Application System/400

9401 Service Information

Version 2

Service

IBM

Application System/400

9401 Service Information

Version 2

> **Take Note!**
>
> Before using this information and the product it supports, be sure to read the general information under "Notices" on page vii.

Second Edition (March 1994)

This edition applies to Version 2 Release 3 Modification 0, and to all subsequent releases and modifications until otherwise indicated in new editions. Make sure you are using the proper edition for the level of the product.

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Each safety notice contains a reference number (RSFTxxxx). To see if the safety notice is available in your language, refer to the reference number in the *9401 Safety Information* documentation, SA41-0029.

Danger Notices

A danger notice indicates a hazard that could possibly cause death or serious personal injury.

Use the following danger notices throughout the guide:

DANGER

> **An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.**
> *(RSFTD201)*

DANGER

> To prevent a possible electrical shock when installing the system, ensure that the power cords for all devices are unplugged before installing signal cables. *(RSFTD202)*

DANGER

> To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. *(RSFTD203)*

DANGER

> To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. *(RSFTD003)*

DANGER

> To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. *(RSFTD004)*

DANGER

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

Caution Notices

A caution notice indicates a hazard that could possibly cause minor personal injury.

Use the following caution notices throughout the guide:

CAUTION:
The battery is an alkaline battery. Do not burn or charge the battery. Discard the battery as instructed by local regulations. *(RSFTC229)*

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Chapter 1. Starting Problem Isolation

Starting Problem Analysis

Perform all problem analysis from within this book. **Do not perform on-line problem analysis unless instructed to do so by the procedures in this book. When on-line problem analysis identifies a failing item, use the "Online Failing Item Cross Reference List" on page 2-63** .

Note: Record the IPL type and mode (function 01) and return the system to this IPL type and mode (function 02) when the service call is complete.

1 Perform the following:

a. Find the problem in the "Symptom" column of Table 1-1

b. Follow the instruction in the "What You Should Do" column.

Table 1-1 (Page 1 of 3). Start Table

Symptom	What You Should Do
There is a system reference code (SRC) displayed on the system control panel (function 11) or on the console.	Collect all information about the failure (use Appendix D, "Problem Summary Form" on page D-1 and fill out the form). Then, go to Chapter 2, "Unit Reference Codes" on page 2-1.
System operator messages indicate damaged objects are present on the system.	Perform the action indicated in the additional message information for the message. Check for disk failures in the error log indicating which disk unit is causing the problem. Exchange the disk unit, see "Disk Unit" on page 4-7. If there are no disk failures in the error log, ask software support for assistance.
A message is shown on the console or on any display station. **Note:** Possible message sources are: • Reported by the user • Reported by the operator • Shown on a display station	Go to a display station and perform the action indicated in the additional message information. When on-line problem analysis identifies a failing item, use the "Online Failing Item Cross Reference List" on page 2-63.
You cannot power on the system.	Is the background light for the Data display on the control panel on? **Note:** The background light is a dim (yellow) light in the Data area on the control panel. **Yes No** ↓ Ensure that the AC power switch at the rear of the system is on. Ensure that power is available at the customer's power outlet. The problem is either in the chassis or the line cord. Exchange the chassis, type 0000 (see "Type and Part Number List" on page 2-62) or see FI02205. Exchange the chassis (type 0000).

Table 1-1 (Page 2 of 3). Start Table

Symptom	What You Should Do
You cannot power off the system.	Go to "Cannot Power Off System (No SRC)" on page 1-7.
The control panel is not working.	Go to "Checking the System Control Panel" on page 1-8.
All workstations are not working, or all workstations on a port are not working correctly.	For twinaxial workstation or console failures, go to "Twinaxial Workstation I/O Processor Problem Isolation Procedures" on page 3-15.
The system loses the date and time.	Perform the Control Panel Battery Check, see Appendix B, "Preventive Maintenance (PM) Checklist" on page B-1.
You cannot perform an IPL.	Go to "Cannot Perform IPL (No SRC)" on page 1-5.
You cannot perform an IPL at a specified time (no SRC).	Go to "Cannot Perform IPL at a Specified Time (No SRC)" on page 1-9.
You cannot perform an IPL from a remote location (no SRC).	Go to "Cannot Perform IPL from a Remote Location (No SRC)" on page 1-11.
The system performs an IPL that is not wanted.	Check, and if needed, exchange the following parts: • Control panel battery (see "Control Panel Battery" on page 4-5) • Chassis (see "Chassis" on page 4-2)
The system is in a loop. **Note:** The system may be in a loop when one or more of the following conditions are true: • An IPL does not complete. • System operations have stopped. • Attached devices no longer operate.	Go to "System Hangs or Loops (No SRC)" on page 1-5.
The external tape unit has one or more of the following symptoms: • The panel on the front of the tape unit shows an error condition. • The unit does not indicate ready. • The unit is not working.	Go to the external 1/4-inch tape unit documentation

Table 1-1 (Page 3 of 3). Start Table	
Symptom	**What You Should Do**
You cannot find the symptom in this table.	Perform the following: 1. On the System Service Tools (SST) display, select the *Start a service function* option. 2. Select the *Error log utility* option on the Start a Service Function display. 3. Search the error log for entries made during the time that the customer reported having problems with the system. **Note:** For example, a 6343 tape unit error would be identified as follows: Translate Table ID: 6343 Reference Code: CC5F Description: 1/4-inch tape unit failed. 4. Find any reference codes in Chapter 2, "Unit Reference Codes" on page 2-1. 5. If the error log does not help you define the problem, ask your next level of support for assistance.

Analyzing IPL Problems

Cannot Perform IPL (No SRC)

1 Perform the following:

a. Verify that the power cable is plugged into the power outlet.
b. Verify that the AC switch at the rear of the system is set to the on position.
c. Verify that power is available at the customer's power outlet.

2 Start an IPL by doing the following:

a. Perform an IPL using the type that the system is currently set at (A, B, or D) and mode M, (see "Selecting IPL and Mode" on page 5-2).
b. Power on the system (see "Powering Off and Powering On the System" on page 5-2).

Does the IPL complete successfully?

No   **Yes**

↓   **This ends the procedure.**

3 Is a system reference code (11-2 xxxx xxxx) displayed on the control panel?

Yes   **No**

↓   Exchange the following part:

    a. 0000—Chassis See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

    This ends the procedure.

4 Go to Chapter 2, "Unit Reference Codes" on page 2-1.

This ends the procedure.

System Hangs or Loops (No SRC)

1 Ask the customer what the system was doing before the hang or loop condition occurred.

2 Perform the following:

a. Perform an IPL using the type that the system is currently set at (A, B, or D) and mode M.
b. Select function 21 (Bring Up DST).
c. Press Enter on the control panel.

Does the Dedicated Service Tools Password display appear on the console?

No   **Yes**

↓   Enter the password 22222222 and continue with the next step of this procedure.

    Note: If this password is not correct, ask the customer for the correct password.

3 Is a system reference code (SRC) displayed on the control panel?

Note: You might have to wait a few minutes before the SRC is displayed.

No   **Yes**

↓   Go to Chapter 2, "Unit Reference Codes" on page 2-1.

    This ends the procedure.

4 Perform the following:

a. Select function 22 (Main Storage Dump).
b. Press Enter on the control panel.
c. Wait for the main storage dump to disk to complete.

Notes:
1) The dump procedure takes a minimum of 7 minutes.
2) SRCs indicated during a dump:
    a) D1xx 31xx indicates loading a special Horizontal Licensed Internal Code.

b) C1xx xxxx indicates performing an IPL with a special Horizontal Licensed Internal Code.

c) D1xx 32xx indicates writing main storage pages to the disk. This process takes approximately 15 seconds per 1MB (where MB indicates 1 048 576 bytes of storage).

d) A1xx 300x indicates the dump has completed successfully (System Attention light is on).

e) B1xx 3xxx or 25xx xxxx indicates the dump has failed.

3) See Chapter 2, "Unit Reference Codes" on page 2-1 for the possible values of x.

Is 0000 0000 displayed on the control panel for more than 30 seconds?

No   Yes

↓   **Warning:** Before exchanging any part, power off the system (see "Powering Off and Powering On the System" on page 5-2).

Exchange the following part:

a. 0000—Chassis See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

There may be a problem with Licensed Internal Code module AJSLC01. Ask your next level of support for assistance.

This ends the procedure.

5 Does the main storage dump complete successfully (A1xx 300x displayed)?

No   Yes

↓   Return to the problem isolation procedure that sent you here, or go to "Copying Main Storage Dump to Tape or Diskette" in the *Service Functions User's Guide* for the correct procedure to save a main storage dump.

This ends the procedure.

6 Is an SRC displayed on the control panel?

No   Yes

↓   Go to Chapter 2, "Unit Reference Codes" on page 2-1.

This ends the procedure.

7 **Warning:** To prevent loss of data, ask the customer to verify that no interactive jobs are running before you perform this step.

Power off the system (see "Powering Off and Powering On the System" on page 5-2).

8 Power on the system and start an IPL. (see "Powering Off and Powering On the System" on page 5-2).

Does the IPL complete successfully?

Yes   No

↓   If the system stopped with a reference code displayed, go to Chapter 2, "Unit Reference Codes" on page 2-1.

If the system is still hanging or in a loop, ask your next level of support for assistance.

This ends the procedure.

9 Enter

    DSPMSG QSYSOPR

(the Display Message command) on the command line.

Are any messages marked with an asterisk for problem analysis?

Yes   No

↓   **This ends the procedure.**

10 Move the cursor to the line with the asterisk and press the Help key. Follow the instructions to correct the problem.

If you cannot correct the problem, press F14 (Run problem analysis) and follow the instructions shown.

This ends the procedure.

Cannot Power Off System (No SRC)

1 Warning: To prevent loss of data, ask the customer to verify that no interactive jobs are running before you perform with this procedure.

If the system is in a hang condition and it is not possible to power off normally, you can perform an **abnormal** power off by doing the following steps.

Notes:

a. It is assumed that you have already attempted to power off the system using PWRDWNSYS *IMMED (the Power Down System Immediate command) from the console, and the system did not power off.

b. The following steps should <u>not</u> be used to correct a problem with the system. You should power off only after performing all possible problem analysis procedures.

2 Perform the following:

a. Perform an IPL using the type that the system is currently set at (A, B, or D) and mode M.

b. Go to the Use Dedicated Service Tools (DST) display by selecting function 21 on the control panel.

c. If the workstation fails to respond, go to step 8 of this procedure.

3 Select the *Start a service tool* option from the Use Dedicated Service Tools (DST) display.

```
              Use Dedicated Service Tools (DST)
Select one of the following:

    1. Perform an IPL
    2. Install the operating system
    3. Work with Licensed Internal Code
    4. Work with disk units
    5. Work with DST environment
    6. Select DST console mode
    7. Start a service tool
    8. Perform automatic installation of the operating system
    9. Work with Save Storage and Restore Storage



Selection

         F3=Exit          F12=Cancel
```
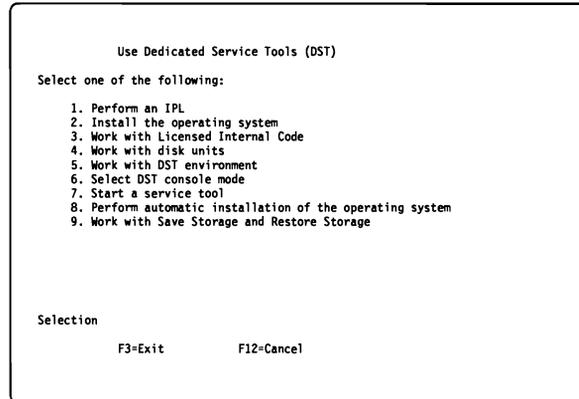
Figure 1-1. Use Dedicated Service Tools (DST) Display

4 Select the *Power off the system* option from the Start a Service Tool display.

```
              Start a Service Tool
Select one of the following:

    1. Display/alter/dump
    2. Vertical Licensed Internal Code log
    3. Trace Vertical Licensed Internal Code
    4. Display hardware configuration
    5. I/O Debug utility
    6. Print stand-alone dump
    7. Error log utility
    8. Power off the system



     Option
     F3=Exit          F12=Cancel
```
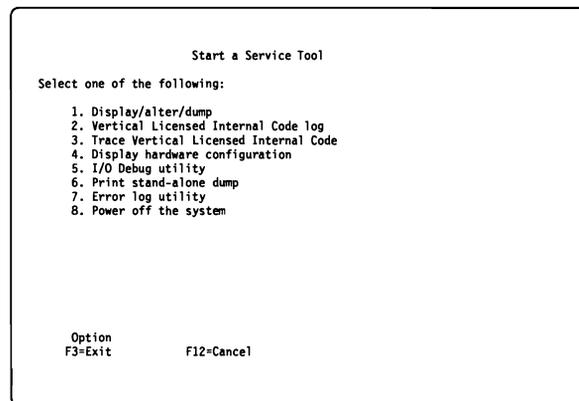
Figure 1-2. Start a Service Tool Display

5 The system should now power off (it may take up to 20 minutes for the system to power off).

Does the system power off, and is the Power On light off?

No   **Yes**

↓   Go to step 8 of this procedure.

6 Warning: Using the control panel Power button to power off the 9401 system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

Perform the following:

a. Open the front cover of the 9401.

b. The 9401 must be in manual (M) mode to power off. To select manual mode see "Selecting IPL and Mode" on page 5-2.

