to "Calling Your Hardware Service Representative" on page 6-10. If you have another control panel problem, also go to "Calling Your Hardware Service Representative" on page 6-10.

## Procedure 4—Recovering from IPL or System Failure

Verify the following:

- The device from which you did the IPL is powered on.
- The sign-on User ID and password are correct.
- The system is set to the correct mode (Manual, Normal, Auto or Secure).
- The system value for date/time is set correctly if this is a timed IPL.
- The Phone, modem, and QRMTIPL value are set up correctly if this is a remote IPL.

Do the following:

1. Do an IPL from the system control panel as follows:
  - a. Set the system to the Manual mode.
  - b. Select Function 03.
  - c. Press the Enter pushbutton to start an IPL.
2. Sign on the system when the Sign On display appears. If you do not see the Sign On display, do you have a new SRC?

**No** Go to “Getting Help with Problems” on page 6-9.

**Yes** Go to “Procedure 2—Recovering when attention light is on or SRC is displayed” on page A-2.
3. On the IPL Options display, specify YES for the following parameters:
  - Define or change the system at IPL
  - Clear output queues
  - Clear job queues
  - Clear incomplete job logs
4. Change the system value for QMCHPOOL to a smaller value.
5. Make sure the system value for QCTLSBSD has the correct spelling, or assign an alternative controlling subsystem.
6. Change the system value for QPWRDWNLMT to a larger value.
7. Continue IPL process. If the same failure occurs, set the system to the Normal mode, then go to “Calling Your Hardware Service Representative” on page 6-10.

## Procedure 5—Recovering from Workstation Failure

1. Make sure all workstations and devices (such as displays or printers) are turned on.
2. Make sure all workstation cables are attached properly and set to the proper address. For information about workstation address, see “Determining the Primary or Alternative Consoles” on page A-9 if you are using system console, and see *Local Device Configuration*, SC41-4121 if you are using other workstations.
3. Make sure recently attached workstations have been properly configured to the system.
4. Check all workstation printers for mechanical problems such as paper jams, ribbon failure and so on.

- Vary off the failing workstation controller if any other workstation is operational, and then Vary it on again. To vary on or off the workstation controller, do the following:

**Note:** You need to end all active jobs before varying off the workstation controller. To end active jobs, use the Work with Active Jobs (WRKACTJOB) command.

- Enter WRKCFGSTS \*CTL on any command line. The Work with Configuration Status display appears.
  - Specify **1** (Vary on) or **2** (Vary off) in the opt column next to your workstation controller, and press the Enter key.
- Try the operation again. If you still have the same problem, go to “Calling Your Hardware Service Representative” on page 6-10.

### Procedure 6—Recovering from Tape or Optical Device Problem

Verify the following:

- All tapes or optical devices are powered on and in a Ready (enabled) condition.
- Cables between the system and the tape or optical device are properly connected (if applicable).
- Tape density and tape bits per inch (BPI) matches.
- Tape path is cleaned.
- CD-ROM disc is clean and the format is supported.

Do the following:

- Do all the tapes or CD-ROM device fail to read or write?

**No.** Replace the tape and CD-ROM, and try the operation again. For more information about tape and optical device, see Chapter 4, “Using Media” on page 4-1. If the same failure occurs, Go to “Calling Your Hardware Service Representative” on page 6-10.

**Yes** Go to “Calling Your Hardware Service Representative” on page 6-10.

### Procedure 7—Recovering from Disk or Diskette Drive Problem

- Make sure that all disk and diskette devices are powered on and enabled.

**Note:** Some disk units may have enable switches.

- Make sure cables are properly connected between the system and disk or diskette device (if applicable).

- Do all diskettes fail to read or write?

**No** Replace the diskette and try the operation again. For more information about diskette, see Chapter 4, “Using Media” on page 4-1. If the same failure occurs, go to “Calling Your Hardware Service Representative” on page 6-10.

**Yes** Go to “Calling Your Hardware Service Representative” on page 6-10.

### Procedure 8—Recovering from Communication Problem

1. Make sure all communication equipment such as, modems or transceiver are powered on. Make sure all communication cables are properly connected.
2. Make sure the remote system is ready to receive your communication.
3. Verify the network equipment (or provider) is functional. This includes phone service.
4. Verify that the configuration is correctly specified for the failing communication or LAN facility.

If you still have the same problem, go to “Calling Your Hardware Service Representative” on page 6-10.

### Procedure 9—Recovering from System Hang or Loop Condition

The system appears unable to accept commands. This problem can be caused by system hardware or the system may be in a loop or hang condition.

Perform the following:

1. Take a system main storage dump. See “Performing a Main Storage Dump” on page A-7 for more information.

**Note:** System main storage dump gathers current data of the state of the system during the loop or hang condition. This information is critical for problem solving. Valuable diagnostic information will be lost if you do not collect the storage dump information before you try to do an IPL.

2. Call IBM Software Service after taking the system mainstore dump.

### Procedure 10—Recovering from Intermittent Problem

1. Enter the Analyze Problem (ANZPRB) command on any command line. The Select Type of System display appears.
2. Select Option 1 (This AS/400 or attached device). The Analyze problem display appears.
3. Select Option 3 (Hardware problem). The Problem Frequency display appears.
4. Select Option 1 (Yes) to get an intermittent checklist, and follow instructions.

If the problem still exists, go to “Getting Help with Problems” on page 6-9.

### Procedure 11—Recovering When System Console did not Vary On

1. Locate the workstation that is used as primary system console. see “Determining the Primary or Alternative Consoles” on page A-9 for information about determining system consoles.
2. Make sure the workstation cables are attached properly, and set to the correct address.
3. Can you sign on to an alternative console?  
**No** Go to Step 5 on page A-7.  
**Yes** Go to Step 4.
4. If you can sign on to an alternative console, do the following:

- a. Make sure the primary console controller (e.g. CTL01) and device description (e.g. DSP01) have been created or restored. To check device description, use the command WRKCFGSTS \*CTL.
- b. If descriptions exist, check the system operator message to determine why the primary console failed. Take corrective actions indicated in the message.

If you still can not solve the problem, set the system to the Normal mode, and go to “Calling Your Software Service Representative” on page 6-10.

5. If you can not sign on to an alternative console, do the following:

- a. Set the system to the manual mode, select function 3, and press the Enter pushbutton to start an IPL until you see the IPL Option display.
- b. Were you able to get to the IPL Option display?  
**No** Contact your IBM service representative.  
**Yes** Continue with Step 5c.
- c. On the IPL Options display, specify **Y** (Yes) in the Define or change system at IPL field, **N** (No) in the Set major system option field, and press the Enter key.
- d. On the Define or Change the System at IPL display, select Option 1 (Configuration commands), and press the Enter key. The Configuration Commands menu appears.
- e. Select Option 2 (Controller description commands) to see the controller description for the system console. Verify that the controller (e.g. CTL01) was created correctly.
- f. Select Option 3 (Device description commands) to see device description for the system console. Verify that the device (e.g. DSP01) was created correctly.

If you still can not solve the problem, set the system to the Normal mode, and go to “Calling Your Software Service Representative” on page 6-10.

---

## Performing a Main Storage Dump

A main storage dump (MSD) is a process of collecting data from the system's main storage. A main storage dump can be performed in the following ways:

- Automatically - by the service processor as the result of a system failure. No user action required.
- Manually - by performing a Function 22 on the control panel when the system waits, loops, or appears to have an operating system failure.

## Perform Main Storage Dump to the System Storage

This procedure helps you in managing the existing Main Storage Dump (MSD) information on your system.

To display or record MSD summary and report the information to your service, do the following:

1. Select Option 1 (Work with current Main Storage Dump). The Work with Current Main Storage Dump display appears.

## Analyzing problems with a symptom index table

2. Select Option 1 (Display Main Storage Dump). The Display Main Storage Dump display appears.
3. Select Option 1 (Display MSD summary). The Display MSD Summary display appears.
4. Record and report the summary information to your service provider.
5. Press F3 (Exit) to return to the Main Storage Dump Manager Display.
6. Copy existing MSD to a predefined MSD storage area on the system. This may prevent the MSD from being overwritten by possibly another dump.
  - a. On the Main Storage Dump Manager display, select Option 1 (Work with current Main Storage Dump). The Work with Current Main Storage Dump display appears.
  - b. Select Option 3 (Copy main storage dump to MSD copy). The Copy Main Storage Dump to MSD Copy display appears. This display show the system reference code, date and time of the MSD. It also displays a message indicating whether the MSD has been completed.

If the message indicates "Copy completed normally", you are done with this procedure, and you can continue with the procedure in topic "Purge Dumps from Main Storage Dump" on page A-8.

If you do not see the Message "Copy completed normally", continue with step 7.
7. Has your service provider requested a tape for copying the MSD?
  - No** Work with your service provider on the problem.
  - Yes** Go to Step 8.
8. To copy MSD to a tape device, do the following:
  - a. Select Option 1 (Work with current main storage dump). The Work with Current Main Storage Dump display appears.
  - b. Select Option 2 (Copy Main Storage Dump to Media). The Copy Main Storage Dump to Media display appears.
  - c. Load the media and follow the instruction on the display.
  - d. When the copy procedure is successfully completed, process the tape according to your service provider's instruction. If you encounter a problem with the copy procedure, contact your service provider.

## Purge Dumps from Main Storage Dump

This procedure is used when dump copies are no longer needed by your service provider.

1. On any command line, enter STRSST.
2. Select Option 1 (Start a service tool). The Start Service tool display appears.
3. Select option 6 (Main storage dump manager). The Main Storage Dump Manager display appears.
4. Select Option 2 (Work with copies of main storage dumps). The Work with Copies of Main Storage Dumps display appears. From this display, you can see the dump copy information. If you want to delete any dump copies, type 4 next to the dump copies, and press the Enter key. If you do not want to delete any dump copies, press F3 (Exit) three times to exit SST.