7 Press the Power button on the control panel.

The Power On light will begin to blink as the system is powered off. The light will stop blinking and stay off when power off is complete.

8 Disconnect the power cable from the power outlet.

9 Exchange the following part:

- 0000—Chassis See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

10 Verify the problem is fixed by performing a power on and power off.

Notes:

a. Connect the power cable to the power outlet.
b. Verify that the AC power switch is set to the On position.

This ends the procedure.

Checking the System Control Panel

Perform this procedure with the system powered off.

1 Press the up button on the control panel.

Can you select function 11?

Yes	No
↓	Continue with step 4.

This ends the procedure.

2 Press Enter on the control panel.

Is an SRC displayed?

No	Yes
↓	Go to "Unit Reference Code Tables" on page 2-3.

This ends the procedure.

3 Exchange the chassis. See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

This ends the procedure.

4 Is the system Attention light on?

No	Yes
↓	Exchange the chassis (see "Chassis" on page 4-2).

This ends the procedure.

5 Press the Down button until 04 is shown in the Function display.

Can you select function 04 (Lamp Test)?

Yes	No
↓	Exchange the chassis. See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

This ends the procedure.

6 Press the Down button.

Does the following occur?

- The 5 x 10 dot pattern for each character disappears
- 01, 02, or 03 appears in the Function/Data display
- The Power On light goes off

  Note: This light goes off only if the system was not powered on before you performed this check.

- The Processor Active light goes off

  Note: This light goes off if the system powered down. This light may blink if the system powered on.

- The System Attention light goes off

Yes   No

↓   Exchange the chassis. See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

        This ends the procedure.

7 Press the Down button on the control panel.

Do all of the following occur?

The lights listed in step 6 go off
The 5 x 7 dot pattern for each character disappears
Only function 01 or 02 appears in the Function/Data display on the control panel

Yes   No

↓   Exchange the chassis. See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

        This ends the procedure.

8 This ends the procedure.

Cannot Perform IPL at a Specified Time (No SRC)

To correct the IPL problem, perform this procedure until you find the problem and can perform an IPL at a specified time.

1 Perform the following:

   a. Verify that the AC power switch is set to the On position.
   b. Verify that the power cable is plugged into the power outlet.
   c. Verify that power is available at the customer's power outlet.

2 Perform an IPL using the type that the system is currently set at (A, B, or D) and mode N.

Note: In N mode, the *Dedicated service tools* option will not be shown.

3 Start an IPL by powering on the system (see "Power on" on page 5-2).

Does the IPL complete successfully?

Yes   No

↓   If there is a reference code, go to "Unit Reference Code Tables" on page 2-3.

        If there is no reference code, exchange the chassis. See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

        This ends the procedure.

4 Verify the system date and time by doing the following:

   a. Enter

      `DSPSYSVAL QIPLDATTIM`

     (the Display System Value command) on the command line.

     Observe the system value parameters.

     Note: The system value parameters are the date and time the system operator requested a timed IPL.

```
                            Display System Value
                                                 System: S0000000
System value . . . . . . . . . :  QIPLDATTIM

Description  . . . . . . . . . :  Date and time to automatically IPL

IPL date   . . . . . . . . . :  MM/DD/YY
IPL time   . . . . . . . . . :  HH:MM:SS
```

Figure 1-3. Display for QIPLDATTIM

   b. Enter

      `DSPSYSVAL QDATE`

     (the Display System Value command) on the command line.

     Check the system values for the date.

```
                           Display System Value
                                         System:  S0000000
System value . . . . . . . . . :  QDATE

Description  . . . . . . . . . :  System date

Date         . . . . . . . . . :  MM/DD/YY
```

Figure 1-4. Display for QDATE

c. Enter

   DSPSYSVAL QTIME

   (the Display System Value command)
   on the command line.

   Check the system values for the time.

```
                           Display System Value
                                         System:  S0000000
System value . . . . . . . . . :  QTIME

Description  . . . . . . . . . :  Time of day

Time         . . . . . . . . . :  HH:MM:SS
```

Figure 1-5. Display for QTIME

Does the operating system have the correct
date and time?

No   **Yes**

↓   Go to step 6 of this procedure.

5 Check with the customer before changing
the system date and time.

Perform the following:

a. Perform the control panel battery check
   (see Control Panel Battery Check in
   Appendix B, "Preventive Maintenance
   (PM) Checklist" on page B-1).

   Notes:
   1) To determine the current values,
      use DSPSYSVAL (the Display
      System Values command).
      Example: DSPSYSVAL QTIME
   2) If you cannot change these values,
      contact the customer for authori-
      zation.
   3) The month, day, and year format is
      used for these examples. To deter-
      mine the format for your system,
      use DSPSYSVAL QDATE (the
      Display System Values command).

b. Change the system values to the
   correct date and time by doing the
   following:

1) To set the correct date, do the
   following:
   a) Enter

      CHGSYSVAL QDATE VALUE('mmddyy')

      (the Change System Value
      command) on the command
      line.
   b) Set the date by entering

      mm=month
      dd=day
      yy=year

   c) Press Enter on the control
      panel.
2) To set the correct time, do the
   following:
   a) Enter

      CHGSYSVAL QTIME VALUE('hhmmss')

      (the Change System Value
      command) on the command
      line.
   b) Set the time by entering

      hh=24 hour time clock
      mm=minutes
      ss=seconds

   c) Press Enter on the control
      panel.

6 Verify that the system can perform an IPL
at a specified time by doing the following:

a. Set the IPL date and time to 5 minutes
   past the current system time by
   entering

   CHGSYSVAL SYSVAL(QIPLDATTIM) VALUE('mmddyy hhmmss')

   (the Change System Value command)
   on the command line.

   mm = month to power on
   dd = day to power on
   yy = year to power on

   hh = hour to power on
   mm = minute to power on
   ss = second to power on

b. Power off the system by entering

   PWRDWNSYS *IMMED

   (the Power Down System Immediate
   command) on the command line.

c. Wait 5 minutes.

Does the IPL start at the time you speci-
fied?

No **Yes**

↓ **This ends the procedure.**

7 Press the Power button on the control
panel to start an IPL.

8 Sign on the system.

Enter

    PRTERRLOG

(the Print Error Log command) on the
command line.

Did the system record any errors in the
error log during the time you were per-
forming this manual IPL?

No **Yes**

↓ Determine the cause of any system
error log entries before you con-
tinue with the next step of this pro-
cedure.

Note: For information on how to
work with the error log, see "Error
Log Utility" under "System Service
Tools" in the *Service Functions
User's Guide*.

9 Select M (manual) mode. See "Selecting
IPL and Mode" on page 5-2.

If the preceding steps fail to identify the
problem, exchange the chassis. See "Type
and Part Number List" on page 2-62 to
determine the part and see "Chassis" on
page 4-2 for the procedure.

Warning: Before exchanging any part,
power off the system (see "Power off" on
page 5-2).

After exchanging the chassis, set the
correct date and time (perform step 5 of
this procedure).

Verify that the system can perform an IPL
at a specified time by performing step 6 of
this procedure.

Then continue with the next step of this
procedure.

10 If the IPL does not complete successfully
after you exchange all of the parts listed in
step 9 of this procedure, ask your next level
of support for assistance.

This ends the procedure.

Cannot Perform IPL from a Remote Location (No SRC)

To correct the IPL problem, perform this proce-
dure until you find the problem and can perform a
remote IPL.

1 Verify that all external communications
functions are operational, such as:

- The customer is using the correct tele-
  phone number.
- The telephone line is operational (dial
  tone).
- The telephone line is connected or
  plugged in.
- The modem is powered on.
- The modem cable is connected or
  plugged in.
- The modem switches are set or jumper
  wires are installed for the type of com-
  munications network being used.

2 Perform the following:

a. Verify that the AC power switch is set
   to the On position.
b. Verify that the power cable is con-
   nected to the power outlet.
c. Verify that power is available at the
   customer's power outlet.

3 Is the IPL mode set to the N (Normal) posi-
tion? See "Selecting IPL and Mode" on
page 5-2.

Yes   No

↓   Select the IPL using the type that the system is currently set at (A, B, or D) and mode N (see "Selecting IPL and Mode" on page 5-2).

Check to determine if the IPL can complete successfully from a remote location. If not, continue with the next step of this procedure.

4 Verify that the cable connecting the modem to the communications adapter card in the chassis is fastened correctly.

5 Perform the following:

a. Dial the telephone number for the system.
b. Wait at least 40 seconds for the system to answer.

Note: The Ring Indicator signal is used to start the remote IPL. If the caller hangs up the telephone before the system disconnects the line (indicated by the return of the dial tone), the IPL will not complete. The caller may hear other tones before the dial tone.

Was the telephone answered in 40 seconds?

Yes   No

↓   Go to step 7 of this procedure.

6 Does the IPL complete successfully?

No   Yes

↓   **This ends the procedure.**

7 The IPL from a remote location was not successful. The following steps show you how to start a manual IPL and how to analyze the remote IPL problem.

Select the IPL using the type that the system is currently set at (A, B, or D) and mode M (manual), see "Selecting IPL and Mode" on page 5-2.

8 Start an IPL by powering on the system (see "Powering Off and Powering On the System" on page 5-2).

Does the IPL complete successfully?

Yes   No

↓   If there is a reference code, go to "Unit Reference Code Tables" on page 2-3.

If there is no reference code, exchange the chassis. See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

This ends the procedure.

9 Enter

DSPSYSVAL QRMTIPL

(the Display System Value command) on the command line.

Does the operating system have the correct value of 1 for the remote power-on function?

```
                        Display System Value
                                        System:  S0000000
System value . . . . . . . . . :  QRMTIPL
Description   . . . . . . . . . :  Remote power on and IPL
Initial value  . . . . . . . . :  1        0= Not allowed
                                           1= Allowed
```

Figure 1-6. Example of Remote Power-on Configuration Display for QRMTIPL

Yes   No

↓   Perform the following:

a. Change the value to 1 by entering

CHGSYSVAL SYSVAL(QIPLRMT) VALUE('1')

(the Change System Value command) on the command line.

Note: If you cannot change this value, contact the customer for authorization.

b. Power off the system by entering

PWRDWNSYS *IMMED

(the Power Down System Immediate command) on the command line.

c. Select the IPL type that the system is currently set at and mode N (see "Selecting IPL and Mode" on page 5-2).

d. Verify that an IPL from a remote location is working correctly by going to step 5 of this procedure.

10 Start the communications verification function and run a cable wrap test on the suspected cable by doing the following:

a. Enter

VFYCMN

(the Verify Communications command) on the command line to show the communications verification display.

Note: For more information on VFYCMN (the Verify Communications command), see "Verification Procedures" in the *Service Functions User's Guide*.

b. On the next display, enter the line description name for the communications line that has the remote power-on cable attached.

c. Select the *Cable test* option from the display that shows a list of tests that can be performed on a communications line.

d. Follow all instructions (such as run problem analysis or attach the wrap connector).

Did you find the communications problem using the above procedure?

No   **Yes**

↓   Perform the following:

a. Exchange the failing item indicated, see Chapter 4, "Removal Procedures" on page 4-1.

b. Verify that an IPL from a remote location is working correctly by going to step 5 of this procedure.

This ends the procedure.

11 Enter

PRTERRLOG

(the Print Error Log command) on the command line.

Did the system record any errors in the error log during the time you were performing this manual IPL?

Note: For information on how to work with the error log, see "Error Log Utility" under "System Service Tools" in the *Service Functions User's Guide*.

No   **Yes**

↓   Determine the cause of any system error log entries before continuing with the next step of this procedure.

12 Select M (manual) mode. See "Selecting IPL and Mode" on page 5-2.

If the preceding steps fail to identify the problem, exchange the following parts:

Warning: Before exchanging any part, power off the system (see "Power off" on page 5-2).

- Chassis (see "Chassis" on page 4-2)
- Communications adapter card (see "Adapter Card" on page 4-2)
- Communications cable (see "Adapter Card" on page 4-2)

Notes:

a. Attempt to perform an IPL from a remote location after exchanging each part.

b. If you exchange the chassis, you must set the correct date and time. To set the correct date and time, see "Setting the Date and Time" on page 5-3.

13 If the remote IPL does not complete successfully after you exchange all the parts listed in step 12 of this procedure, ask your next level of support for assistance.

This ends the procedure.

Chapter 2. Unit Reference Codes

How to Use the Unit Reference Code Tables

Note: The table id is the 4 leftmost characters of the data for Function 11 on the control panel or the type field when displayed online.

When instructed to use the unit reference code tables, do the following:

When the system displays a device or functional unit reference code:

1. Go to the section for the device or functional unit and find the unit reference code in the table.

   Some unit reference codes are grouped, for example:

   > 2014,
   > 2018 to
   > 201C,
   > 201E

   All information applies to unit reference codes 2014, 2018, 2019, 201A, 201B, 201C, and 201E.

   The unit reference codes are arranged in hexadecimal sequence, with numeric characters listed before alphabetic characters. For example, unit reference codes 0001 through 0009 are listed before unit reference codes 000A through 000F.

2. Perform the action indicated in the *Description/Action* column of the reference code table to correct the problem. If this does not correct the problem, exchange the failing items or parts in the order they are listed in the table.

3. If no action is indicated in the unit reference code table, exchange the failing items or parts indicated in the table.

   Notes:

   a. When exchanging the failing items, use the Chapter 4, "Removal Procedures" on page 4-1.
   b. When instructed to perform problem isolation procedures, go to Chapter 3, "Problem Isolation Procedures" on page 3-1.