## Performing a Main Storage Dump to Disk

To place the data from system's main storage to the load-source disk, perform the following procedure:

1. **Attention** Verify that there are no interactive jobs running.
  - a. Select Manual mode.
  - b. Use the Select pushbutton (increment or decrement) to display Function 22 (main storage dump).
  - c. Press Enter pushbutton on the control panel.
2. Is 22 0000 0000 displayed on the control panel for more than 30 seconds?

**No      Yes**

↓      The multiple function IOP or service processor is not responding to a request from the control panel.

Go to "Getting Help with Problems" on page 6-9.

**This ends the procedure.**

3. An attention SRC is displayed, A1xx 3022, indicating that Function 22 has been selected. Reselect Function 22, press Enter on the control panel, and wait for the dump to complete.
4. Did the main storage dump complete successfully?

**Note:** The appearance of a A1xx 300x SRC on the control panel or on the Main Storage Dump display indicates a successful MSD.

**No      Yes**

↓      Return to the procedure that sent you here.

**This ends the procedure.**

5. Go to "Getting Help with Problems" on page 6-9.

**This ends the procedure.**

---

## Determining the Primary or Alternative Consoles

The primary console is a workstation that is attached to the first Input/Output Processor that is capable of supporting workstations.

In addition to the primary console, the system can assign up to two alternative consoles. The 1st alternative console can only be a TWINAX workstation that is attached to the same IOP as the primary console. The 2nd alternative console is a workstation that is attached to the next IOP that is capable of supporting workstations.

The IOP that supports the console must be on the first system bus (bus 1).

If a workstation is not correctly attached to the first IOP that is capable of attaching workstations, then the system will not assign a primary console. The system will display a reference code on the operators panel. In addition, if the IPL mode is set to Manual, the system will stop.

### Primary console workstation requirements

In order to be the primary console, the workstation must be operational and have the correct port and address. If the workstation is a PC, it must also have an active emulation program on the workstation.

The workstation requirements are:

- TWINAX workstation
  - Port 0 Address 0
- ASCII workstation
  - Port 0
- PC attached to ASCII IOP
  - Port 0
  - PC software to emulate a 316x or 3151 terminal
- PC attached to TWINAX IOP
  - Port 0 Address 0
  - 5250 emulator software active on PC
- PC attached to a LocalTalk IOA (6054)
  - SNA\*ps 5250 Version 1.2 (or above) application
  - Console capable selected on MacIntosh (IOA converts to Port 0 Address 0)
- PC attached to a 2609 or 2612 communications IOA
  - Client Access Console cable attached to the 2609 or 2612 (part number 46G0450 or 46G0479)
  - 5250 emulation or Rumba active on PC

### Finding Primary Console When System Is Operational

The following methods can be used to find the primary console:

**Method 1:** Look for a sign-on display with a DSP01 in the upper right corner.

**Method 2:** If the device name (DSP01) for the console has been changed, you can verify the device name for the primary console by doing the following:

1. Enter DSPCTLD QCTL on any command line. The Display Controller Description display appears. Find the Resource name parameter (such as CTL01) and record it.
2. Enter PRTDEVADR rrrrr on any command line,  
where rrrrr is the resource name you recorded.

If the printer is active, the data will be printed.

#### **Method 2**

1. Enter STRSST on any command line. The System Service Tools (SST) appears.
2. Select Option 1 (Start a service tool). The Start a Service Tool display appears.
3. Select Option 7 (Hardware Service Manager). The Hardware Service Manager display appears.

4. Select Option 2 (Logical Hardware resources). The Logical Hardware Resources display appears.
5. Select Option 1 (System bus resources). The Logical Hardware Resources on System Bus appears. The < symbol indicates the IOP that the system console is attached to. You can use Option 9 (Resource associate with IOP and display detail) to find location of system bus, board and card.

### Finding Primary Console When System Power Is Off

Use one of the following:

- Power on the system in the Manual mode and look for the IPL and Install System display.
- Power on the system in the Normal mode and look for DSP01 on the sign on display

**Note:** The name may have been changed. Reference “Finding Primary Console When System Is Operational” on page A-10 to determine the display name.

---

### Using the Macintosh as the AS/400 Console

A locally attached Macintosh can be configured as the AS/400 console to perform functions including:

- Initial program load (IPL)
- Licensed program installation
- Service functions

Only one workstation attached to the AS/400 system can be active as the console. For service reasons, the workstation used as the console should be located within 20 feet of the AS/400 system.

To configure the Macintosh as the AS/400 console, use the following procedure:

1. Connect the LocalTalk cable to the AS/400 system. To be used as the AS/400 console, the Macintosh must be attached to the first workstation adapter on bus 0.
2. On the Macintosh, do the following:
  - a. Double click on the icon for the hard drive on which the SNA•ps™ folder is installed.
  - b. Double click on the SNA•ps™ folder.
  - c. Double click on the 5250 Access/AT Documents folder.
  - d. Double click on the Console document.
3. Power on the AS/400 system with the system in Manual mode.
4. Wait for the AS/400 System Menu to appear on the Macintosh display.
5. Save the console selection on the Macintosh for subsequent IPLs (choose Save from the File menu).

## Multiple AS/400 Connections on a Network

The SNA•ps 5250 connection dialog box shows AS/400 systems to which you can connect in the AS/400 Controllers list. If the Macintosh can connect to more than one AS/400 system, you need to know the serial number of the IOP on the AS/400 system.

The values shown in the AS/400 Controllers list are in the following format:

Ixxxxxxx Sy

Where:

- xxxxxxxx is the serial number of the AS/400 IOP.
- y is the slot number of the controller.

S0, S1, and S2 represent the position of the 6054 Workstation Adapter used for LocalTalk connections. Slot 5 (S5) represents 6055 or 6056 virtual controllers used for local area network connections.

Use the WRKHDWRSC command to determine the serial numbers of the AS/400 IOPs.

## SNA•ps 5250 Keyboard Mapping

The SNA•ps 5250 Version 1.2 application determines the keyboard mapping used by the Macintosh computer for AS/400 sessions. You can use the following procedure to view or edit the current keyboard mapping for any Macintosh keyboard:

1. From the Macintosh desktop, double-click on the hard drive icon.
2. Double-click on the SNA•ps™ Folder icon to open the folder.
3. Double-click on the SNA•ps 5250 icon to open the application.
4. Choose Keyboard Map from the Preferences menu.
5. The Keyboard Map display appears. You can edit the keyboard map by dragging control keys from the palette to the keyboard or by dragging keyboard keys to the trash.

The Keyboard Map display shows the keyboard map for unshifted keys. Press *Shift*, *Option*, *Command + Option*, *Command + Shift*, and *Command + Shift + Option* to see the keyboard mappings for these key combinations. Figure A-1 shows the Macintosh Command key.



Figure A-1. Macintosh Command Key

To reset the default keyboard map, choose Use Default Map from the Edit menu.

Table A-2 shows the default SNA•ps 5250 keyboard equivalents for some of the 5250 keys that do not appear on Macintosh keyboards. The equivalents shown in Table A-2 are specific to the Macintosh Extended Keyboard.

AS/400 Function	Default SNA•ps 5250 Keyboard Equivalent
Reset	esc

## Analyzing problems with a symptom index table

*Table A-2. Macintosh Extended Keyboard Equivalents for Common AS/400 Functions*

<b>AS/400 Function</b>	<b>Default SNA•ps 5250 Keyboard Equivalent</b>
Attention (Attn)	<i>scroll lock</i>
System Request (SysReq)	<i>Option + esc</i>
F13 through F24	<i>Shift + F1 through F12</i>

For more information about keyboard mapping, see the documentation provided with SNA•ps 5250 Version 1.2 and the *Macintosh User's Guide*.

**Analyzing problems with a symptom index table**

---

## Appendix B. Problem Summary Forms

The Problem Summary Form is used to record information displayed on the system unit control panel. When you perform problem analysis in Chapter 6, "Handling and Reporting System Problems" you may be instructed to fill out this form so your service representative can further analyze the problem. The form should be removed from the binder when used.

There are two forms, one for each of the following:

1. 9402/9404 Models 4xx
2. 9404/9406 Models 5xx

There is one form for each type of control panel. Use the form that matches the control panel for your system.

Make copies of a blank form to use if you need more forms.

# Problem Summary Form – 9402/9404 Models 4xx

Date and time that the problem occurred: \_\_\_/\_\_\_/\_\_\_ \_\_\_:\_\_\_:\_\_\_

PMR or service request number: \_\_\_\_\_

Describe the problem: \_\_\_\_\_

Message ID	Message Text	From/Send Program	Instruction Number	To/Receive Program	Instruction Number
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

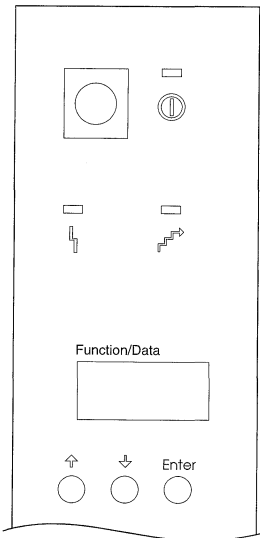
**1** Record the mode.

**2** Set the mode to Manual.

**3** Place a check on the line below to indicate which lights on the control panel are on.

- Power On
- Processor/Active/Activity
- System Attention

9402/9404 Models 4XX



RV3P020-1

**4** Press the Select pushbutton (increment or decrement) until 11-3 is shown in the Function/Data display. Press the Enter pushbutton.

**5** Record the 8 characters shown in the Data display for Function 11-3.



11XX	
12XX	
13XX	
14XX	
15XX	
16XX	
17XX	
18XX	
19XX	
20XX	

6 Press the Select pushbutton (increment). This action steps the function/Data display to the next higher number (12, 13, and so on) and blanks the Data display.

7 Press the Enter pushbutton. This action shows a new set of eight characters in the Data display. Record this data on the form.

8 Repeat steps 6 and 7 until all data has been recorded through Function 20. All functions may not be displayed, depending on the failure.

9 Set the same mode as recorded in step 1 of this form. Press the Select pushbutton (increment or decrement) until the number 11-3 is shown in the Function/Data display. Press the Enter pushbutton. The original system reference code (SRC) appears.

10 Return to the step that sent you here.

Comments: \_\_\_\_\_  
\_\_\_\_\_

# Problem Summary Form – 9404/9406 Models 5xx

Date and time that the problem occurred: \_\_\_/\_\_\_/\_\_\_ \_\_\_:\_\_\_:\_\_\_

PMR or service request number: \_\_\_\_\_

Describe the problem: \_\_\_\_\_

Message ID	Message Text	From/Send Program	Instruction Number	To/Receive Program	Instruction Number
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

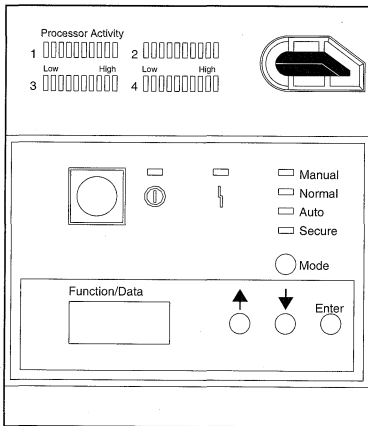
**1** Record the mode.

**2** Set the mode to Manual.

**3** Place a check on the line below to indicate which lights on the control panel are on.

- Power On
- Processor/Active/Activity
- System Attention

9404/9406 Models 5XX



RV3P019-1

**4** Press the Select pushbutton (increment or decrement) until 05 is shown in the Function/Data display. Press the Enter pushbutton.

**5** Record the 8 characters shown in the Data display for Function 05.

05	
11XX	
12XX	
13XX	
14XX	
15XX	
16XX	
17XX	
18XX	
19XX	
20XX	

**6** Press the Select pushbutton (increment). This action steps the function/Data display to the next higher number (11-3, 12, 13, and so on) and blanks the Data display.

**7** Press the Enter pushbutton. This action shows a new set of 8 characters in the Data display. Record this data on the form.

**8** Repeat steps 6 and 7 until all data has been recorded through Function 20. All functions may not be displayed, depending on the failure.

**9** Set the same mode as recorded in step 1 of this form. Press the Select pushbutton (increment or decrement) until the number 11-3 is shown in the Function/Data display. Press the Enter pushbutton. The original system reference code (SRC) appears.

**10** Return to the step that sent you here.

Comments: \_\_\_\_\_

---

## Problem Summary Forms

---

## Appendix C. Control Panel Status Forms

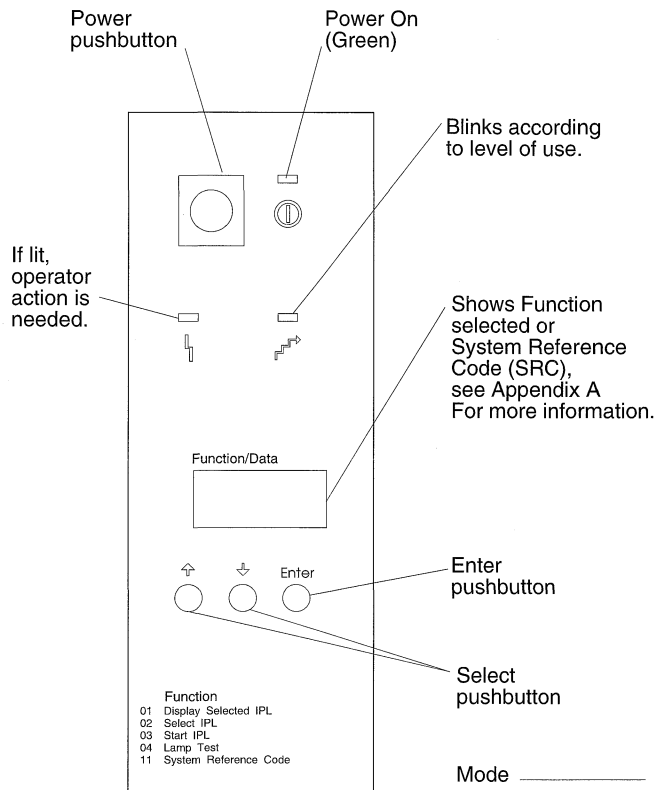
The System Control Panel Status form is used for you to keep all of your important control panel information in one place, should you need to call for assistance.

There is a separate form for the 9402/9404 Models 4xx, 9404/9406 Models 5xx System Units.

Fill out one of the forms and post it near your system unit or keep it in an accessible place. If you have problems with your system, refer to this sheet for information on what the different problem signals are and the phone number to call if you are having problems. For information on the different types of problems and who to call for them, see "Getting Help with Problems" on page 6-9.

## Control Panel Status Forms

### 9402/9404 Models 4xx Control Panel Status Form



Mode \_\_\_\_\_  
RV3P021-1

**IBM Customer Number:** \_\_\_\_\_

**Computer Serial Number:** \_\_\_\_\_

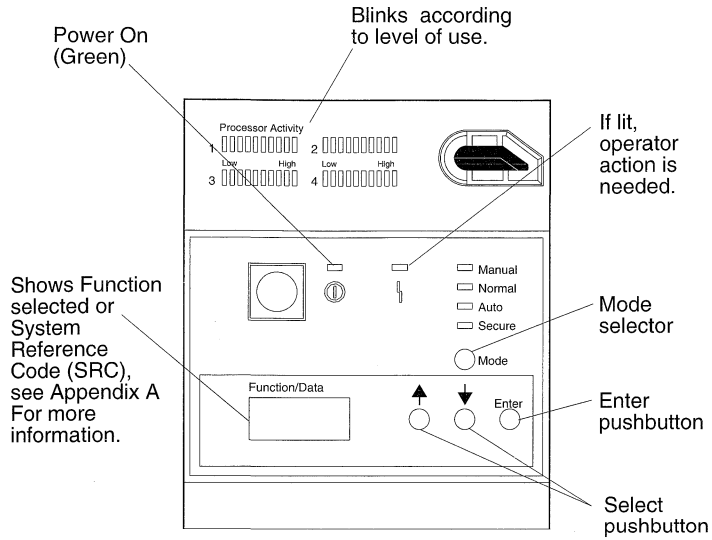
**AS/400 Model 9402/9404-** \_\_\_\_\_

**IBM Business Partner/Marketing Team Number:** \_\_\_\_\_

**IBM Software Service Number:** \_\_\_\_\_

**IBM Hardware Service Number:** \_\_\_\_\_

### 9404/9406 Models 5xx Control Panel Status Form



Mode \_\_\_\_\_

RV3P022-0

**IBM Customer Number:** \_\_\_\_\_

**Computer Serial Number:** \_\_\_\_\_

**AS/400 Model 9404/9406-** \_\_\_\_\_

**IBM Business Partner/Marketing Team Number:** \_\_\_\_\_

**IBM Software Service Number:** \_\_\_\_\_

**IBM Hardware Service Number:** \_\_\_\_\_



## Appendix D. Replacing Battery Power Unit

Replace the battery power unit when the system reference code (SRC), 1xxx D101 or 1xxx D102 is shown on the system control panel. The part number for the battery power unit is 86G8040.

1. Do not power off the system.
2. Remove the front cover **1**.
3. Pull out and lift to remove the screen **2**.

**Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the card enclosure.

Ensure that the system is not running on battery power. As a test, be sure that the console accepts system commands before removing the battery power unit.

4.

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

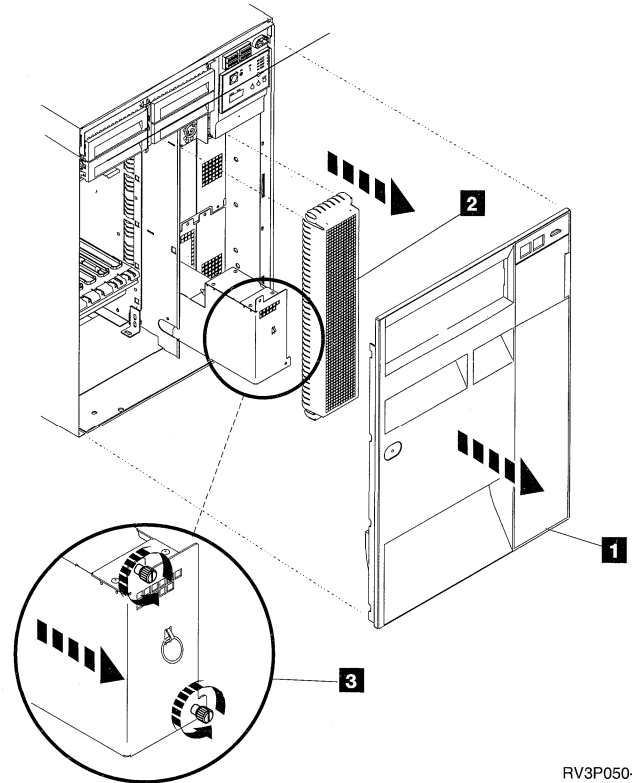
Loosen the screws and use two hands to pull the battery power unit out **3**.

5. Install the battery power unit by reversing the removal procedure.

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

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

(RSFTC225)



RV3P050-1

# Replacing Battery Power Unit

---

## Bibliography

You may need to refer to other IBM manuals for more specific information about a particular topic. The following IBM AS/400 manuals contain information that you may need.

For information about planning, installation, and migration:

- *Local Device Configuration*, SC41-4121, provides information about how to do an initial configuration and how to change that configuration. It also contains conceptual information about device configuration.
- *Software Installation*, SC41-4120, provides step-by-step procedures for initial install, installing licensed programs, program temporary fixes (PTFs), and secondary languages from IBM.
- *ASCII Work Station Reference*, SA41-3130, provides information on how to use ASCII work stations attached to the AS/400 system. It describes how to adjust the settings of ASCII work stations and provides information on keyboard mappings and character code mappings.