   The failing item listed first should be exchanged first. If exchanging a failing item

does not correct the problem, reinstall the original item and exchange the next failing item in the list. Continue to exchange and reinstall the failing items one at a time until the problem is corrected. If exchanging the failing items does not correct the problem, ask your next level of support for assistance.

4. If the failing item is "Licensed Internal Code (LIC)," ask your next level of support to submit an "Authorized Program Analysis Report (APAR)" or a "Licensed Internal Code trouble report (LICTR)."

Unit Reference Code Tables

(0000) Power Reference Codes

Note: If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing. If the failing item is not an FI code, go to the failing item table following this reference code table for a description of the failing item.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0005	Power supply failed The system unit power supply detected a problem. Perform "POW-PIP1" on page 3-8.	FI02203 FI02204
0006	Power supply failed The system unit power supply detected a problem. Perform "POW-PIP1" on page 3-8.	FI02203 FI02204

Power Failing Items

Failing Item	Description	Document Description
Chassis	• Twinaxial chassis Model P01—part number 75G3392 • Twinaxial chassis Model P02—part number 75G3427	See "Chassis" on page 4-2.

(0000) Control Panel Reference Codes

Note: If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing. If the failing item is not an FI code, go to the failing item table following this reference code table for a description of the failing item.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0000	Service processor failure caused machine check interrupt	Chassis
8200	Service processor card real time clock failed	Chassis
AABB	Remote power-on failure An attempt has been made to power on the system by a remote power-on with the IPL mode set to Manual. To correct the problem, set the IPL mode to Normal or Auto and attempt the remote power-on again if necessary.	Chassis 21F9941
AACC	Service processor power-on failure An attempt has been made to power on the system by a service processor power-on with the IPL mode set to Manual. To correct the problem, set the IPL mode to Normal and attempt the service processor power-on again if necessary. This error can also occur if a power-off has been requested before a complete IPL has occurred to initialize the time-of-day clock on the processor card. The time-of-day clock can become "uninitialized" if the cable from the control panel to the processor becomes disconnected or if there is a simultaneous loss of control power and a bad or disconnected control panel battery.	Chassis
BBBB	Battery not working correctly	21F1599 Chassis
CCCC	Service processor error to or from control panel	Chassis 21F9941
DDDD	Interface error.	Chassis
EEEE	IPL1 failed in the service processor	Chassis 21F9941
FFFF	Control panel self-test failed	Chassis

Control Panel Failing Items

Failing Item	Description	Document Description
21F1599	Control panel battery	"Control Panel Battery" on page 4-5
21F9941	1-line EIA-232/V.24 Communications Adapter	"Adapter Card" on page 4-2
Chassis	• Twinaxial chassis Model P01—part number 75G3392 • Twinaxial chassis Model P02—part number 75G3427	"Chassis" on page 4-2.

(2661) Twinaxial Workstation I/O Processor Reference Codes

Note: If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing. If the failing item is not an FI code, go to the failing item table following this reference code table for a description of the failing item.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0000	Device no response time-out; temporary error	FI00601 FI00602 Chassis
0001	WS IOP detected error when transmitting data Perform "TWSC-PIP1" on page 3-15.	FI00602 FI00601 GSV7777 GSV8888 Chassis
0003	WS IOP detected parity error from device Perform "TWSC-PIP1" on page 3-15.	FI00602 FI00601 GSV7777 Chassis
0004	Device detected parity error from WS IOP Perform "TWSC-PIP1" on page 3-15.	FI00602 FI00601 GSV7777 Chassis
0005	WS IOP detected error when transmitting data Perform "TWSC-PIP1" on page 3-15.	FI00602 FI00601 GSV8888 Chassis
0006	WS IOP detected wrong data from device Perform "TWSC-PIP1" on page 3-15.	FI00601 FI00602 GSV8888 Chassis
0007	WS IOP detected wrong address from device Perform "TWSC-PIP1" on page 3-15.	FI00601 GSV8888 GSV7777 Chassis
0008	WS IOP detected device power turned off, and then on Perform "TWSC-PIP1" on page 3-15.	GSVEEEE FI00601
0009	WS IOP detected wrong device response to start command Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis
0020	Device detected wrong command or device ID from WS IOP Perform "TWSC-PIP1" on page 3-15.	FI00601 AJLMX2B1 Chassis
0021	Device detected not valid value from WS IOP Perform "TWSC-PIP1" on page 3-15.	FI00601 AJLMX2B1 Chassis
0022	Device detected storage or data overrun Perform "TWSC-PIP1" on page 3-15.	FI00601 AJLMX2B1 Chassis
0023	Device detected null or attribute exception error Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0024	Device detected wrong start command from WS IOP Perform "TWSC-PIP1" on page 3-15.	FI00601 AJLMX2B1 Chassis
0025	WS IOP detected wrong exception response from device Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis
0026	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 3-15.	GSV9999 Chassis
0049	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis
0082	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 3-15.	FI00601
0090	WS IOP detected no status change from device Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis
0091	WS IOP detected busy time-out from device Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis
0100	Device no response time-out; temporary error	FI00601 FI00602 Chassis
0101	WS IOP detected error when transmitting data Perform "TWSC-PIP1" on page 3-15.	FI00602 FI00601 GSV7777 GSV8888 Chassis
0103	WS IOP detected parity error from device Perform "TWSC-PIP1" on page 3-15.	FI00602 FI00601 GSV7777 Chassis
0104	Device detected parity error from WS IOP Perform "TWSC-PIP1" on page 3-15.	FI00602 FI00601 GSV7777 Chassis
0105	WS IOP detected error when transmitting data Perform "TWSC-PIP1" on page 3-15.	FI00602 FI00601 GSV8888 Chassis
0106	WS IOP detected wrong data from device Perform "TWSC-PIP1" on page 3-15.	FI00601 FI00602 GSV8888 Chassis
0107	WS IOP detected wrong address from device Perform "TWSC-PIP1" on page 3-15.	FI00601 GSV8888 GSV7777 Chassis
0108	WS IOP detected device power turned off, and then on Perform "TWSC-PIP1" on page 3-15.	GSVEEEE FI00601

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0109	WS IOP detected wrong device response to start command Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis
0111	WS IOP detected wrong keyboard scan code from display Perform "TWSC-PIP1" on page 3-15.	FI00601 AJLMX2B1 Chassis
0120	Device detected wrong command or device ID from WS IOP Perform "TWSC-PIP1" on page 3-15.	FI00601 AJLMX2B1 Chassis
0121	Device detected not valid value from WS IOP Perform "TWSC-PIP1" on page 3-15.	FI00601 AJLMX2B1 Chassis
0122	Device detected storage or data overrun Perform "TWSC-PIP1" on page 3-15.	FI00601 AJLMX2B1 Chassis
0123	Device detected null or attribute exception error Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis
0124	Device detected wrong start command from WS IOP Perform "TWSC-PIP1" on page 3-15.	FI00601 AJLMX2B1 Chassis
0125	WS IOP detected wrong exception response from device Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis
0126	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 3-15.	GSV9999 Chassis
0149	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis
0170	WS IOP detected error downloading printer definition table	QUCVRYON FI00601
0171	WS IOP detected error downloading printer definition table	FI00601 AJLMX2B1
0172	WS IOP detected error downloading printer definition table	CSVPDT QUCVRYON FI00601
0173	WS IOP detected error downloading printer definition table	CSVPDT FI00601
0174	WS IOP detected error unloading printer definition table	FI00601 AJLMX2B1
0175	WS IOP detected device configuration error	FI00601 AJLMX2B1
0176, 0177	WS IOP detected error downloading LIC to device	GSVDMCC FI00601
0181	Wrong magnetic stripe reader response Perform "TWSC-PIP1" on page 3-15.	FI00605 MSVFFFF FI00601 Chassis

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0182	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 3-15.	FI00601
0183	WS IOP detected wrong display size value Perform "TWSC-PIP1" on page 3-15.	FI00601
0184	WS IOP detected wrong keyboard identification Verify that the correct keyboard is attached correctly to the workstation. If the correct keyboard is attached correctly to the workstation, perform "TWSC-PIP1" on page 3-15.	FI00601
0189	Wrong magnetic stripe reader or light pen status Perform "TWSC-PIP1" on page 3-15.	FI00601 FI00605 FI00607 Chassis
0190	WS IOP detected no status change from device Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis GSV7777
0191	WS IOP detected busy time-out from device Perform "TWSC-PIP1" on page 3-15.	FI00601 Chassis
0200	Device no response time-out; temporary error	FI00604 FI00602 Chassis
0201	WS IOP detected error when transmitting data	FI00602 FI00604 GSV7777 GSV8888 Chassis
0203	WS IOP detected parity error from device	FI00602 FI00604 GSV7777 Chassis
0204	Device detected parity error from WS IOP	FI00602 FI00604 GSV7777 Chassis
0205	WS IOP detected error when transmitting data	FI00602 FI00604 GSV7777 Chassis
0206	WS IOP detected wrong data from device	FI00604 FI00602 GSV8888 Chassis
0207	WS IOP detected wrong address from device	FI00604 GSV8888 GSV7777 Chassis
0208	WS IOP detected device power turned off, and then on	GSVEEEE FI00604

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0209	WS IOP detected wrong device response to start command	FI00604 Chassis
0210	Printer detected equipment error	FI00604
0211	Printer detected equipment error	FI00604 AJLMX2B1 Chassis
0212	Printer detected equipment error	FI00604
0220	Device detected wrong command or device ID from WS IOP	FI00604 AJLMX2B1 Chassis
0221	Device detected not valid value from WS IOP	FI00604 AJLMX2B1 Chassis
0222	Device detected storage or data overrun	FI00604 AJLMX2B1 Chassis
0223	WS IOP detected start command to printer was lost	FI00604 FI00602 Chassis
0224	Device detected wrong start command from WS IOP	FI00604 AJLMX2B1 Chassis
0225	WS IOP detected wrong exception response from device	FI00604 Chassis
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 Chassis
0281, 0283 to 0289	Printer detected equipment error	FI00604
0290	WS IOP detected no status change from device	FI00604 Chassis
0291	WS IOP detected busy time-out from device	FI00604 Chassis
A000	Too many devices active on the workstation IOP This error occurs if you attempted to activate more workstations than allowed. Power off (or remove) one or more of the display stations (other than the console) that are attached to this WS IOP. Perform an initial program load (IPL) from the control panel to correct the problem. Refer to your local workstation diagrams for the physical location of workstations if required.	GSVBBBB
B000	WS IOP fails to report part, model and serial number Perform "TWSC-PIP1" on page 3-15.	Chassis

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C000	WS IOP error not known	Chassis AJLMX2B1
D000	Work Station IOA start-up test error	Chassis
D010	WS IOP storage failure corrected Perform "TWSC-PIP1" on page 3-15.	Chassis
D011	WS IOP card storage failure	Chassis
D021	WS IOP detected errors on all cables	FI00602 FI00601 Chassis
D022	WS IOP parity errors detected on all cables	FI00602 FI00601 Chassis
D023	WS IOP detected errors on some, but not all cables Perform "TWSC-PIP1" on page 3-15.	FI00602 FI00601 Chassis
E000	WS IOP or IOA error during working operation	AJLMX2B1 Chassis
F000	WS IOP or IOA operating system program error	AJLMX2B1 Chassis
FFFF	User-detected workstation problem Reference code FFFF is assigned by the Analyze Problem (ANZPRB) command for user perceived errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.	FI00609

Twinaxial Workstation I/O Processor Failing Items

Failing Item	Description	Document Description
AJLMX2B1	Work Station IOP or IOA system Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
Chassis	• Twinaxial chassis Model P01—part number 75G3392 • Twinaxial chassis Model P02—part number 75G3427	"Chassis" on page 4-2.
CSVPDT	Printer definition table	
GSVBBBB	Too many work stations are active on the workstation IOP	
GSVDMCC	Device Licensed Internal Code change	
GSVEEEE	Active device turned off	
GSV7777	Electrical interference	
GSV8888	Other work station on port is failing	
GSV9999	Error occurred with pass-through command	
MSVFFFF	Magnetic stripe reader	Workstation service manual
QUCVRYON	OS/400 licensed program	

(6104) Disk Unit Reference Codes

Note: If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing. If the failing item is not an FI code, go to the failing item table following this reference code table for a description of the failing item.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
102E	Out of alternate sectors for disk storage To find the failing FRU, see "Disk Unit FRU Locations" on page 3-7.	55F9806
3002	Addressed device failed to respond to selection Perform "DU-PIP1" on page 3-2.	55F9806 Chassis FI01106
3010	Disk device returned wrong response to IOP Perform "DU-PIP1" on page 3-2.	55F9806 Chassis
3020	Storage subsystem configuration error If the configuration is correct, perform "DU-PIP1" on page 3-2.	55F9806 FI01106 Chassis
3100	Tape or disk bus interface error occurred Perform "DU-PIP1" on page 3-2.	Chassis 55F9806 FI01106
3109	IOP timed out a disk command Perform "DU-PIP1" on page 3-2.	Chassis 55F9806 FI01106
FFF2	Disk motor problem To find the failing FRU, see "Disk Unit FRU Locations" on page 3-7.	55F9806
FFF3	Disk media format bad To find the failing FRU, see "Disk Unit FRU Locations" on page 3-7.	55F9806
FFF4	Disk device problem To find the failing FRU, see "Disk Unit FRU Locations" on page 3-7.	55F9806 Chassis
FFF5	Disk sector read error Perform "DU-PIP4" on page 3-5.	55F9806
FFF6	Disk device detected recoverable error Disk unit error was recovered Perform "DU-PIP4" on page 3-5.	55F9806
FFF7	Temporary disk data error Disk data error was recovered **Note:** If a large number of these errors occur over a short period of time, exchanging the disk unit is recommended. To find the failing FRU, see "Disk Unit FRU Locations" on page 3-7.	55F9806
FFF8	Temporary disk data error Sector ID error was recovered Perform "DU-PIP4" on page 3-5.	55F9806

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFF9	Temporary disk data error Sector read error was recovered Perform "DU-PIP4" on page 3-5.	55F9806
FFFA	Temporary disk bus error Disk bus error was recovered. No action required. This reference code is logged for information only.	55F9806 Chassis
FFFE	Temporary disk bus error Disk bus error was recovered Perform "DU-PIP4" on page 3-5.	Chassis 55F9806 FI01106

6104 Disk Unit Failing Items

Failing Item	Description	Document Description
55F9806	Disk drive	"Start Disk Service Here" on page 5-4
Chassis	• Twinaxial chassis Model P01—part number 75G3392 • Twinaxial chassis Model P02—part number 75G3427	"Chassis" on page 4-2.