This manual also describes the process of ASCII device setup and provides examples about ASCII device setting adjustments. It also contains information on special considerations for personal computer setting adjustments, and auxiliary printer setting adjustments.

For information about system use:

- *Getting Started with AS/400*, SC41-4204, is for new or novice AS/400 users to help them get started on the AS/400 system. The booklet shows how to perform simple tasks on the system in a short time (2 or 3 hours) and introduces them to key functions on the AS/400.
- *System Operation for New Users*, SC41-3200, provides beginner information about how to sign on and off; send and receive messages; respond to keyboard error messages; use function keys; use display, command, and help information; and control and manage jobs.
- *System Operation*, SC41-4203, provides information about handling messages, working with jobs and printer output, devices communications, working with support functions, cleaning up your system, and so on.
- *Managing OfficeVision/400*, SH21-0699, provides information on how to manage the day-to-day activities of OfficeVision for OS/400. It also includes information on maintaining office enrollment and creating and managing office objects.

- *Q & A Database Coordinator's Guide*, SC41-8088, describes how to use Question-and-Answer (Q & A) to search through questions and answers stored in a Q & A database on the system. This manual also includes information about creating a Q & A database.

For information about system management

- *Security – Basic*, SC41-3301, explains why security is necessary, defines major concepts, and provides information on planning, implementing, and monitoring basic security on the AS/400 system.
- *Backup and Recovery – Basic*, SC41-4304, contains information about planning a backup and recovery strategy, the different types of media available to save and restore system data, save and restore procedures, and disk recovery procedures. It also describes how to install the system again from backup.
- *Backup and Recovery – Advanced*, SC41-4305, describes how to plan for and set up user auxiliary storage pools (ASPs), mirrored protection, and checksums, along with other availability recovery topics. It also provides information about journaling and save-while-active.
- *Work Management*, SC41-4306, provides information about how to create and change a work management environment. Other topics include a description of tuning the system, collecting performance data including information on record formats and contents of the data being collected, working with system values to control or change the overall operation of the system, and a description of how to gather data to determine who is using the system and what resources are being used.
- *System Manager/400 Use*, SC41-4321, provides information about the commands and functions available when the SystemView System Manager/400 licensed program is installed on one or more AS/400 systems in a network. This manual also provides setup procedures and information for maintaining a network of AS/400 systems.
- *Performance Tools/400*, SC41-4340, provides information about what Performance Tools/400 are, gives an overview of the tools, and tells how the tools can be used to help manage system performance. The manual gives instructions on how to approach the analysis of system performance and how to do system performance measurement, reporting, capacity planning, and application analysis. This manual also includes information about additional functions and related commands for further analysis. provides information on AS/400

Performance Tools and how they can help manage system performance.

For more information about communications and connectivity:

- *SNA Distribution Services*, SC41-3410, provides information about administering data communications applications on an AS/400 system.
- *Communications Management*, SC41-3406, provides information on how to start, stop, verify, and test communications, handle communications errors, and work with communications status.
- *Communications Configuration*, SC41-3401, provides information on how to configure the communications functions available with the OS/400 licensed program, including detailed descriptions of network interface, line, controller, device, mode, and class-of-service descriptions; configuration lists; and connection lists.

For information about program enablers

- *Printer Device Programming*, SC41-3713, provides information on printing elements and concepts of the AS/400 system, printer file and print spooling support for printing operation, and printer connectivity.

- *System/36 Environment Programming*, SC41-4730, provides information identifying the differences in the applications process in the System/36 environment on the AS/400 system. It helps the user understand the functional and operational differences (from a System/36 perspective) when processing in the System/36 environment on the AS/400 system. This includes an environment functional overview, considerations for migration, programming, communications, security, and coexistence.
- *System/36 Environment Reference*, SC41-4731, provides information about using System/36 procedure control expressions, procedures, operation control language (OCL) statements, control commands, and utilities on the AS/400 system.

For information about program interfaces:

- *System API Reference*, SC41-4801, provides information on how to create, use, and delete objects that help manage system performance, use spooling efficiently, and maintain database files efficiently. This manual also includes information on creating and maintaining the programs for system objects and retrieving OS/400 information by working with objects, database files, jobs, and spooling.

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# Index

## Special Characters

(WRKPRB) Work with Problem command

## Numerics

### 1/2-inch tape cartridge

- cleaning 4-16
- storing data 4-17
- using 4-16
- volume statistics 4-24

### 1/2-inch tape reel

- loading 4-19
- storing data 4-19
- using 4-17
- volume statistics 4-24

### 1/2-inch tape reel unit

- cleaning 4-19
- when to clean 4-19

### 1/2-inch tape unit

- addressing 4-15
- automatic cartridge loader operation 4-13
- backing up data 4-15
- cleaning 4-15, 4-16
- models 4-13
- restoring data 4-15
- using 4-13

### 1/4-inch mini tape cartridge

- environment ranges 4-8
- guidelines for using 4-4
- loading 4-5
- operating 4-8
- shipping 4-8
- storing 4-8
- storing data 4-7
- unloading 4-6
- using 4-3

### 1/4-inch mini tape unit

- cleaning 4-3
- using 4-3

### 1/4-inch tape cartridge

- environment ranges 4-8
- error 4-4
- guidelines for using 4-4
- illustration 4-4
- loading 4-5
- operating 4-8
- shipping 4-8
- storing 4-8
- storing data 4-7
- unloading 4-6
- using 4-3

### 1/4-inch tape cartridge (continued)

- volume statistics 4-24

### 1/4-inch tape unit

- cleaning 4-3
- using 4-3

### 3480, 3490, 3490E, 3590 tape unit

- sharing systems with 4-14

### 8-mm tape cartridge

- erasing 4-13
- loading 4-12
- storing tape 4-13
- unloading 4-12
- volume statistics 4-24

### 8-mm tape unit

- cleaning 4-8
  - attention notice 4-8
- tape cartridge to use 4-11
- using 4-8, 4-11

### 9402/9404 Models 4xx 1-1

- control panel status form C-2
- problem summary form B-1

### 9404/9406 Models 5xx 1-1

- control panel status form C-2
- problem summary form B-1

## A

### A storage area

- changing 5-18
- description 5-18
- displaying 5-18

### access path

- definition 2-13
- editing during attended IPL 2-13

### accessing

- Operational Assistant 3-1

### adding

- notes to your problem record 6-17

### address display

- SPCN 1-6

### addressing

- 1/2-inch tape unit 4-15

### advanced assistance level 3-1

### advanced PTF topics 5-19

### alternative console, determining A-9

### Analyze Problem (ANZPRB) command 5-1, 6-7, 6-11

### analyzing

- new problem 6-11

### ANZPRB (Analyze Problem) 6-11

### ANZPRB (Analyze Problem) command 6-7

**application program**

PTF 5-20

**Apply Program Temporary Fix (APYPTF)**

command 5-21

**applying**

delayed program temporary fix (PTF) 5-20

immediate program temporary fixes (PTFs)

method 5-20

permanently without an IPL 5-23

temporarily without an IPL 5-23

Licensed Internal Code fixes

at the next unattended IPL 5-24

immediately 5-24

program temporary fix (PTF)

permanently during an attended IPL 5-22

permanently during an unattended IPL 5-21

remote system 5-28

temporarily during an attended IPL 5-22

temporarily versus permanently 5-21

**APYPTF (Apply Program Temporary Fix)**

command 5-21

**AS/400 system**

See system

**assistance level**

advanced 3-1

basic 3-1

definition 3-1

intermediate 3-1

using 3-1

**attachable device**

list 1-1

**attended initial program load (IPL)**

applying PTFs permanently during 5-22

applying PTFs temporarily during 5-22

definition 2-1

doing when power is off 2-7

doing when the power is on 2-7

editing access paths during 2-13

editing check pending constraints during 2-15

**attention light A-2****attention notice**

cleaning

8-mm tape unit 4-8

Initialize Tape (INZTAP) command 4-20

power pushbutton 2-23

powering down the system 2-21

removing tape cartridge from tape unit 4-6

tape cartridge cleaning 4-16

Work with Device Description (WRKDEVD)

command 4-14

WRKDEVD (Work with Device Description)

command 4-14

**auto mode (system unit) 1-3, 1-5****automated problem analysis****automated remote service 6-19, 6-20****automatic cartridge loader operation**

1/2-inch tape unit 4-13

**automatic IPL after power is restored (QPWRRSTIPL) system value 2-12****automatic power schedule**

solving problems 2-6

**B****B storage area**

changing 5-18

description 5-18

displaying 5-18

**backing up**

data

using 1/2-inch tape unit 4-15

**basic assistance level 3-1****Battery**

replacing D-1

**battery power unit 1-7****bypassing**

system password 2-17

**C****calling**

hardware service representative 6-10

IBM business partner 6-9

marketing representative 6-9

software service representative 6-10

**cartridge**

loader operation

1/2-inch tape unit 4-13

**cartridge, tape**

See tape cartridge

**CD-ROM**

installing cumulative PTF packages from 5-14

loading and unloading 4-30

using 4-30

**Change power on/off defaults option**

Power On and Off Tasks menu 2-4

**changing**

configuration during IPL 2-10

network attribute

during IPL 2-10

power on and off schedule

defaults 2-4

entries 2-5

individual days 2-5

service support contact information 6-14

storage area for IPL source 5-18

system attribute

during IPL 2-10

system password 2-17

system value

during IPL 2-10

method 2-10

**changing** *(continued)*

- user profile
- during IPL 2-10

**check pending constraint**

- editing during attended IPL 2-15

**Check Product Option (CHKPRDOPT)**

- command 6-1

**Check Tape (CHKTAP) command 4-6**

**checking**

- licensed program installation 6-1
- product installation 6-1
- tape cartridge 4-6

**CHKPRDOPT (Check Product Option)**

- command 6-1

**CHKTAP (Check Tape) command 4-6**

**cleaning**

- 1/2-inch tape cartridge 4-16
- 8-mm tape unit
  - attention notice 4-8
- diskette 4-24
- tape cartridge
  - attention notice 4-16
- tape unit
  - 1/2-inch 4-15, 4-16, 4-19
  - 1/4 inch 4-3
  - 1/4-inch mini 4-3
  - 8-mm 4-8

**Clear Diskette (CLRDKT) command 4-26**

**clearing**

- diskette 4-26

**client-server series 1-2**

**CLRDKT (Clear Diskette) command 4-26**

**code**

- list of system reference (SRC) A-2

**collecting**

- system reference codes (SRCs) 6-8

**command, CL**

- Analyze Problem (ANZPRB) 6-7
- ANZPRB (Analyze Problem) 5-1, 6-7, 6-11
- Apply Program Temporary Fix (APYPTF) 5-21
- APYPTF (Apply Program Temporary Fix) 5-21
- Check Product Option (CHKPRDOPT) 6-1
- Check Tape (CHKTAP) 4-6
- CHKPRDOPT (Check Product Option) 6-1
- CHKTAP (Check Tape) 4-6
- Clear Diskette (CLRDKT) 4-26
- CLRDKT (Clear Diskette) 4-26
- Copy File (CPYF) Command 5-8
- Copy Program Temporary Fix (CPYPTF) 5-29
- CPYF (Copy File) command 5-8
- CPYPTF (Copy Program Temporary Fix) 5-29
- Delete PTF (DLTPTF) 5-27
- Display Program Temporary Fix (DSPPTF) 5-4, 5-17
- DLTPTF (Delete PTF) 5-27
- DSPPTF (Display Program Temporary Fix) 5-4, 5-17

**command, CL** *(continued)*

- DUPDKT (Duplicate Diskette) 4-27
- Duplicate Diskette (DUPDKT) 4-27
- Duplicate Tape (DUPTAP) 4-22
- DUPTAP (Duplicate Tape) 4-22
- GO (Go to Menu) 3-2
- GO LICPGM 5-14
- GO PTF 5-12
- Go to Menu (GO) 3-2
- Initialize Diskette (INZDKT) 4-26
- INZDKT (Initialize Diskette) 4-26
- Load Program Temporary Fix (LODPTF) 5-20
- LODPTF (Load Program Temporary Fix) 5-20
- Power Down System (PWRDWNSYS) 1-5
- PWRDWNSYS (Power Down System) 1-5
- QRYPRBSTS (Query Problem Status) 6-18
- Remove Program Temporary Fix (RMVPTF) 5-21, 5-26
- RMVPTF (Remove Program Temporary Fix) 5-21, 5-26
- Send Program Temporary Fix Order (SNDPTFORD) 5-2, 5-9
- SNDPTFORD (Send Program Temporary Fix Order) 5-2, 5-9
- Start System Service Tools (STRSST) 4-22
- STRSST (Start System Service Tools) 4-22
- Work with Device Description (WRKDEVD) 4-14
- Work with Subsystem Descriptions (WRKSBSD) 2-20
- WRKDEVD (Work with Device Description) 4-14
- WRKPRB (Work with Problem) 5-1, 6-7, 6-11, 6-18
- WRKSBSD (Work with Subsystem Descriptions) 2-20

**communication problem A-6**

**configuration**

- changing during IPL 2-10
- enabling during IPL 2-9

**console, primary and alternative A-9**

**constraint**

- definition 2-15

**contact information**

- changing your service support 6-14

**control panel**

- illustration
  - 9402/9404 Models 4xx 1-2
  - 9404/9406 Models 5xx 1-2
- status forms C-1
- system expansion or extension tower 1-5
- system unit 1-2

**Copy File (CPYF) command**

- printing Information APAR 5-8

**Copy Program Temporary Fix (CPYPTF)**

- command 5-29

**copying**

- diskette 4-27
- programming temporary fix (PTF) cover letters from magnetic tape 5-3

**copying** *(continued)*

tape 4-22

**correcting common tape unit errors**

procedure 4-2

**corrective service**

definition 5-1

**cover letter, PTF**

copying

from CD-ROM 5-3

from magnetic tape 5-3

**CPYF (Copy File) command**

printing Information APAR 5-8

**CPYPTF (Copy Program Temporary Fix)**

**command** 5-29

**creating**

problem record 6-6

**cross-reference summary list (PTF)**

receiving 5-9

ordering 5-9

**cumulative PTF package**

content 5-1

definition 5-1

displaying level 5-18

installing 5-14

installing high-impact pervasive (HIPER) PTFs 5-15

loading PTFs from 5-19

omitting PTFs in

before the next IPL 5-27

ordering 5-1, 5-2, 5-8

preventive service planning (PSP) information 5-10

receiving 5-1

**current storage area**

A (permanent) 5-18

B (temporary) 5-18

**D**

**data**

backing up

1/2-inch tape unit 4-15

restoring

1/2-inch tape unit 4-15

storing

1/2-inch tape cartridge 4-17

1/4-inch mini tape cartridge 4-7

1/4-inch tape cartridge 4-7

**dedicated service tools (DST)**

to enter password 2-17

**default IPL options** 2-9

**defining**

system during IPL 2-10

**definition**

access path 2-13

attended IPL 2-1

constraint 2-15

corrective service 5-1

**definition** *(continued)*

cumulative PTF package 5-1

diskette 4-24

initializing a diskette 4-26

IPL threshold 2-14

journal 2-14

preventive service 5-1

problem log 6-12

program temporary fix (PTF)

delayed 5-20

immediate 5-20

permanently applied 5-20

temporarily applied 5-20

subsystem 2-20

system value 2-10

unattended IPL 2-1

**delayed program temporary fix (PTF)**

definition 5-20

**Delete PTF (DLTPTF) command** 5-27

**deleting**

*See also* removing

Delete Program Temporary Fix (DLTPTF) 5-27

DLTPTF (Delete Program Temporary Fix) 5-27

program temporary fix (PTF)

immediate 5-25

**device**

attachable 1-1

naming at IPL time 2-9

**disk**

IPL from 2-8

**disk problem** A-5

**diskette**

5-1/4 inch 4-24

8-inch 4-24

cleaning 4-24

clearing 4-26

copying 4-27

definition 4-24

duplicating 4-27

handling 4-25

initializing 4-26

labeling 4-27

ready condition 4-28

using 4-24

**diskette problem** A-5

**display**

address (SPCN) 1-6

fault (SPCN) 1-6

**display device**

handling problem 6-1

**Display power on and off schedule option**

Power On and Off Tasks menu 2-4

**Display Program Temporary Fix (DSPPTF) command**

displaying PTF cover letters 5-4

finding PTF status 5-17



## displaying

- cumulative PTF package level 5-18
- power on and off schedule 2-4
- program temporary fix (PTF)
  - cover letter 5-4
  - status 5-17
- status
  - PTF 5-17
- subsystem description 2-21

## distributing

- program temporary fix (PTF)
  - remote system 5-27
  - tailored package 5-29

## DLTPTF (Delete PTF) command 5-27

## DSPPTF (Display Program Temporary Fix) command 5-4, 5-17

## DST (dedicated service tools)

- to enter password 2-17

## dump

- main storage A-9
  - automatic A-7
  - introduction A-7
  - manual A-7

## DUPDKT (Duplicate Diskette) command 4-27

## Duplicate Diskette (DUPDKT) command 4-27

## Duplicate Tape (DUPTAP) command 4-22

## duplicating

- See copying

## DUPTAP (Duplicate Tape) command 4-22

## E

### editing

- access paths
  - during attended IPL 2-13
- check pending constraint
  - during attended IPL 2-15

## Enter pushbutton (system unit) 1-3

## erasing

- 8-mm tape cartridge 4-13

## error

- tape cartridge
  - 1/4-inch 4-4
- tape unit 4-2

## expansion or extension (SPCN) control panel

- illustration 1-5

## F

### fault display

- SPCN 1-6

### finding

- menus 3-2
- previously reported problem 6-18
- status of PTF orders 5-10

## form

- control panel status
  - 9402/9404 Models 4xx C-2
  - 9404/9406 Models 5xx C-2
- problem summary B-1

## formatting

- See initializing

## function/data display 1-3

## G

### getting

- See also receiving
- help with problems 6-9
- preventive service planning (PSP) information 5-9

## GO (Go to Menu) command 3-2

## Go to Menu (GO) command 3-2

## guidelines

- using 1/4-inch mini tape cartridges 4-4
- using 1/4-inch tape cartridges 4-4

## H

### handling

- diskette 4-25
- problem
  - procedures A-1
  - summary form B-1
  - table A-1
- system problem 6-1

## hang, system A-6

## hardware

- reporting problem 6-11

## hardware service representative

- calling 6-10

## help

- getting 6-9

## high-impact pervasive (HIPER) PTFs

- installing 5-15

## HIPER (high-impact pervasive) PTFs

- installing 5-15

## humidity

- mini tape cartridge effect 4-8
- tape cartridge effect 4-8

## I

### IBM business partner

- calling 6-9

### identifying

- PTF ordered through service support 5-10

## immediate (program temporary fix) PTF

- applying permanently
  - without an IPL 5-23
- applying temporarily
  - without an IPL 5-23