(6152) Communications Reference Codes

This page pertains to the following communications reference codes:

- (6150) Communications I/O Processor
- (6152) Communications Adapter

Information on these reference codes is available from the following sources:

- Use WRKPRB (the Work with Problem command) to run problem analysis and get a description of the reference code and associated failing items.
- Use the Error Log Utility for a description of the reference code.
- See the *Supplement to Reference Code Tables* manual, SY44-0030, for a description of the reference code and associated failing items.

If the failing item is a failing item (FI) code and not a part number, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing.

(6343) Tape Unit Reference Codes

The system has detected a 6343 1/4 inch tape unit error. This is the external tape unit attached to the system.

See the tape unit documentation for all tape unit part numbers. All references to systems other than the one you are working on, should be ignored.

If an IPL type D mode M was being performed, perform the following:

1 Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:

- In Canada and the United States, use part 46G2675.
- In all other countries, use part 8191177.

2 Load the first tape of the latest set of SAVSYS tapes, SAVSTG tapes, or the first IBM Software Distribution tape.

3 Start an IPL type D mode M from the system unit control panel. (See "Selecting IPL and Mode" on page 5-2.)

4 Does the IPL complete successfully?

Yes This ends the procedure.

No Obtain another copy of the tape. Repeat steps 2 and 3 using the new tape. If the problem continues, continue with step 5.

5 Look at the 4 rightmost characters of the Data display for function 11-2. These 4 characters are the unit reference code.

6 Find the unit reference code in the following table.

Note: If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing. If the failing item is not an FI code, go to the failing item table following this reference code table for a description of the failing item.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0003	The data format is incorrect; the tape cannot be read Format is the arrangement of the data fields or record sequences recorded on a magnetic tape.	MHGTFOR
3002, 3003	IOP card addressed 1/4-inch tape unit; no response The tape unit did not respond to commands from the IOP. Perform the following: 1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, see the tape unit manual and analyze the problem. 2. Power off the tape unit. 3. Ensure the system interface cable is connected at the tape unit and the IOP. 4. Power on the tape unit.	FI01106 Chassis

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3004	Tape unit failed after Licensed Internal Code was loaded The tape unit did not respond to commands from the IOP. Perform the following: 1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, see the tape unit manual and analyze the problem. 2. Power off the tape unit. 3. Ensure the system interface cable is connected at the tape unit and the IOP. 4. Power on the tape unit.	FI01106 Chassis
3010	IOP detected incorrect response from the tape unit.	Tape unit
3100, CC04	Interface failure between IOP and 1/4-inch tape unit The tape unit did not respond to commands from the IOP. Perform the following: 1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, see the tape unit manual and analyze the problem. 2. Power off the tape unit. 3. Ensure the system interface cable is connected at the tape unit and the IOP. 4. Power on the tape unit.	FI01106 Chassis
CC06	Damaged cartridge detected or the tape unit failed 1. Remove the data cartridge and inspect it for the following conditions: • The tape has run off one of the spools (the tape does not pass in front of the mirror). • The mirror is broken or skewed out of its normal position. • The data cartridge belt is broken or damaged. • The tape is not wound correctly on both spools. • The tape is broken. 2. Exchange the data cartridge if it has one of the above conditions. **Note:** If the tape has been broken in more than one cartridge, also exchange the tape unit.	MHGTCAR Tape unit
CC0C	1/4-inch tape unit failed The tape unit did not respond to commands from the IOP. Ensure that the tape unit is powered on. If the tape unit does not become powered on, see the tape unit manual and analyze the problem.	Tape unit
CC18	Unexpected end-of-media detected The tape being used was not written correctly. • If the tape was not written by an AS/400 system, it may not be readable. • If the tape was written by an AS/400 system, ask your next level of support for assistance.	MHGTFOR

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

CC1A,
CC1B
	Damaged cartridge detected or the tape unit failed
	
	1. Remove the data cartridge and inspect it for the following conditions:
	  • The tape has run off one of the spools (the tape does not pass in front of the mirror).
	  • The mirror is broken or skewed out of its normal position.
	  • The data cartridge belt is broken or damaged.
	  • The tape is not wound correctly on both spools.
	  • The tape is broken.
	2. Exchange the data cartridge if it has one of the above conditions.
	
	Note: If the tape has been broken in more than one cartridge, also exchange the tape unit.
		MHGTCAR
		Tape unit

CC1E	Unexpected end-of-media detected Ensure that you are using an IBM-approved data cartridge (see the *System Operator's Guide*, SC41-8082). If the cartridge is approved, ask your next level of support for assistance.	MHGTFOR

CC20,
CC22
	Tape unit detected a read or write error on tape medium
	
	1. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:
	  • In Canada and the United States, use part 46G2675.
	  • In all other countries, use part 8191177.
	2. Perform an IPL.
		MHGTCAR
		Tape unit

CC36	IOP detected incorrect response from the tape unit.	Tape unit
CC38	1/4-inch tape unit failed The tape unit did not respond to commands from the IOP. Ensure that the tape unit is powered on. If the tape unit does not become powered on, see the tape unit manual and analyze the problem.	Tape unit

CC45	Tape unit detected a read or write error on tape medium
	
	1. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:
	  • In Canada and the United States, use part 46G2675.
	  • In all other countries, use part 8191177.
	2. Perform an IPL.
		MHGTCAR
		Tape unit

CC4A	Unexpected end-of-media detected	MHGTFOR
CC4B	Damaged cartridge detected or the tape unit failed	Tape unit MHGTCAR

CC54	Damaged cartridge detected or the tape unit failed.
	
	1. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:
	  • In Canada and the United States, use part 46G2675.
	  • In all other countries, use part 8191177.
	2. Perform an IPL.
		MHGTCAR
		Tape unit

CC5F	1/4-inch tape unit failed	Tape unit
CC65	Licensed Internal Code for the tape unit is not correct	A0B00E1

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
CD02, CD03, CD0D, CD42, CD53	Tape unit detected incorrect request from the IOP. Ask your next level of support for assistance.	FI00130
CF01	Tape unit detected incorrect request from Vertical LIC. Ask your next level of support for assistance.	AJDG301
CF16	Tape unit detected incorrect request from Vertical LIC. Ask your next level of support for assistance.	AJDG301
CF60	The data format is incorrect; the tape cannot be read See the *System Operator's Guide*, SC41-8082 ("Using Tapes and Diskettes," *QIC Formats, Data Cartridges, and Tape Unit Compatibility*).	MHGTFOR

FF01	Damaged cartridge detected or the tape unit failed
	
	1. Remove the data cartridge and inspect it for the following conditions:
	   • The tape has run off one of the spools (the tape does not pass in front of the mirror).
	   • The mirror is broken or skewed out of its normal position.
	   • The data cartridge belt is broken or damaged.
	   • The tape is not wound correctly on both spools.
	   • The tape is broken.
	2. Exchange the data cartridge if it has one of the above conditions.
	
	Note: If the tape has been broken in more than one cartridge, also exchange the tape unit.
		MHGTCAR
		Tape unit

FF03	Cartridge removed; end-of-tape processing did not complete Perform the following: 1. Insert the cartridge again. 2. Send a DSPTAP command to the drive and read through all the files recorded on the tape. 3. If an error occurs, run the job again. If an error does not occur, the tape is good.	UHGUSER
FF04	Cartridge removed; end-of-tape processing did not complete Perform the following: 1. Insert the cartridge again. 2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD. 3. After the status light goes off, remove the cartridge. The tape is now ready for storage.	UHGUSER
FF05	Cartridge changed or device reset; processing not complete Perform the following: 1. If a new cartridge was inserted, remove it and insert the last cartridge used. Otherwise, keep the cartridge in the drive. 2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD. 3. After the status light goes off, remove the cartridge. The tape is now ready for storage.	UHGUSER

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FF06	Cartridge changed or device reset; processing not complete Perform the following: 1. If a new cartridge was inserted, remove it and insert the last cartridge used. Otherwise, keep the cartridge in the drive. 2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD. 3. After the status light goes off, remove the cartridge. The tape is now ready for storage.	UHGUSER
FF07, FF08	Device powered off; end-of-tape processing not complete Ensure that the tape unit is powered on. If the tape unit does not become powered on, see the tape unit manual and analyze the problem. If the device is now powered on, perform the following: 1. If the cartridge was removed, insert it again. 2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD. 3. After the status light goes off, remove the cartridge. The tape is now ready for storage.	FI01106 *Chassis*
FF09	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed. The tape drive will continue to operate with the previous LIC. Wait for next IPL when the system will attempt to load the LIC for the tape drive again.	
FF4D, FF4F	A recoverable interface error occurred No action required. This reference code is logged for information only.	
FF5D	A recoverable not operational error occurred No action required. This reference code is logged for information only.	
FFF6	Tape volume statistics logged (no action required) This reference code is logged for information only.	

6343 Tape Unit Failing Items

Failing Item	Description	Document Description
AJDG301	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
A0B00E1	Licensed Internal Code for programmable tape unit	Service Functions User's Guide; APAR or LICTR
Chassis	• Twinaxial chassis Model P01—part number 75G3392 • Twinaxial chassis Model P02—part number 75G3427	"Chassis" on page 4-2.
MHGTCAR	Defective tape or damaged cartridge	System Operations: Operator's Guide SC41-8082
MHGTFOR	The data format is incorrect; the tape cannot be read	System Operations: Operator's Guide SC41-8082
Tape unit	External 1/4-inch tape unit	External 1/4-inch tape unit documentation
UHGUSER	System Operator/User	System Operations: Operator's Guide SC41-8082

(6601) Disk Unit Reference Codes

Note: If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing. If the failing item is not an FI code, go to the failing item table following this reference code table for a description of the failing item.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
102E	Out of alternate sectors for disk storage To find the failing FRU, see "Disk Unit FRU Locations" on page 3-7.	45G9463
3002	Addressed device failed to respond to selection Perform "DU-PIP3" on page 3-2.	45G9463 Chassis FI01106
3010	Disk device returned wrong response to IOP Perform "DU-PIP1" on page 3-2.	45G9463 Chassis
3020	Storage subsystem configuration error Perform "DU-PIP1" on page 3-2.	45G9463 FI01106 Chassis
3100	Tape or disk bus interface error occurred Perform "DU-PIP3" on page 3-2.	Chassis 45G9463 FI01106
3109	IOP timed out a disk command Perform "DU-PIP3" on page 3-2.	Chassis 45G9463 FI01106
FFF2	Disk motor problem To find the failing FRU, see "Disk Unit FRU Locations" on page 3-7.	45G9463
FFF3	Disk media format bad To find the failing FRU, see "Disk Unit FRU Locations" on page 3-7.	45G9463
FFF4	Disk device problem To find the failing FRU, see "Disk Unit FRU Locations" on page 3-7.	45G9463 Chassis
FFF5	Disk sector read error Perform "DU-PIP4" on page 3-5.	45G9463
FFF6	Disk device detected recoverable error Disk unit error was recovered Perform "DU-PIP4" on page 3-5.	45G9463
FFF7	Temporary disk data error Disk data error was recovered **Note:** If a large number of these errors occur over a short period of time, exchanging the disk unit is recommended. To find the failing FRU, see "Disk Unit FRU Locations" on page 3-7.	45G9463
FFF8	Temporary disk data error Sector ID error was recovered Perform "DU-PIP4" on page 3-5.	45G9463

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFF9	Temporary disk data error Sector read error was recovered Perform "DU-PIP4" on page 3-5.	45G9463
FFFA	Temporary disk bus error Disk bus error was recovered. No action required. This reference code is logged for information only.	45G9463 Chassis
FFFE	Temporary disk bus error Disk bus error was recovered Perform "DU-PIP4" on page 3-5.	Chassis 45G9463 FI01106

Disk Unit Failing Items

Failing Item	Description	Document Description
45G9463	Disk drive	"Start Disk Service Here" on page 5-4
Chassis	• Twinaxial chassis Model P01—part number 75G3392 • Twinaxial chassis Model P02—part number 75G3427	"Chassis" on page 4-2.

(9143, 9144) Multiple Function I/O Processor Reference Codes

Note: If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing. If the failing item is not an FI code, go to the failing item table following this reference code table for a description of the failing item.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A1	I/O processor detected a buffer allocation error	AJEDA00 Chassis
09A2	I/O processor detected a recoverable system bus error No action required. This reference code is logged for information only.	
0A17	A permanent I/O processor failure occurred	Chassis AJEDA00
0A18	I/O processor detected a random interrupt Perform "SDC-PIP3" on page 3-11.	Chassis FI01107
0A20	I/O processor resource not available	FI01105 Chassis AJEDA00
0A21	I/O processor detected a storage transfer error Perform "SDC-PIP3" on page 3-11.	Chassis FI01107
0A22	I/O processor detected a storage transfer error	Chassis AJEDA00
0A41	I/O processor parity error	Chassis 21F9941
0AA3	A permanent I/O processor failure occurred	AJEDA00 Chassis
0AC9	I/O processor detected a buffer allocation error	AJEDA00 Chassis 21F9941
0AD0	I/O processor detected a storage sequence error	AJEDA00 Chassis 21F9941
0AD1	A permanent I/O processor failure occurred	Chassis 21F9941
1070	I/O processor memory error	Chassis AJEDA00
1071	Problem with tape media, possibly a user error	MSTMEDA AJEDA00 FI01105
1072	I/O processor Licensed Internal Code error	AJEDA00
1073	I/O processor memory error No action required. This reference code is logged for information only.	
1074	Problem with tape media, possibly a user error	MSTMEDA
1075	I/O processor detected a buffer allocation error	AJEDA00 MSTMEDA
1076	I/O processor Licensed Internal Code error	AJEDA00

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1077	EEPROM update occurred No action required. This reference code is logged for information only.	
107F	I/O processor Licensed Internal Code error	AJEDA00
1A03	I/O processor resource not available	AJEDA00 AJDG301
1A10	I/O processor resource not available The I/O processor error log has been filled. If it is possible to view the error log via DST or other system level methods, correct those errors in the error log before correcting this reference code. If there are no other error log messages, perform "SDC-PIP3" on page 3-11.	Chassis 21F9941 FI01107 AJEDA00
3000	A permanent I/O processor failure occurred	Chassis
3002	Tape or disk device failed to respond to selection	FI01105 Chassis
3006	A permanent I/O processor failure occurred	Chassis 21F9941
3020	I/O processor detected a SCSI bus configuration error Use the FI codes to find failing devices.	USTUSER FI01105 Chassis
3030	A tape or disk device reported a failure	FI01105 Chassis
3031	Type of tape or disk unit not known	FI01105 AJEDA00
3100	Tape or disk bus interface error occurred Perform "SDC-PIP3" on page 3-11.	Chassis FI01105
3200	A tape or disk device reported a failure	FI01105 MSTMEDA
3300	Tape unit detected a tape problem	MSTMEDA Tape unit Cable
3400	Failure in initialization of a device task	FI01105 Chassis
3500	I/O processor Licensed Internal Code error	AJEDA00 Chassis
3501	I/O processor Licensed Internal Code error	AJEDA00
4002	I/O processor Licensed Internal Code error	AJEFDA10 Chassis
4003	I/O processor Licensed Internal Code error	AJEFDA21 Chassis
4030	Data decompression failure, I/O processor operational	MSTMEDA Chassis
B300	A permanent I/O processor failure occurred	Chassis 21F9941
B301	A permanent I/O processor failure occurred	Chassis 21F9941

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B3D0, B3E0	A permanent I/O processor failure occurred	Chassis
B3E9	Not valid system configuration detected during IPL	USTUSER Chassis
B5E9	I/O processor detected errors in control panel interface	Chassis
B701	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B711	Control storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B720 to B7E5	A permanent I/O processor failure occurred	Chassis
B791	I/O processor detected a recoverable device error No action required. This reference code is logged for information only.	
B7A2	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B940	Adapter card storage failure	21F9941 Chassis
B950	Adapter card storage or vital product data (VPD) failure	21F9941 Chassis
B960	Type of adapter card not known	AJEDA00 21F9941
B980	Tape or disk bus interface error occurred Perform "SDC-PIP3" on page 3-11.	Chassis FI01107
B981	Tape or disk bus interface error occurred Perform "SDC-PIP7" on page 3-12.	Chassis FI01107
B982	I/O processor detected a storage device failure	FI01105 Chassis
B983	Tape unit detected a tape problem	MSTMEDA FI01105 Chassis
B986	Tape or disk bus interface error occurred	FI01105 Chassis
B98F	Type of tape or disk unit not known	FI01105 AJEDA00
B9D2	I/O processor cannot communicate with control panel	Chassis
B9D5	I/O processor detected a timer problem	Chassis
BB00	System bus error	Chassis 21F9941
BE01	I/O processor was not ready for interrupt that occurred	AJEDA00 Chassis 21F9941
BE04	I/O processor Licensed Internal Code error	AJEDA00 Chassis

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
BE18	I/O processor detected a random interrupt	21F9941 Chassis
BE1A	I/O processor was not ready for interrupt that occurred	Chassis AJEDA00
BE1B	I/O processor was not ready for interrupt that occurred	AJEDA00 Chassis FI01107
BE1C to BE1E	I/O processor was not ready for interrupt that occurred	AJEDA00 Chassis
BE40	A permanent I/O processor failure occurred	Chassis AJEDA00
BE45, BE46	Adapter card not communicating to I/O processor	21F9941 Chassis AJEDA00
BE48	A permanent I/O processor failure occurred	Chassis AJEDA00
BE50	I/O processor detected a random interrupt	Chassis
BE51	I/O processor memory error	Chassis
BE52	I/O processor card or Licensed Internal Code error	AJEDA00 Chassis 21F9941
BE53, BE54	I/O processor Licensed Internal Code error	AJEDA00 Chassis
BE55	I/O processor memory error	Chassis
BE56, BE57	A permanent I/O processor failure occurred	Chassis
BE58	I/O processor detected a random interrupt	Chassis AJEDA00
BE60	I/O processor detected a random interrupt	Chassis
FF3D	I/O processor detected an internal error No action required. This reference code is logged for information only.	Chassis
FF6D	I/O processor detected a recoverable system bus error No action required. This reference code is logged for information only.	Chassis 21F9941

Multiple Function I/O Processor Failing Items

Failing Item	Description	Document Description
21F9941	1-line EIA-232/V.24 Communications Adapter	"Adapter Card" on page 4-2
AJDG301	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
AJEDA00	I/O processor Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
AJEFDA10	I/O processor Licensed Internal Code	Service Functions User's Guide; APAR or LICTR

Failing Item	Description	Document Description
AJEFDA21	I/O processor Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
Cable	External 1/4-inch tape unit cable • United States and Canada .67 meter—part 31F4222 • United States and Canada 1.5 meter—part 74G8526 • All other countries .67 meter—part 8191252 • All other countries 1.5 meter—part 74G8529	
Chassis	• Twinaxial chassis Model P01—part number 75G3392 • Twinaxial chassis Model P02—part number 75G3427	"Chassis" on page 4-2.
MSTMEDA	Defective tape	System Operations: Operator's Guide SC41-8082
Tape unit	External 1/4-inch tape unit	External 1/4-inch tape unit documentation
USTUSER	System Operator/User	System Operations: Operator's Guide SC41-8082

(11-2 A1xx, B1xx, C1xx, D1xx, B123) Service Processor Reference Codes

Note: If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing. If the failing item is not an FI code, go to the failing item table following this reference code table for a description of the failing item.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
A1xx xxxx	Service processor attention, check devices ready.	
B1xx 0000	Service processor detected a failing IOP.	Chassis Tape
B1xx 1xxx	Service processor ROS IPL failure.	Disk or tape Chassis Jumper
B1xx 2xxx	Service processor RAM IPL failure.	Chassis Disk
B1xx 3xxx	Main Storage dump failure.	Chassis Disk User
B1xx 5xxx	Service processor diagnostic failure	Chassis Disk
B1xx 8xxx	Service processor internal failure.	Chassis LIC
B1xx 9xxx	Service processor diagnostic failure.	Chassis Disk
B1xx Dxxx	Service processor functional failure.	Chassis LIC Disk
C1xx xxxx	Service processor status for IPL.	
D1xx xxxx	Service processor status for diagnostic.	

Service Processor Failing Items

Failing Item	Description	Document Description
Jumper	• 6104 disk unit address jumper—part 21F1657 • 6601 disk unit address jumper—part 8193233	"Disk Unit" on page 4-7
Chassis	• Twinaxial chassis Model P01—part number 75G3392 • Twinaxial chassis Model P02—part number 75G3427	"Chassis" on page 4-2.

Failing Item	Description	Document Description
Disk	• 6104—disk unit • 6601—disk unit **Note:** To determine which disk unit you have, look at the address jumpers. The address jumper on a 6104 disk unit is located on the same end as the signal and power connectors. The address jumper on a 6601 disk unit is located on the opposite end from the signal and power connectors.	"Disk Unit" on page 4-7
LIC	Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
Tape	External 1/4-inch tape unit	External 1/4-inch tape unit documentation
User	Procedural error	

(A6xx, B6xx, C6xx, D6xx) Vertical Licensed Internal Code (VLIC) Reference Codes

Note: If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing. If the failing item is not an FI code, go to the failing item table following this reference code table for a description of the failing item.

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

0000	Operating system status code
	
	This reference code is for information only. It is shown in the error log as a side effect of a condition that was detected by VLIC.
	
	Normally, no action should be taken as a result of information reference codes. However, to isolate the root cause, use these suggestions:
	
	  1. Examine the date and time of the informational reference code.
	
	  2. Determine if any other reference codes have been logged at or before the same date and time.
	
	  3. Begin the service approach based on these other logged errors.	

0101 to 0108	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0110	System equipment problem Select Function 02 (start IPL) press Enter to start the IPL. This may cause a new reference code. Use the new reference code to analyze the problem. If no reference code appears, the system has corrected the problem.	
0115	System equipment problem Perform "VLIC-PIP8" on page 3-22.	AJDG301
0116	System equipment problem Select Function 02 (start IPL) press Enter to start the IPL. This may cause a new reference code. Use the new reference code to analyze the problem. If no reference code appears, the system has corrected the problem.	
0150	Operating system status code Perform "VLIC-PIP8" on page 3-22.	AJDG301
0201	Not enough system storage for initial program load Perform "VLIC-PIP8" on page 3-22.	AJDG301
0202	Operating system recovery needed Restore the Licensed Internal Code using the "Licensed Internal Code Install and Restore" procedures in the *Service Functions User's Guide*.	
0204	Operating system recovery needed Perform "VLIC-PIP8" on page 3-22. The problem may also be that there is not enough auxiliary storage.	
0208	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0209, 0215	Operating system recovery needed Perform "VLIC-PIP8" on page 3-22.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0217	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0219, 0222	Operating system recovery needed Perform "VLIC-PIP8" on page 3-22.	
0223, 0224	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0227	Operating system recovery needed Perform "VLIC-PIP8" on page 3-22.	
0228	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0234, 0235	Operating system recovery needed Perform "VLIC-PIP8" on page 3-22.	
0236	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0237	OS/400 licensed program failed Perform "VLIC-PIP10" on page 3-23.	AJDG301
0241 to 0243	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0244	Disk device problem Do not power off the system. Perform "VLIC-PIP13" on page 3-28.	FI00580 FI00500 AJEDA00 Chassis AJDG301
0245	OS/400 licensed program failed	AJEDA00 Chassis FI00580 FI00500 AJDG301
0246	IOP problem	Chassis AJEDA00 FI00580 FI00500 AJDG301
0247	Disk device problem	FI00580 Chassis FI00500 AJEDA00 AJDG301
0248	Disk device problem	FI00580 FI00500 AJDG301
0249	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0250	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301 Chassis
0251	Disk device problem Perform "VLIC-PIP13" on page 3-28.	FI00580 FI00500 AJEDA00 Chassis AJDG301
0252	System equipment problem Perform "VLIC-PIP14" on page 3-28.	
0253	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0255	Disk device problem Do not power off the system. Perform "VLIC-PIP13" on page 3-28.	FI00580 FI00500 AJEDA00 Chassis AJDG301
0257	IOP problem	Chassis AJEDA00 FI00580 FI00500 AJDG301
0261	OS/400 licensed program failed	Chassis
0262	OS/400 licensed program failed	AJSG501 Chassis
0266	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0297	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJEDA00 AJDG301 Chassis FI00580 FI00500
0298	Operating system status code Perform "VLIC-PIP9" on page 3-23.	AJDG301
0299, 0301, 0302, 0304, 0305, 0308, 0309, 0310, 0312, 0314	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0315	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#CFTRAP2