**immediate (program temporary fix) PTF** *(continued)*

definition 5-20

**Information APAR**

printing 5-8

**initial program load (IPL)**

applying immediate PTFs permanently without 5-23

applying immediate PTFs temporarily without 5-23

applying Licensed Internal Code fixes at the next  
unattended

attended

applying PTFs temporarily 5-22

definition 2-1

editing access paths during 2-13

editing check pending constraints during 2-15

mode 2-7

changing

configuration 2-10

network attribute 2-10

options during 2-8

system attribute 2-10

system during 2-10

system value 2-10

user profile 2-10

defining system during 2-10

omitting PTFs in a cumulative package before the  
next 5-27

option

default special environment 2-9

device configuration naming 2-9

display 2-7

enable automatic configuration 2-9

viewing 2-8

overview 2-18

remote 2-6

setting

date and time 2-8

major system options 2-9

option 2-8

source

A storage area 5-18

B storage area 5-18

changing 5-18

displaying 5-18

storage area

A (permanent) 5-18

B (temporary) 5-18

system reference codes (SRCs) displayed  
during 2-18

system value

automatic IPL after power is restored  
(QPWRRSTIPL) 2-12

controlling 2-11

IPL date and time (QIPLDATTIM) 2-11

IPL status (QIPLSTS) 2-12

IPL type (QIPLTYPE) 2-12

QIPLDATTIM (IPL date and time) 2-11

QIPLSTS (IPL status) 2-12

**initial program load (IPL)** *(continued)*system value *(continued)*

QIPLTYPE (IPL type) 2-12

QPWRRSTIPL (automatic IPL after power is  
restored) 2-12

QRMTIPL (remote IPL) 2-12

QUPSDLYTIM (uninterruptible power supply delay  
time) 2-12

QUPSMMSGQ (uninterruptible power supply) 2-13

remote IPL (QRMTIPL) 2-12

uninterruptible power supply (QUPSMMSGQ) 2-13

uninterruptible power supply delay time  
(QUPSDLYTIM) 2-12

threshold 2-14

unattended

applying PTFs permanently 5-21

definition 2-1

**Initialize Diskette (INZDKT) command** 4-26**Initialize Tape (INZTAP) command** 4-20

attention notice 4-20

parameters 4-20

**initializing***See also* starting

diskette 4-26

system 2-1

tape 4-20

**input description** 1-1**installation**

checking

licensed program 6-1

product 6-1

verifying

PTF package 5-15

**installing**

high-impact pervasive (HIPER) PTF

from a cumulative PTF package 5-15

program temporary fix (PTF)

cumulative package 5-14

Licensed Internal Code 5-11

licensed program 5-13

solving problems 5-16

verifying 5-14

PTFs 5-11

**intermediate assistance level**

definition 3-1

**intermittent problem** A-6**INZDKT (Initialize Diskette) command** 4-26**INZTAP (Initialize Tape) command** 4-20

attention notice 4-20

parameters 4-20

**IPL (initial program load)**

applying immediate PTFs permanently without 5-23

applying immediate PTFs temporarily without 5-23

applying Licensed Internal Code fixes at the next  
unattended

attended

applying PTFs permanently 5-22

## **IPL (initial program load) (continued)**

### attended (continued)

- applying PTFs temporarily 5-22
- definition 2-1
- editing access paths during 2-13
- editing check pending constraints during 2-15
- mode 2-7

### changing

- configuration 2-10
- network attribute 2-10
- options during 2-8
- system attribute 2-10
- system during 2-10
- system value 2-10
- user profile 2-10

### defining system during 2-10

### displaying

- system value during 2-10

### omitting PTFs in a cumulative package before the next 5-27

### option

- default special environment 2-9
- device configuration naming 2-9
- display 2-7
- enable automatic configuration 2-9
- viewing 2-8

### overview 2-18

### remote 2-6

### setting

- date and time 2-8
- major system options 2-9
- option 2-8

### source

- A storage area 5-18
- B storage area 5-18
- changing 5-18
- displaying 5-18

### storage area

- A (permanent) 5-18
- B (temporary) 5-18

### system reference codes (SRCs) displayed during 2-18

### system value

- automatic IPL after power is restored (QPWRRSTIPL) 2-12
- controlling 2-11
- IPL date and time (QIPLDATTIM) 2-11
- IPL status (QIPLSTS) 2-12
- IPL type (QIPLTYPE) 2-12
- QIPLDATTIM (IPL date and time) 2-11
- QIPLSTS (IPL status) 2-12
- QIPLTYPE (IPL type) 2-12
- QPWRRSTIPL (automatic IPL after power is restored) 2-12
- QRMTIPL (remote IPL) 2-12
- QUPSDLYTIM (uninterruptible power supply delay time) 2-12

## **IPL (initial program load) (continued)**

### system value (continued)

- QUPSMSGQ (uninterruptible power supply) 2-13
- remote IPL (QRMTIPL) 2-12
- uninterruptible power supply (QUPSMSGQ) 2-13
- uninterruptible power supply delay time (QUPSDLYTIM) 2-12
- threshold 2-14
- unattended
  - applying PTFs permanently 5-21
  - definition 2-1

### **IPL date and time (QIPLDATTIM) system value 2-11**

### **IPL or Install the System display**

- perform an IPL option 2-8

### **IPL status (QIPLSTS) system value 2-12**

### **IPL type (QIPLTYPE) system value 2-12**

## **J**

### **job queue**

- releasing
  - after stopping the system 2-22

### **journal**

- definition 2-14

## **L**

### **labeling**

- diskette 4-27

### **level**

- displaying cumulative PTF package 5-18

### **Licensed Internal Code fix**

- applying
  - immediately 5-24
  - next unattended IPL 5-24
- installing 5-11
- removing 5-26

### **licensed program**

- checking installation 6-1
- PTFs
  - installing 5-13
  - removing 5-25

### **list**

- cross-reference summary for PTFs
  - ordering 5-9
  - receiving 5-9
- system reference code (SRC) A-2

### **Load Program Temporary Fix (LODPTF)**

#### **command 5-20**

### **loading**

- 1/2-inch tape reel 4-19
- 1/4-inch mini tape cartridge 4-5
- 1/4-inch tape cartridge 4-5
- 8-mm tape cartridge 4-12
- program temporary fix (PTF)
  - from a cumulative PTF package 5-19
  - method 5-19

**loading** *(continued)*  
  program temporary fix (PTF) *(continued)*  
    over another PTF 5-20  
    remote system 5-28

**LODPTF (Load Program Temporary Fix)**  
  **command** 5-20

**log**  
  problem, working with 6-12  
**loop, system** A-6

## M

**magnetic tape**  
  copying PTF cover letters from 5-3

**main storage dump** A-7  
  purge A-8  
  system storage A-7  
  to diskette A-9  
  to tape A-8

**maintaining**  
  licensed program  
    corrective service 5-1  
    preventive service 5-1

**Manual mode (system unit)** 1-3, 1-4

**marketing representative**

  calling 6-9

**media**

  shipping PTF 5-3  
  using  
    optical media library 4-1  
    tape 4-1

**menu**

  finding 3-2

**mini tape cartridge**

  humidity and temperature 4-8

**mode**

  Auto 1-3, 1-5  
  Manual 1-3, 1-4  
  Normal 1-3, 1-5  
  powering the system on 2-5  
  Secure 1-3, 1-5  
  Secure position 1-5

**model**

  1/2-inch tape unit 4-13

**monitoring**

  tape volume statistics 4-22

**MSD (main storage dump)** A-7, A-9

  purge A-8

## N

**network attribute**

  changing  
    during IPL 2-10

**new problem**

  analyzing 6-11

**no power**

  doing an attended IPL 2-7

**Normal mode (system unit)** 1-3, 1-5

## O

**omit PTF**

  using Go PTF command 5-13

**omitting**

  PTFs in a cumulative package 5-27

**Operational Assistant**

  accessing  
    methods 3-1  
    user 3-1  
  introduction 3-1

**operator**

*See* system operator

**optical device problem** A-5

**optical library**

  attached to AS/400 system 1-1

**optical media library**

  using 4-32

**option**

  IPL 2-8, 2-9  
  setting major system 2-9

**ordering**

  cumulative PTF package 5-8  
  order  
    superseding 5-3  
  preventive service planning (PSP) information  
    cumulative PTF packages 5-10  
    types 5-9  
  program temporary fix (PTF)  
    cover letter 5-3  
    cross-reference summary list 5-9  
    cumulative package 5-2  
    electronically 5-2, 5-3  
    individual 5-2  
    summary list 5-10  
    superseding 5-3  
  PSP (preventive service planning) information 5-9  
    cumulative PTF packages 5-10  
    types 5-9

**OS/400 licensed program**

  removing 5-26

**output description** 1-1

**overview**

  Operational Assistant 3-1

## P

**package**

  cumulative PTF  
    loading PTFs from 5-19  
  ordering 5-8

**panel, control**

See control panel

**parameter**

Initialize Tape (INZTAP) command

Check for active files 4-20

**password**

system 2-16

bypassing 2-17

changing 2-17

**perform an IPL option**

IPL or Install the System display 2-8

**permanent PTF**

advantages 5-21

applying 5-21

during an attended IPL 5-22

during an unattended IPL 5-21

applying immediate

without an IPL 5-23

definition 5-20

save file 5-27

**permanent storage area 5-18****personal computer (PC)**

attached to AS/400 system 1-1

**power**

pushbutton 1-2

**Power Down System (PWRDWSYS) command 1-5****power on**

doing an attended IPL 2-7

mode 2-5

**power on and off schedule**

changing

defaults 2-4

entries 2-5

individual days 2-5

displaying 2-4

setting 2-4

**Power On and Off Tasks menu**

Change power on/off defaults option 2-4

Display power on and off schedule option 2-4

**Power On light 1-2****power problem A-2****power pushbutton**

attention notice 2-23

stopping the system 2-23

**power schedule**

solving problems 2-6

**powering off**

See also stopping

attention notice 2-21

doing an attended IPL 2-7

immediate 2-22

method 2-1

using menu options 2-1

**powering on system**

See starting system

**powering up system**

See starting

**preparing**

tape leader 4-18

**preventive service**

definition 5-1

description 5-10

maintenance strategy 5-1

ordering 5-2

ordering a cumulative PTF package 5-2

planning information

cumulative PTF package 5-9

equipment 5-9

Licensed Internal Code fix 5-9

licensed program PTF 5-9

PTF 5-1

**primary console, determining A-9****printer device**

attached to AS/400 system 1-1

**printing**

Information APAR 5-8

program temporary fix (PTF)

cover letter 5-4

cumulative tape summary 5-14

**problem**

adding notes to record 6-17

analyzing 6-1

automatic power schedule 2-6

CD-ROM A-5

communication A-6

detected by the system

reporting 6-12

disk A-5

diskette A-5

display device 6-1

finding a previously reported 6-18

getting help with 6-9

handling 6-1

intermittent A-6

IPL A-4

light A-3

optical device A-5

pushbutton A-3

reporting 6-1

hardware 6-11

software 6-11

telephone 6-17

voice 6-17

symptom index

analyzing A-1

system failure A-4

system reference code (SRC) A-2

tape A-5

working with 5-1

**problem analysis**

running 6-7

**problem handling**

- considerations before you begin 6-1
- diagnosing 6-1
- getting help with 6-9
- problem summary form B-1
- procedures A-1
- Processor Active light 1-3
- System Attention light 1-3
- table A-1

**problem log**

- definition 6-12
- working with 6-12

**problem management**

- automated 6-19

**problem record**

- adding notes to 6-17
- creating your own 6-6

**problem status**

- query 6-18

**procedure**

- correcting common tape unit errors 4-2
- fixing problems A-1

**processing**

- data 1-1

**Processor Active light 1-3****Processor Activity light 1-3****product**

- checking installation 6-1

**program maintenance strategy 5-1****program temporary fix (PTF)**

- See also* cumulative PTF package

- See also* delayed PTF

- See also* immediate PTF

- A storage area 5-18

- advanced topics 5-19

- application program 5-20

- applying

  - Licensed Internal Code fixes 5-24

  - permanently 5-21

  - remote systems automatically 5-28

- applying Licensed Internal Code fixes

  - immediately 5-24

- B storage area 5-18

- building a tailored package 5-29

- central site processing 5-27, 5-29

- changing

  - storage areas (A or B) 5-18

- cover letter

  - deleting 5-27

  - description 5-7

  - displaying 5-4

  - ordering electronically 5-3

  - printing 5-4

  - receiving electronically 5-3

  - removing 5-27

- cumulative package 5-1, 5-10

**program temporary fix (PTF) (continued)**

- cumulative package level, displaying 5-18

- cumulative PTF summary

  - printing 5-14

- deleting save file 5-27

- displaying 5-4, 5-17

- displaying status 5-17

- distributing to remote system 5-27, 5-29

- finding status of order 5-10

- information

  - receiving 5-2

- install problems, solving 5-16

- installation

  - verifying 5-14

- installing

  - cumulative package from CD-ROM 5-14

  - cumulative package from tape 5-14

  - high-impact pervasive (HIPER) 5-15

  - instructions 5-14

  - Licensed Internal Code 5-11

  - licensed program 5-13

- Licensed Internal Code fix

  - removing 5-26

- loading 5-19, 5-20

- maintenance strategy 5-1

- omit function 5-13

- omitting

  - from cumulative package before the next

    - IPL 5-27

- order

  - finding the status of 5-10

  - sending 5-2

- ordering

  - cumulative PTF package 5-2

  - electronically 5-2, 5-3

  - individually 5-2

  - preventive service planning (PSP)

    - information 5-2

  - service support 5-10

- package

  - building tailored 5-29

  - ordering a cumulative 5-8

  - verifying installation 5-15

- permanent

  - applying during an unattended IPL 5-21

- preventive service planning (PSP) 5-9

- printing 5-4

- receiving

  - electronically 5-2

- removing

  - cover letter 5-27

  - from a cumulative package 5-27

  - from remote system 5-28

  - immediate 5-25

  - Licensed Internal Code fix 5-26

  - licensed program 5-25

  - local system 5-26

**program temporary fix (PTF) (continued)**

- removing (continued)
  - OS/400 licensed program 5-26
  - save file 5-27
- selecting A or B storage area 5-18
- shipping information letter 5-14
- status
  - displaying 5-17
- summary list 5-10
- temporary
  - applying during an attended IPL 5-22
  - using 5-1
  - verifying PTF package installation 5-15

**PSP (preventive service planning) information**

- description 5-10
- getting 5-9
- ordering 5-9

**PTF**

- shipping
  - media 5-3

**PTF (program temporary fix)**

- See also* cumulative PTF package
- See also* delayed PTF
- See also* immediate PTF
- A storage area 5-18
- advanced topics 5-19
- application program 5-20
- applying
  - Licensed Internal Code fixes 5-24
    - permanently 5-21
    - remote systems automatically 5-28
- applying Licensed Internal Code fixes
  - immediately 5-24
- B storage area 5-18
- building a tailored package 5-29
- central site processing 5-27, 5-29
- changing
  - storage areas (A or B) 5-18
- cover letter
  - deleting 5-27
  - description 5-7
  - displaying 5-4
  - ordering electronically 5-3
  - printing 5-4
  - receiving electronically 5-3
  - removing 5-27
- cross-reference summary list
  - ordering 5-9
  - receiving 5-9
- cumulative package 5-1, 5-10
- cumulative package level, displaying 5-18
- cumulative PTF summary
  - printing 5-14
- deleting save file 5-27
- displaying 5-4
- displaying status 5-17

**PTF (program temporary fix) (continued)**

- distributing to remote system 5-27, 5-29
- finding status of order 5-10
- information
  - receiving 5-2
- install problems, solving 5-16
- installation
  - verifying 5-14
- installing 5-11
  - cumulative package from CD-ROM 5-14
  - cumulative package from tape 5-14
  - high-impact pervasive (HIPER) 5-15
  - instructions 5-14
  - Licensed Internal Code 5-11
  - licensed program 5-13
- Licensed Internal Code fix
  - removing 5-26
- loading 5-19, 5-20
- maintenance strategy 5-1
- omit function 5-13
- omitting
  - from cumulative package before the next IPL 5-27
- order
  - finding the status of 5-10
  - sending 5-2
- ordering
  - cumulative PTF package 5-2
  - electronically 5-2, 5-3
  - individually 5-2
  - preventive service planning (PSP)
    - information 5-2
    - service support 5-10
- package
  - building tailored 5-29
  - ordering a cumulative 5-8
  - verifying installation 5-15
- permanent
  - applying during an attended IPL 5-22
  - applying during an unattended IPL 5-21
  - applying immediate without an IPL 5-23
- preventive service planning (PSP) 5-9
- printing 5-4
- receiving
  - electronically 5-2
- removing
  - cover letter 5-27
  - from a cumulative package 5-27
  - from remote system 5-28
  - immediate 5-25
  - Licensed Internal Code fix 5-26
  - licensed program 5-25
  - local system 5-26
  - OS/400 licensed program 5-26
  - save file 5-27
- selecting A or B storage area 5-18

## **PTF (program temporary fix) (continued)**

- shipping information letter 5-14
- status
  - displaying 5-17
- summary list 5-10
- temporary
  - applying during an attended IPL 5-22
  - applying immediate without an IPL 5-23
- using 5-1
- verifying PTF package installation 5-15

## **PTF cumulative package**

- content 5-1
- ordering 5-1
- receiving 5-1

## **Purge**

- main storage dump A-8

## **pushbutton 1-2**

## **PWRDOWNSYS (Power Down System) command 1-5**

## **Q**

### **QIPLDATTIM (IPL date and time) system value 2-11**

### **QIPLSTS (IPL status) system value 2-12**

### **QIPLTYPE (IPL type) system value**

- changing IPL options 2-7
- description 2-12
- unattended IPL 2-2

### **QPWRRSTIPL (automatic IPL after power is restored) system value 2-12**

### **QRMTIPL (remote IPL) system value 2-12**

### **QRYPRBSTS (Query Problem Status)**

- command 6-18

### **querying**

- problem status 6-18

### **QUPSDLYTIM (uninterruptible power supply delay time) system value 2-12**

## **R**

### **ready condition**

- diskette 4-28
- storage device 4-28
- storage device ready condition 4-28
- tape unit 4-28

### **receiving**

- program temporary fix (PTF)
  - cover letter 5-3
  - cross-reference summary list 5-9
  - cumulative package 5-14
  - electronically 5-3
  - information 5-2

### **record**

- adding notes to problem 6-17

### **recover**

- workstation failure A-4

### **reference code**

- list of system (SRC) A-2

### **remote controller**

- attached to AS/400 system 1-1

### **remote IPL (QRMTIPL) system value 2-12**

### **remote service**

- automated 6-19, 6-20

### **remote system**

- applying PTF 5-28
- initial program load (IPL) 2-6
- program temporary fix (PTF)
  - distributing 5-27, 5-29
  - loading 5-28
- removing PTF 5-28
- starting 2-6

### **Remove Program Temporary Fix (RMVPTF)**

#### **command 5-21, 5-26**

### **removing**

- 8-mm tape cartridge 4-12
- program temporary fix (PTF)
  - from a cumulative package 5-27
  - immediate 5-25
  - Licensed Internal Code 5-26
  - licensed program 5-25
  - local system 5-26
  - OS/400 licensed program 5-26
  - remote system 5-28
  - save file 5-27
- tape cartridge
  - attention notice 4-6

### **reporting**

- manually 6-12
- problems
  - telephone 6-17
  - voice 6-17
- problems detected by the system 6-12
- system problem 6-1

### **request for service**

- sending immediately 6-16
- sending later 6-17

### **restoring**

- data
  - using 1/2-inch tape unit 4-15

### **retension operation 4-5**

### **reviewing**

- program temporary fix (PTF)
  - status 5-17

### **RMVPTF (Remove Program Temporary Fix)**

#### **command**

- local system 5-26

### **running**

- problem analysis 6-7



## S

### save file

- program temporary fix (PTF)
  - deleting 5-27
  - removing 5-27

### schedule

- power on and off
  - changing days 2-5
  - changing defaults 2-4
  - changing entries 2-5
  - displaying 2-4