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0401 to 0403, 0405 to 0409, 0410 to 0413	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0414	System equipment problem Perform "VLIC-PIP8" on page 3-22.	AJDG301
0415 to 0419, 0420 to 0423	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0424	IOP problem Perform "VLIC-PIP7" on page 3-21.	FI00065 #BMIPL AJDG301
0425, 0427 to 0429, 0430, 0431	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0432	IOP problem	FI00065 AJDG301
0433	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJEDA00 AJDG301 Chassis
0434, 0436, 0438	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	Chassis AJEDA00 FI00580 FI00500 AJDG301
0439, 0440, 0441, 0443 to 0449	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0451	Operating system status code Power is not available. Power on the system from the control panel to start the initial program load when power is available.	AJDG301
0480 to 0482	Machine termination problem If this reference code is displayed on the control panel for more than 30 minutes, turn the system power off. When power to the system becomes available, power on the system from the control panel to start the initial program load.	AJDG301
0485, 0486	Operating system status code The system has lost power and is operating on the uninterruptible power supply.	
0487	Operating system status code Power has returned, and the system is no longer operating on the uninterruptible power supply.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0504, 0506, 0607, 0611, 0612	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
0615	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22. The problem may also be that there is not enough auxiliary storage.	AJDG301
0616, 0617, 0620, 0625, 1210, 1215, 1217, 1219, 1604, 1719	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
1800	Operating system status code Perform "VLIC-PIP9" on page 3-23.	#POMAIN
18FD to 18FF	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#POMAIN
2041 to 2147	OS/400 Licensed Program failed. Perform "VLIC-PIP8" on page 3-22.	AJDG301
4001 to 4008, 4010 to 4014	Operating system status code Perform "VLIC-PIP9" on page 3-23.	AJDG301
4020	Operating system status code	AJSG501 AJDG301 Chassis
4021 to 4029, 4030 to 4032, 4036	Operating system status code Perform "VLIC-PIP9" on page 3-23.	AJDG301
4101 to 4104, 4106, 4107, 410A, 4111 to 4114, 4117, 411A, 4121 to 4124, 4127, 412A	Operating system status code Perform "VLIC-PIP9" on page 3-23.	AJDG301 #BMIPL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4131 to 4134, 4137, 413A, 4141 to 4144, 4147, 414A, 4151 to 4154, 4157, 415A, 4161 to 4164, 4167, 416A, 4171 to 4174, 4177, 417A	Operating system status code Look at the third character from the left in this unit reference code. If the number of system I/O buses is less than this value, perform "VLIC-PIP8" on page 3-22. If the number of system I/O buses is equal to or more than this value, perform "VLIC-PIP9" on page 3-23. **Note:** See the latest configuration printout of your system to determine the number of system I/O buses.	AJDG301 #BMIPL
4204, 4205, 4210, 4220, 4230, 4240, 4250, 4260, 4270, 4272, 4275, 4280, 4282	Operating system status code Perform "VLIC-PIP9" on page 3-23.	AJDG301
4300 to 4307	Operating system status code Perform "VLIC-PIP9" on page 3-23.	#CMCCIOM #CMRASFP
5001	IOP problem The workstation I/O processor for the system console failed to respond.	Chassis #CMCNFIG
5002	Service program failed A service program problem occurred during an attempt to use the system console. Perform "VLIC-PIP3" on page 3-20.	#S3DPCTL Chassis
5004	Service program failed The twinaxial system console failed to respond. Perform "TWSC-PIP1" on page 3-15.	UG6USR1 FI00320 FI00602 #S3ISCTL Chassis
5005	Service program failed The workstation adapter system console failed to respond.	UG6USR1 FI00320 FI00602 #S3ISCTL Chassis

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5010	Service program failed Perform "VLIC-PIP4" on page 3-21.	#ITSF
5082	Service program failed A service program lost contact with the system console. Perform "TWSC-PIP1" on page 3-15.	#S3ISCTL UG6USR1
5083	Service program failed A service program lost contact with the system console. Perform "VLIC-PIP4" on page 3-21.	#S3ISCTL UG6USR1
5090	Disk device, service processor, or operating system problem Perform "VLIC-PIP11" on page 3-24.	FI00580 FI00500 Chassis FI00065 #S3ISCTL
5091	Disk device problem Perform "VLIC-PIP11" on page 3-24.	FI00580 #S3ISCTL
50C0	OS/400 licensed program failed The version of Licensed Internal Code does not match the version of OS/400. Ask the customer to install the correct version of OS/400.	
50FF	Service program failed Perform "VLIC-PIP3" on page 3-20.	#S3ISCTL Chassis
5100	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMINTF0 AJDG301
5103	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMIPL AJDG301
5104	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMREMST AJDG301
5105	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMCFBM AJDG301
5106	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMCFBMR AJDG301
5107	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMCINTF AJDG301
5108	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMKERNR AJDG301
5109	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMGETD AJDG301
5110	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMCFRTR AJDG301
5111	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMTIMER AJDG301

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5112	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMBIPCF AJDG301
5113	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMCINTR AJDG301
5114	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#BMCINTO AJDG301
5126	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#CMCCIOM #CMRASFP #CMCNFIG
5151	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	#IPOMGR #IPOMRSP #IPOMREQ #IPOMERP #IPROUTE
5200 to 5207	IOP failure	FI00310 FI00065 AJDG301
5208 to 520A	IOP not successfully loaded, IOP failure. Perform "VLIC-PIP7" on page 3-21.	FI00310 FI00065 AJDG301
520B to 520C	IOP failure	FI00310 FI00065 AJDG301
520D to 520E	IOP failure Perform "VLIC-PIP7" on page 3-21.	FI00310 FI00065 AJDG301
520F to 5214	IOP failure	FI00310 FI00065 AJDG301
5215 to 5249	IOP failure Perform "VLIC-PIP7" on page 3-21.	FI00310 FI00065 AJDG301
5260 to 5262	IOP failure Perform "VLIC-PIP7" on page 3-21.	FI00310 FI00065 #IPOMGR
5270	OS/400 licensed program failed CCIOM detected wrong base load ID in bus configuration SRM. IPCF RAS connection cannot be open to I/O processor. Perform "VLIC-PIP7" on page 3-21.	#CMRASFP
5271 to 5273	IOP failure Perform "VLIC-PIP7" on page 3-21.	FI00310 FI00065 #CMCCIOM #CMRASFP
5274	IOP sent bad status on bus command CCIOM received wrong report status table data from an I/O processor. Perform "VLIC-PIP7" on page 3-21.	FI00310 FI00065 #CMCNFIG

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5275	IOP Reset was issued No action required. This reference code is logged for information only.	
6001	User action required; Lic Int Code install/restore utility This reference code occurs during the procedure to restore Licensed Internal Code. See "Restoring Licensed Internal Code" in the *Service Functions User's Guide*.	UG6USR1
6002 to 6004	User action required; Lic Int Code install/restore utility See Appendix A, "Licensed Internal Code Install and Restore SRCs That Require User Action" in the *Service Functions User's Guide*.	UG6USR1
6005	User action required; Lic Int Code install/restore utility See Appendix A, "Licensed Internal Code Install and Restore SRCs That Require User Action" in the *Service Functions User's Guide*.	UG6USR1 FI00360
6006 to 6009, 6010, 6011, 6030, 6041 to 6043, 6048, 6049, 6050 to 6052	User action required; Lic Int Code install/restore utility See Appendix A, "Licensed Internal Code Install and Restore SRCs That Require User Action" in the *Service Functions User's Guide*.	UG6USR1
6101, 6102	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	#SENUKE
6103	Licensed Internal Code install/restore utility problem If exchanging the failing items does not correct the problem, perform "VLIC-PIP1" on page 3-20.	Chassis #SENUKE
6104 to 6109	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	#SENUKE
6110	Licensed Internal Code install/restore utility ended	UG6USR1
6111 to 6119, 6120 to 6129	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	#SENUKE
6130 to 6132	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	Chassis AJEDA00 FI00580 FI00500 #SENUKE
6133 to 6136	Licensed Internal Code install/restore utility problem	Chassis AJEDA00 FI00580 FI00500 #SENUKE
6138, 6139	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	#SENUKE

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6140 to 6143	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	Chassis AJEDA00 FI00580 FI00500 #SENUKE
6144 to 6146	Licensed Internal Code install/restore utility problem	Chassis AJEDA00 FI00580 FI00500 #SENUKE
6148, 6149, 6150	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	#SENUKE
6151	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	UG6USR1
6152	Licensed Internal Code install/restore utility problem Install the Licensed Internal Code using the correct tapes and "Licensed Internal Code Install and Restore SRCs That Require User Action" in the *Service Functions User's Guide*.	UG6USR1
6158	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	Chassis AJEDA00 FI00580 FI00500 #SENUKE
6159	Licensed Internal Code install/restore utility problem If this reference code occurred while you were restoring Licensed Internal Code using the Licensed Internal Code Install/Restore utility, it will be necessary to restart the utility and install the Licensed Internal Code. **Warning:** The user should save a copy of the system before installing the Licensed Internal Code because the Licensed Internal Code Install utility destroys all the user data.	Chassis AJEDA00 FI00580 FI00500 #SENUKE
6160	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	#SENUKE
6161	Licensed Internal Code install/restore utility problem The Licensed Internal Code tape is not loaded with the correct device Licensed Internal Code. Start the utility again with the correct tape.	UG6USR1
6162, 6163	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	#SENUKE
6166	User action required; Lic Int Code install/restore utility The Licensed Internal Code tape is not loaded with the correct level of Licensed Internal Code for the model upgrade function. Start the utility again with the correct tape.	UG6USR1
6167	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	UG6USR1
6168	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	#SENUKE

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6169	Licensed Internal Code install/restore utility problem Perform "VLIC-PIP1" on page 3-20.	UG6USR1
6201 to 6206, 6208, 6209, 6210, 6211	Licensed Internal Code install/restore utility status code Perform "VLIC-PIP2" on page 3-20.	#SENUKE
6299	Licensed Internal Code install/restore utility status code This reference code indicates that the Stand Alone Utility has completed and an IPL from a disk unit has been started. This is an informational reference code and does not indicate that an error has occurred. If this reference code is displayed on the control panel for more than five minutes, IPL the system.	#SENUKE
6301	Licensed Internal Code install/restore utility status code Perform "VLIC-PIP2" on page 3-20.	#SENUKE
6330	Licensed Internal Code install/restore utility status code Perform "VLIC-PIP2" on page 3-20.	FI00360 #SENUKE
6340	Licensed Internal Code install/restore utility status code Perform "VLIC-PIP2" on page 3-20.	FI00350 #SENUKE
6350 to 6357, 6360 to 6367	Licensed Internal Code install/restore utility status code Perform "VLIC-PIP2" on page 3-20.	#SENUKE
6901 to 6909	I/O bus failure	FI00065 AJDG301
6920 to 6929	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
6930 to 6933	I/O bus failure	FI00065 AJDG301
6934	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
6935	I/O bus failure	FI00065 AJDG301
6936 to 6937	OS/400 Licensed Program failure Perform "VLIC-PIP8" on page 3-22.	AJDG301
6938 to 6944	I/O bus failure	FI00065 AJDG301
6950 to 6962	IOP failure	FI00310 FI00065 AJDG301
6963 to 6966	IOP failure Perform "VLIC-PIP7" on page 3-21.	FI00310 FI00065 AJDG301

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6967	IOP problem Perform "VLIC-PIP8" on page 3-22.	Chassis AJEDA00 FI00580 FI00500 AJDG301
6968	IOP returned bad status on bus command I/O processor returned incorrect bus status.	FI00310 FI00065 AJDG301
6980	OS/400 licensed program failed Perform "VLIC-PIP8" on page 3-22.	AJDG301
6990 to 69FF	OS/400 Licensed Program failure Perform "VLIC-PIP8" on page 3-22.	AJDG301
7001	ISDN call in rejected	GG6COMM
7002	Lines not selected	GG6COMM
7003	Network interfaces not selected	GG6COMM
7100	APPN session initiation attempt has timed out This reference code is used to indicate that VLIC timed out on a request to initiate a session. The PDP will indicate whether the original timeout condition still exists and what the corrective actions should be.	GG6PL03 GG6PL01 GG6PL02 #LCTRTSK #LCCPTSK #LCDSTSK #LMTASK #MSSAPPN QLCCRTCD #TP2SECS QLCCRTLD
7101	APPN session initiation attempt has failed This reference code is used to indicate that VLIC attempted to satisfy a session initiation request, but some failure condition was detected by VLIC. The failure condition could be a configuration or operational problem in the network.	GG6PL04 GG6PL05 GG6PL06 #LCTRTSK #LCCPTSK #LCDSTSK
7201	Uninterruptible Power System reported a utility failure This reference code is for information only. The Uninterruptible Power System (UPS) is reporting a utility failure. The system is now running on the UPS batteries. Normally, no action should be taken as a result of information reference codes. However, to isolate the root cause, use these suggestions: 1. Examine the date and time of the informational reference code. 2. Determine if any other reference codes have been logged at or before the same date and time. 3. Begin the service approach based on these other logged errors.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
7202	Uninterruptible Power System reported power restored This reference code is for information only. The Uninterruptible Power System (UPS) has reported that AC power has been restored. The system is now running on utility power. Normally, no action should be taken as a result of information reference codes. However, to isolate the root cause, use these suggestions: 1. Examine the date and time of the informational reference code. 2. Determine if any other reference codes have been logged at or before the same date and time. 3. Begin the service approach based on these other logged errors.	
7203	UPS reported a battery low condition This reference code is for information only. The Uninterruptible Power System (UPS) has reported a battery low condition for the UPS batteries. Normally, no action should be taken as a result of information reference codes. However, to isolate the root cause, use these suggestions: 1. Examine the date and time of the informational reference code. 2. Determine if any other reference codes have been logged at or before the same date and time. 3. Begin the service approach based on these other logged errors.	
7204	Uninterruptible Power System reported a bypass active This reference code is for information only. The Uninterruptible Power System (UPS) is reporting a bypass is active. Normally, no action should be taken as a result of information reference codes. However, to isolate the root cause, use these suggestions: 1. Examine the date and time of the informational reference code. 2. Determine if any other reference codes have been logged at or before the same date and time. 3. Begin the service approach based on these other logged errors.	
FFF5	VLIC program failed and data was captured This reference code indicates First Failure Data Capture (FFDC) data was collected for a problem reported by vertical licensed internal code.	GG6FFDC