### scheduling

- power on and off 2-4

### Secure mode (system unit) 1-3, 1-5

### SELECT parameter 5-21

### Select pushbutton 1-3

### selecting

- A storage area 5-18
- B storage area 5-18

### Send Program Temporary Fix Order (SNDPTFORD)

#### command 5-2, 5-9

### sending

- program temporary fix (PTF)
  - order 5-2
  - remote system 5-27
- service request immediately 6-16
- service request later 6-17

### Server Series 1-2

### service

- calling hardware 6-10
- calling software 6-10
- corrective 5-1
- preventive 5-1

### service attribute 6-19

### service request

- sending immediately 6-16
- sending later 6-17

### service support

- changing your service support contact information 6-14
- identifying PTF ordered through 5-10
- preventive service planning (PSP) information for licensed program 5-9
- PTF summary list 5-10

### set initial program load (IPL) date and time 2-8

### setting up

- power on and off schedule 2-4

### sharing

- systems with a 3480, 3490, 3490E, or 3590 tape unit 4-14

### signing on

- system 2-3

### SNDPTFORD (Send Program Temporary Fix Order)

#### command 5-2, 5-9

### software

- reporting problem 6-11

### software service representative

- calling 6-10

### solving

- install problems for PTFs 5-16
- problem with power schedule 2-6

### SPCN (system power control network) 1-5

- address display 1-6
- fault display 1-6

### SRC (system reference code)

- See system reference code (SRC)

### SST (system service tools)

- starting 4-22

### Start System Service Tools (STRSST)

#### command 4-22

### starting

- remote system 2-6
- subsystem 2-20
- system
  - attended IPL 2-7
  - methods 2-1
  - unattended IPL 2-2
- system service tools 4-22

### statistics

- monitoring tape volume 4-22

### status

- orders, finding 5-10
- program temporary fix (PTF)
  - displaying 5-15, 5-17
  - list 5-17

### stopping

- interactive subsystem 2-21
- subsystem 2-20
- system
  - considerations 2-21
  - immediately 2-22
  - methods 2-1
  - power pushbutton 2-23
  - releasing job queues 2-22

### storage area

- A 5-18
- A (permanent) 5-18
- B 5-18
- B (temporary) 5-18
- changing 5-18
- IPL from 5-18
- permanent 5-18
- temporary 5-18

### storage device

- ready condition 4-28

### storing data

- 1/2-inch tape cartridge 4-17
- 1/2-inch tape reel 4-19
- 1/4-inch mini tape cartridge 4-7
- 1/4-inch tape cartridge 4-7

**storing data** *(continued)*

8-mm tape cartridge 4-13

**STRSST (Start System Service Tools)****command** 4-22**subsystem**

description

displaying 2-21

working with 2-20

ending 2-20

starting 2-20

working with 2-20

**summary list**

PTF, ordering 5-10

**superseding**

PTF with other PTFs 5-20

PTF, ordering 5-3

**symptom**

analyze problem with A-1

**system**

attribute

changing during IPL 2-10

changing at IPL 2-10

defining at IPL 2-10

hang condition A-6

initial program load (IPL) 2-7

loop condition A-6

password 2-16

reporting problems detected by 6-12

sharing

3480, 3490, 3490E, or 3590 tape units 4-14

signing on 2-3

starting 2-1

stopping

attention notice 2-21

what you need to know about 1-1

**System Attention light 1-3****system console problem**

very off A-6

very on A-6

**system operator**

responsibility xi

**system password**

bypassing 2-17

changing 2-17

**system power control network (SPCN) 1-5**

address display 1-6

fault display 1-6

**system reference code (SRC)**

analyzing problem with A-1

collecting 6-8

displayed during IPL 2-18

list A-2

solving problem

with A-2

working with 6-8

**system service tools (SST)**

starting 4-22

**system unit**

version 3 release 6 1-1

**system unit control panel**

See control panel

**system value**

automatic IPL after power is restored

(QPWRRSTIPL) 2-12

changing

during IPL 2-10

methods 2-10

controlling IPL 2-11

definition 2-10

description 2-11

displaying

during IPL 2-10

IPL

automatic IPL after power is restored

(QPWRRSTIPL) 2-12

date and time (QIPLDATTIM) 2-11

QIPLDATTIM (IPL date and time) 2-11

QIPLSTS (IPL status) 2-12

QIPLTYPE (IPL type) 2-12

QPWRRSTIPL (automatic IPL after power is restored) 2-12

QRMTIPL (remote IPL) 2-12

QUPSDLYTIM (uninterruptible power supply delay time) system value 2-12

QUPSMMSGQ (uninterruptible power supply) 2-13

remote IPL (QRMTIPL) 2-12

status (QIPLSTS) 2-12

type (QIPLTYPE) 2-12

uninterruptible power supply (QUPSMMSGQ) 2-13

uninterruptible power supply delay time

(QUPSDLYTIM) system value 2-12

QIPLDATTIM (IPL date and time) 2-11

QIPLSTS (IPL status) 2-12

QIPLTYPE (IPL type) 2-2, 2-7, 2-12

QPWRRSTIPL (automatic IPL after power is restored) 2-12

QUPSDLYTIM (uninterruptible power supply delay time) 2-12

QUPSMMSGQ (uninterruptible power supply) 2-13

uninterruptible power supply (QUPSMMSGQ) 2-13

uninterruptible power supply delay time

(QUPSDLYTIM) 2-12

**T****tape**

copying PTF cover letters from 5-3

duplicating 4-22

initializing 4-20

reel

types 4-17

**tape (continued)**

- storing
  - 8-mm tape cartridge 4-13
- using 4-1
- volume ID 4-20
- volume statistics
  - 1/2-inch tape cartridge 4-24
  - 1/4-inch tape cartridge 4-24
  - 1/4-inch tape reel 4-24
  - 8-mm tape cartridge 4-24

**tape cartridge**

- See also* 8-mm tape cartridge
- See also* tape
- 1/2-inch
  - See* 1/2-inch tape cartridge
- 8-mm
  - See* 8-mm tape cartridge
- checking
  - volume 4-6
- cleaning
  - attention notice 4-16
- copying 4-22
- definition 4-1
- humidity and temperature 4-8

**tape leader**

- preparing 4-18

**tape library**

- definition 4-1

**tape problem A-5****tape reel**

- definition 4-1

**tape unit**

- 1/2-inch
  - addressing 4-15
  - backing up data 4-15
  - cleaning 4-15, 4-16
  - models 4-13
  - restoring data 4-15
- 1/2-inch reel
  - cleaning 4-19
  - when to clean 4-19
- 1/4-inch
  - cleaning 4-3
- 1/4-inch mini
  - cleaning 4-3
- 3480, 3490, 3490E, or 3590
  - sharing systems with 4-14
- 8-mm
  - cleaning 4-8
  - tape cartridge to use 4-11
  - using 4-8, 4-11
- attached to AS/400 system 1-1
- automatic cartridge loader operation
  - 1/2-inch 4-13
- definition 4-1
- ready condition 4-28

**tape unit (continued)**

- removing tape cartridge
  - attention notice 4-6
- using 1/2-inch 4-13
- using 1/4-inch 4-3
- using 1/4-inch mini 4-3
- verifying 4-2

**tape units**

- using 4-1

**tape volume 4-20****tape volume statistics**

- monitoring 4-22

**telephone**

- reporting problems by 6-17

**temperature**

- effect on tape cartridges 4-8

**temporarily applied PTF**

- definition 5-20

**temporary PTF**

- applying
  - during an attended IPL 5-22
  - applying immediate
    - without an IPL 5-23

**temporary storage area 5-18****turning off system**

- See* stopping system

**turning on system**

- See* starting

**U****unattended IPL**

- applying Licensed Internal Code fixes 5-24
- applying PTFs permanently during 5-21
- definition 2-1

**unavailable 4-2****uninterruptible power supply**

- system value settings 2-13

**uninterruptible power supply delay time (QUPSDLYTIM) system value 2-12****unit**

- battery power 1-7

**unloading**

- See also* removing
- 1/4-inch mini tape cartridge 4-6
- 1/4-inch tape cartridge 4-6

**user profile**

- changing during IPL 2-10

**using**

- 1/2-inch tape units 4-13
- 1/4-inch mini tape cartridges
  - guidelines 4-4
- 1/4-inch mini tape units 4-3
- 1/4-inch tape cartridges
  - guidelines 4-4
- 1/4-inch tape units 4-3

**using** *(continued)*

optical media library 4-32

tape unit

8-mm 4-8

## V

**value, system**

See system value

**vary off** 4-2

**Verify Optical Drive (VFYOPT) command** 4-31

**Verify Tape (VFYTAP) command** 4-2

**verifying**

installation

PTF package 5-15

PTF installation 5-14

tape unit 4-2

**very off**

system console problem A-6

**very on**

system console problem A-6

**VFYOPT (Verify Optical Drive) command** 4-31

**VFYTAP (Verify Tape) command** 4-2

**voice**

reporting problems by 6-17

**volume ID** 4-20

## W

**work station**

attached to AS/400 system 1-1

**Work with Device Description (WRKDEVD)**

**command** 4-14

attention notice 4-14

**Work with Problem (WRKPRB) command** 5-1, 6-11

**Work with Subsystem Descriptions (WRKSBSD)**

**command** 2-20

**working with**

problem 5-1

problem log 6-12

subsystem descriptions 2-20

**workstation failure**

recover A-4

**WRKDEVD (Work with Device Description)**

**command** 4-14

attention notice 4-14

**WRKPRB (Work with Problem)** 6-11

**WRKPRB (Work with Problem) command** 6-18

**WRKSBSD (Work with Subsystem Descriptions)**

**command** 2-20

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Version 3

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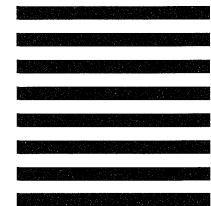
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