Vertical Licensed Internal Code (VLIC) Failing Items

Failing Item	Description	Document Description
#BMBIPCF	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMCFBM	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMCFBMR	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMCFRTR	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMCINTF	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMCINTO	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMCINTR	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMGETD	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMINTF0	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMIPL	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMKERNR	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMREMST	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#BMTIMER	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#CFTRAP2	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#CMCCIOM	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#CMCNFIG	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#CMRASFP	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#IPOMERP	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#IPOMGR	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#IPOMREQ	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#IPOMRSP	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#IPROUTE	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR

Failing Item	Description	Document Description
#ITSF	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#LCCPTSK	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#LCDSTSK	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#LCTRTSK	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#LMTASK	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#MSSAPPN	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#POMAIN	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#SENUKE	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#S3DPCTL	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#S3ISCTL	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
#TP2SECS	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
AJDG301	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
AJSG501	Service processor Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
Chassis	• Twinaxial chassis Model P01—part number 75G3392 • Twinaxial chassis Model P02—part number 75G3427	"Chassis" on page 4-2.
GG6COMM	Communications failure	System Operations; System Operator's Guide, SG41-8082
GG6FFDC	VLIC program failed and data was captured	Service Functions User's Guide; APAR or LICTR
GG6PL01	System performance problem	System Operations; System Operator's Guide, SG41-8082
GG6PL02	Network performance problem	System Operations; System Operator's Guide, SG41-8082
GG6PL03	Switched link activation failure message not answered	System Operations; System Operator's Guide, SG41-8082
GG6PL04	Transmission groups in the network must be activated	System Operations; System Operator's Guide, SG41-8082
GG6PL05	Class-of-service specified does not provide a route	System Operations; System Operator's Guide, SG41-8082
GG6PL06	COS acceptable TGs and nodes do not exist for the route	System Operations; System Operator's Guide, SG41-8082

Failing Item	Description	Document Description
QLCCRTCD	Operating System/400 licensed program	Service Functions User's Guide; APAR or LICTR
QLCCRTLD	Operating System/400 licensed program	Service Functions User's Guide; APAR or LICTR
UG6USR1	Operator response required	Service Functions User's Guide; Lic Int Code install/restore

(A9xx, B9xx, C9xx) OS/400 Reference Codes

All A9xx, B9xx, and C9xx system reference codes and their associated unit reference codes provide information about the user (customer) OS/400 operating system program.

The service representative should have the user see the *Operator's Guide* for the descriptions and actions indicated by these reference codes. For additional help, the user should dial IBM Software Support.

A brief description of some of these codes can be found in the *Service Functions User's Guide* (see "IPL Status SRC Sequence" under "Reference Information").

A complete description and definition of these codes are found in the *Diagnostic Aids – Volume 1* manual under OS/400 Unit Reference Codes. This manual is used by the software support representatives.

(B001, B002, B003, B004) Communications Reference Codes

This page pertains to the following communications reference codes:

- (B001) SDLC
- (B002) BSC
- (B003) ASC
- (B004) X.25 Packet

Information on these reference codes is available from the following sources:

- Use WRKPRB (the Work with Problem command) to run problem analysis and get a description of the reference code and associated failing items.
- Use the Error Log Utility for a description of the reference code.
- See the *Supplement to Reference Code Tables* manual, SY44-0030, for a description of the reference code and associated failing items.

If the failing item is a failing item (FI) code and not a part number, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing.

(B006) Common Licensed Internal Code Reference Codes

Note: If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing. If the failing item is not an FI code, go to the failing item table following this reference code table for a description of the failing item.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1A01	I/O processor resource not available A deactivation failed to get a resource controlled by Licensed Internal Code.	CDAWKLD AJEDA00 AJDG301
1A02	Not valid condition in I/O Processor Licensed Internal Code An error in an activation or deactivation occurred.	AJEDA00 Chassis 21F9941
1A03	I/O processor resource not available A resource that is needed to perform a requested function is not available in the Licensed Internal Code.	AJEDA00 AJDG301 CDAWKLD
1A04	Recovered from condition in Licensed Internal Code. The Licensed Internal Code has recovered from a condition that was not expected.	AJEDA00 AJDG301 Chassis 21F9941
1A05	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	AJEDA00 Chassis 21F9941
1A06	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	AJEDA00 Chassis 21F9941
1A07	I/O processor resource not available The Licensed Internal Code could not allocate memory resources on the I/O processor card.	CDAWKLD Chassis 21F9941 AJDG301
1A08	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code found a condition that should not have occurred.	AJEDA00 Chassis 21F9941
1A09	Threshold overflow The I/O processor card has detected a threshold of recoverable error conditions. The errors are either wrong interruptions or memory error corrections. If in communications, the line is still running. **Note:** If a large number of these errors occur during a short time, they may be caused by an electrically noisy environment, a defective communications I/O processor card or modem, or a communications I/O processor code problem.	Chassis 21F9941 FI01117 AJEDA00
1A10	Error reported to system The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	Chassis 21F9941 FI01117 AJEDA00

Common Licensed Internal Code Failing Items

Failing Item	Description	Document Description
21F9941	1-line EIA-232/V.24 Communications Adapter	"Adapter Card" on page 4-2
AJDG301	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
AJEDA00	I/O processor Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
CDAWKLD	Too many communications lines in use	
Chassis	• Twinaxial chassis Model P01—part number 75G3392 • Twinaxial chassis Model P02—part number 75G3427	"Chassis" on page 4-2.

(B008, B014) Communications Reference Codes

This page pertains to the following communications reference codes:

- (B008) X.25
- (B014) BSC System

Information on these reference codes is available from the following sources:

- Use WRKPRB (the Work with Problem command) to run problem analysis and get a description of the reference code and associated failing items.
- Use the Error Log Utility for a description of the reference code.
- See the *Supplement to Reference Code Tables* manual, SY44-0030, for a description of the reference code and associated failing items.

If the failing item is a failing item (FI) code and not a part number, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing.

(B30x, C30x) System Processor Reference Codes

Note: If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 2-55 to determine which part number associated with the FI code is failing. If the failing item is not an FI code, go to the failing item table following this reference code table for a description of the failing item.

Reference Code	Description/Action -- Perform all actions before exchanging Failing Items	Failing Item
2014	Bus time-out occurred	Chassis
2019, 201B to 201F	System processor card failure	Chassis
202B	System processor or main storage error Perform "PROC-PIP1" on page 3-9.	Chassis FI02022
2034	System processor failure or Licensed Internal Code error	Chassis AJDDP01
203D, 203E	System processor card failure	Chassis
2040	Bus adapter received bad horizontal code instruction	AJDDP01 Chassis FI02022
2114	Bus time-out occurred	Chassis
2119	Bus extension adapter sensed internal address or label error	Chassis
211B	Bus extension adapter sensed bus parity error	Chassis
211C	Bus extension adapter sensed internal error	Chassis
211D	Bus extension adapter sensed bus parity error	Chassis
211E	Bus extension adapter sensed internal error	Chassis
211F	Bus extension adapter sensed internal error	Chassis
212B	Bus extension adapter sensed data error; cannot correct	Chassis FI02022
2134	Bus extension adapter sensed I/O message count error	Chassis AJDDP01
213D	System bus adapter failed	Chassis
213E	Incorrect instruction received from bus extension adapter	Chassis
2140	Bus adapter received bad horizontal code instruction	AJDDP01 Chassis FI02022
2141, 2142	Cable test failure on bus 1	Chassis
2143	Cable test failure on bus 1	Chassis
3001	Main storage failure	FI02022
3002	Main storage failure	FI02022
3009	Main storage failure	FI02022
300A	System processor card failure	Chassis
300B	System processor or main storage error	Chassis FI02022

Reference Code	Description/Action -- Perform all actions before exchanging Failing Items	Failing Item
3010	Failure detected on multiple function I/O processor card	Chassis
3061	System processor or main storage error Perform "PROC-PIP1" on page 3-9.	Chassis FI02022
3062	System processor or main storage error Perform "PROC-PIP1" on page 3-9.	Chassis FI02022
3068	System processor or main storage error Perform "PROC-PIP1" on page 3-9.	Chassis FI02022
30A1	Main storage failure	FI02022 Chassis
30A2	Main storage failure	FI02022 Chassis
30A8	Main storage failure	FI02022 Chassis
30AA	Main storage failure	FI02022 Chassis
30AB	Main storage failure	FI02022 Chassis
30AC	Main storage failure	FI02022 Chassis
30C0	Licensed Internal Code error or system processor failure	AJDDP01 Chassis
30C2	System processor failure or Licensed Internal Code error	Chassis AJDDP01
30C3	System processor failure or Licensed Internal Code error	Chassis AJDDP01
30C7	Main storage, system processor, or Licensed Internal Code Is Function 13 on the control panel 9002 xxxx? **No** **Yes** ↓ Use reference code 3C7F to correct the problem. Exchange the failing items.	AJDDP01 FI02022
30C8	System processor failure or Licensed Internal Code error	Chassis AJDG301 AJDDP01
3148	Main storage, system processor, or Licensed Internal Code	FI02022 Chassis AJDDP01
31A0 to 31A3	Main storage failure	FI02022 Chassis
31A4	Main storage failure	FI02022 Chassis
31A5	Main storage failure	FI02022 Chassis

Reference Code	Description/Action -- Perform all actions before exchanging Failing Items	Failing Item
31A6 to 31A8, 31AB	Main storage failure	FI02022 Chassis
31AC	Main storage failure	FI02022 Chassis
31AD	Main storage failure	FI02022 Chassis
3202	Licensed Internal Code error	AJSDH00 AJSDG00
320E	Multiple function IOP or system processor failure	Chassis
3222	System processor or main storage error Perform "PROC-PIP1" on page 3-9.	Chassis FI02022
322B	Licensed Internal Code error or system processor failure	AJDDP01 Chassis
3252	System processor or multiple function IOP failure	Chassis
325E	Licensed Internal Code error or system processor failure	Chassis AJSDH00
32E9	System processor or multiple function IOP failure	Chassis
3320	Bus 0 BEA sensed internal address or label error	Chassis 21F9941 AJSDG00
3321	System processor or main storage error Perform "PROC-PIP1" on page 3-9.	Chassis FI02022 21F9941
3322	System processor, multiple function IOP, or internal code	Chassis AJDG301 AJDDP01
3323	System processor card failure	Chassis 21F9941
3352	System processor, multiple function IOP, or internal code	Chassis AJSDH00
3C02	Licensed Internal Code error	AJSDG00 AJSDH00
3C03	Licensed Internal Code error	AJSDH00 AJSDG00
3C05	Licensed Internal Code error or system processor failure	Chassis AJSDG00 AJSDH00
3C06	Multiple function IOP or Licensed Internal Code error	Chassis AJSDH00
3C07	Multiple function IOP or Licensed Internal Code error	Chassis AJSDH00 AJSDG00
3C08	Licensed Internal Code error	AJSDH00 AJSDG00 Chassis

Reference Code	Description/Action -- Perform all actions before exchanging Failing Items	Failing Item
3C09	Licensed Internal Code error or system processor failure	AJSDH00 Chassis
3C10, 3C11	Licensed Internal Code error	AJSDH00
3C30	System processor or multiple function IOP failure	Chassis
3C40	System processor or multiple function IOP failure	Chassis 21F9941
3C51	Licensed Internal Code error or system processor failure	AJDG301 Chassis
3C52	Licensed Internal Code error or system processor failure	AJDG301 AJDDP01 Chassis
3C53	Licensed Internal Code error or system processor failure	AJDG301 AJDDP01 Chassis
3C73	System processor, multiple function IOP, or internal code Perform "PROC-PIP1" on page 3-9.	Chassis FI02022 AJSDH00 AJSDG00
3C7F	Licensed Internal Code detected error If an uninterruptible power supply is installed, disconnect it. If this does not correct the problem, exchange the failing items.	21F1599 FI02022 Chassis 21F9941 AJDG301 AJDDP01
3C80	Licensed Internal Code error	AJDDP01
3C81	Licensed Internal Code error	AJDG301
3C82	Licensed Internal Code error	AJDG301 AJDDP01
3C90	Main storage failure Perform online problem analysis under OS/400 if the message "Main storage card failure is detected" appears at the end of system IPL.	FI02022 Chassis
3C91	System processor card failure	Chassis
3C92	Main storage failure	FI02022
3C93	Main storage failure	FI02022
3CAB	System unit failure sensed during IPL	Chassis
3F02	Main storage expansion error	FI02022 Chassis
3F03	Main storage expansion error	FI02022 Chassis
3FF0	Unknown IOP, system processor, or internal code failed	FI02060 Chassis 21F9941

System Processor Failing Items

Failing Item	Description	Document Description
AJDDP01	Horizontal Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
AJDG301	Vertical Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
AJSDG00	Service processor Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
AJSDH00	System processor diagnostic code	Service Functions User's Guide; APAR or LICTR
Chassis	• Twinaxial chassis Model P01—part number 75G3392 • Twinaxial chassis Model P02—part number 75G3427	"Chassis" on page 4-2.
LIC	Licensed Internal Code	Service Functions User's Guide; APAR or LICTR
21F1599	Control panel battery	"Control Panel Battery" on page 4-5
21F9941	1-line EIA-232/V.24 Communications Adapter	"Adapter Card" on page 4-2

Failing Item (FI) Code Table

This table is used to find field replaceable unit (FRU) part numbers identified by a failing item code. If only a type number is listed, go to the "Type and Part Number List" on page 2-62 to determine the part number.

Failing Item Code	Description	Action If only a type number is listed, go to the "Type and Part Number List" on page 2-62 to determine the part number.
FI00010	System processor	Exchange the following: • 0000—Chassis
FI00020, FI00021	Multiple function I/O processor (MFIOP)	Exchange the following: • 0000—Chassis
FI00037	Main storage	Exchange the following: • 0000—Chassis
FI00040	System I/O bus	Exchange the following: • 0000—Chassis
FI00050, FI00065	Any card, cable, or card enclosure connected to the system bus may be the failing item.	Exchange the following: • 0000—Chassis • 6152—1-line EIA-232/V.24 Communications Adapter
FI00072	This FI indicates that the tape in the alternate IPL tape unit is the failing item.	Exchange the tape in the alternate IPL tape unit.
FI00075	Any card, cable, or card enclosure connected to the system main storage bus may be the failing item.	Exchange the following: • 0000—Chassis
FI00100	Missing or failed items	Exchange the following: • 0000—Chassis
FI00121	Attached tape unit	Exchange the following: • 6343—External 1/4-inch tape unit. • 0001—External 1/4-inch tape unit cable.
FI00123	SCSI bus terminating plug	Exchange the following: • 0000—Chassis
FI00130	I/O processor Licensed Internal Code	Licensed Internal Code group AJEDA00
FI00131	Active I/O processor	Exchange the following: • 0000—Chassis
FI00132	Attached I/O adapter	Exchange the following: • 6152—1-line EIA-232/V.24 Communications Adapter
FI00140	1/4-inch tape unit I/O processor	Exchange the following: • 0000—Chassis
FI00300	Vertical Licensed Internal Code	Licensed Internal Code group AJDG301
FI00301	Multiple function I/O processor (MFIOP)	Exchange the following: • 0000—Chassis
FI00302	Multiple function I/O processor (MFIOP) Licensed Internal Code	Licensed Internal Code group AJEDA00
FI00310	An I/O processor or an I/O adapter is the failing item.	Exchange the following: • 0000—Chassis • 6152—1-line EIA-232/V.24 Communications Adapter

Failing Item Code	Description	Action If only a type number is listed, go to the "Type and Part Number List" on page 2-62 to determine the part number.
FI00320	Display station used as the console	Perform the problem isolation procedure specified in the reference code table for the reference code that indicated this failing item code.
FI00350	IPL tape unit	Exchange the following: • 6343—External 1/4-inch tape unit. • 0001—External 1/4-inch tape unit cable.
FI00360	IPL disk unit	Exchange the following: • 6104—disk unit • 6601—disk unit
FI00380	Twinaxial workstation I/O processor	Exchange the following: • 2661—Twinaxial workstation I/O processor
FI00500	SCSI cable	Exchange the following: • 0001—External 1/4-inch tape unit cable. • 0000—Chassis
FI00580	Any disk unit item	Exchange the following: • 6104—disk unit • 6601—disk unit
FI00601	Display station	If a link protocol converter is used to connect the console to the system, the protocol converter is the failing item.
FI00602	Cables between the workstation attachment and the device	Exchange the cables.
FI00604	Printer	Exchange the printer.
FI00605	Magnetic stripe reader on the display station	Exchange the magnetic stripe reader.
FI00607	Selector light pen on the display station	Exchange the light pen.
FI00609	A unit reference code of FFFF was shown when the user entered ANZPRB (the Analyze Problem command) from a workstation.	The failing item for this error can be identified by running the complete ANZPRB command. The failing item is also in the problem log when the user enters WRKPRB (the Work with Problem command).
FI00610	Twinaxial workstation I/O processor	Exchange the following: • 2661—Twinaxial workstation I/O processor
FI00612	Workstation cable	Exchange the cable attached to the failing device.
FI00613	• If the reference code appeared on the console when using WRKPRB (the Work with Problem command), the failing item is the display station, printer, or modem that is directly attached to the failing port. • If the reference code appeared on the control panel lights, the failing item is the display station used as the console.	Exchange the device.
FI00615	Twinaxial workstation I/O processor attachment	Exchange the following: • 2661—Twinaxial workstation I/O processor
FI00700	Remote data terminal equipment (DTE) or an attached device	Inform the remote operator of the problem.
FI00701	Local communications cable	Part numbers for the local communications cables are supplied with FI codes FI00716 and FI00717

Failing Item Code	Description	**Action** If only a type number is listed, go to the "Type and Part Number List" on page 2-62 to determine the part number.
FI00702	Local cable for auto-call unit	Check the cable for the part number: • Japan—part 21F4415 • United States—part 72X5643
FI00703	Auto-call unit	Ensure that the auto-call unit is working.
FI00704	Local data circuit-terminating equipment (DCE)	Ensure that the data circuit-terminating equipment (DCE) is working.
FI00705	Remote data circuit-terminating equipment (DCE)	Inform the remote operator of the problem.

FI00716	FI00716 indicates that the local EIA-232/V.24 enhanced cable is the failing item.	Check the communications cable for the part number:
		
		• Germany
		  – 6.1 meters—part 22F0153
		  – 15.2 meters—part 21F9352
		• Japan
		  – 6.1 meters—part 22F0154
		  – 15.2 meters—part 21F9351
		• All other countries
		  – 6.1 meters—part 22F0152
		  – 15.2 meters—part 21F9350

FI00717	FI00717 indicates that the local EIA-232/V.24 non-enhanced cable is the failing item.	Check the communications cable for the part number:
		
		• Germany
		  – 6.1 meters—part 22F0150
		  – 15.2 meters—part 21F9353
		• Japan
		  – 6.1 meters—part 22F0151
		  – 15.2 meters—part 21F9349
		• All other countries
		  – 6.1 meters—part 22F0149
		  – 15.2 meters—part 21F9348

FI00718	I/O processor or multiple function I/O processor (MFIOP) storage expansion	Exchange the following: • 0000—Chassis
FI00719	Local communications adapter	Exchange the following: • 6152—1-line EIA-232/V.24 Communications Adapter
FI00727	A communications or workstation adapter attached to the same I/O processor as the reporting adapter	Exchange the following: • 6152—1-line EIA-232/V.24 Communications Adapter

FI00730	I/O card Licensed Internal Code module	To determine which code module may be failing, use the *Table ID* from the system error log to find the code module name in the list below.
		
		• B001
		  – —AJGFND20
		• B002
		  – —AJGFNE20
		• B003
		  – —AJGFNG20
		• B004
		  – —AJGFNJ20
		• B008
		  – —AJGFNH20
		• B021
		  – —AJGFNM21
		• B022
		  – —AJGFNM21
		
		See "APAR or LICTR" in the *Service Functions User's Guide*.

Failing Item Code	Description	Action If only a type number is listed, go to the "Type and Part Number List" on page 2-62 to determine the part number.
FI00810	Tape (magnetic tape)	Exchange the magnetic tape.
FI00870	1/4-inch tape unit	Exchange the following: • 6343—External 1/4-inch tape unit. • 0001—External 1/4-inch tape unit cable.
FI01101, FI01103, FI01104	Active adapter card	Exchange the following: • 6152—1-line EIA-232/V.24 Communications Adapter

FI01105	The addressed disk or tape device is the failing item.	1. Read the device address:
		
		  • If the SRC format is 11-2 xxxx xxxx, read the second character from the left in Function 14-2 of the SRC.
		  • If the error is on the console, read the sixth character from the left in the *Address* field.
		
		  Note: If the character in the device address field is "F," the device address cannot be determined.
		
		2. If the device address is 1 or 2, the disk unit is the failing item. Exchange the following:
		
		  • 6104—disk unit
		  • 6601—disk unit
		
		3. If the device address is 7, the tape unit is the failing item. Exchange the following:
		
		  • 6343—External 1/4-inch tape unit.
		  • 0001—External 1/4-inch tape unit cable.

FI01106	A disk or tape device other than the addressed disk or tape unit is the failing item.	1. Read the device address:
		
		  • If the SRC format is 11-2 xxxx xxxx, read the second character from the left in Function 14-2 of the SRC.
		  • If the error is on the console, read the sixth character from the left in the *Address* field.
		
		  Note: If the character in the device address field is "F," the device address cannot be determined.
		
		2. The failing item is one of the devices (other than the addressed device) attached to the I/O processor. See "Device Locations and Addresses" on page 5-15.
		
		3. If the failing item is a disk unit, exchange the following:
		
		  • 6104—disk unit
		  • 6601—disk unit
		
		4. If the failing item is a tape unit, exchange the following:
		
		  • 6343—External 1/4-inch tape unit.
		  • 0001—External 1/4-inch tape unit cable.

FI01107	Any disk or tape device attached to the SCSI bus may be the failing item	The following list shows the possible failing items. • 6104—disk unit • 6601—disk unit • 6343—External 1/4-inch tape unit. • 0001—External 1/4-inch tape unit cable.
FI01111	Active I/O processor	Exchange the following: • 0000—Chassis
FI01112	I/O processor	Exchange the following: • 0000—Chassis
FI01114	Feature card	Exchange the following: • 0000—Chassis

Failing Item Code	Description	Action If only a type number is listed, go to the "Type and Part Number List" on page 2-62 to determine the part number.
FI01117	Attached I/O device	Exchange the following: • Device • Device cable
FI01118	Power and signal (SCSI/OP) cable	Exchange the following: • 0001—External 1/4-inch tape unit cable. • 0000—Chassis
FI01602	Workstation cable	Exchange the cable.
FI02010	System processor	Exchange the following: • 0000—Chassis
FI02022	Main storage expansion Perform "PROC-PIP1" on page 3-9.	Exchange the following: • 3117—Main storage expansion (8MB) • 0000—Chassis
FI02050, FI02060	Any card, cable, or card enclosure connected to system bus 0 may be the failing item.	Exchange the following: • 0000—Chassis • 6152—1-line EIA-232/V.24 Communications Adapter

FI02070	Initial program load (IPL) device	1. Select Function 01 (Display Selected IPL) on the control panel to display the existing IPL mode.
		
		2. If the mode is A or B, disk unit 1 is the failing item. Exchange the following:
		  • 6104—disk unit
		  • 6601—disk unit
		
		3. If the IPL mode is D, the tape unit is the failing item. Exchange the following:
		  • 6343—External 1/4-inch tape unit.
		  • 0001—External 1/4-inch tape unit cable.

FI02074	Magnetic storage interface	1. If a disk unit is the failing item, exchange the following:
		  • 6104—disk unit
		  • 6601—disk unit
		
		2. If a tape unit is the failing item, exchange the following:
		  • 6343—External 1/4-inch tape unit.
		  • 0001—External 1/4-inch tape unit cable.
		
		3. If exchanging the other possible failing items does not correct the problem, exchange the following:
		  • 0000—Chassis

FI02080	Multiple function I/O processor (MFIOP)	Exchange the following: • 0000—Chassis
FI02082	Multiple function processor unit (MFPU) or multiple function I/O processor (MFIOP)	Exchange the following: • 0000—Chassis

FI02094	Magnetic storage interface to the IPL device attached to the multiple function I/O processor (MFIOP)	1. If a disk unit is the failing item, exchange the following:
		  • 6104—disk unit
		  • 6601—disk unit
		
		2. If a tape unit is the failing item, exchange the following:
		  • 6343—External 1/4-inch tape unit.
		  • 0001—External 1/4-inch tape unit cable.
		
		3. If exchanging the other possible failing items does not correct the problem, exchange the following:
		  • 0000—Chassis

Failing Item Code	Description	Action If only a type number is listed, go to the "Type and Part Number List" on page 2-62 to determine the part number.
FI02096	I/O processor attached to the load-source device	Exchange the following: • 0000—Chassis
FI02097	Load-source device and SCSI interface	1. Select Function 01 (Display Selected IPL) on the control panel to display the existing IPL mode. 2. If the mode is A or B, disk unit 1 is the failing item. Exchange the following: • 6104—disk unit • 6601—disk unit 3. If the IPL mode is D, the tape unit is the failing item. Exchange the following: • 6343—External 1/4-inch tape unit. • 0001—External 1/4-inch tape unit cable. 4. For SCSI cable use: • 0000—Chassis
FI02098	Load-source device	1. Select Function 01 (Display Selected IPL) on the control panel to display the existing IPL mode. 2. If the mode is A or B, disk unit 1 is the failing item. Exchange the following: • 6104—disk unit • 6601—disk unit 3. If the IPL mode is D, the tape unit is the failing item. Exchange the following: • 6343—External 1/4-inch tape unit. • 0001—External 1/4-inch tape unit cable.
FI02105	See FI01105.	
FI02106	See FI01106.	
FI02107	See FI01107.	
FI02111	See FI01111.	
FI02112	See FI01112.	
FI02114	See FI01114.	
FI02202	SCSI/OP panel cable	Exchange the following: • 0001—External 1/4-inch tape unit cable. • 0000—Chassis
FI02203	Power supply and cables	Exchange the following: • 0000—Chassis
FI02204	Any device or part connected to the system power distribution may be the failing item.	Exchange the following: • 6152—1-line EIA-232/V.24 Communications Adapter • 0000—Chassis • 6104—disk unit • 6601—disk unit

Failing Item Code	Description	Action If only a type number is listed, go to the "Type and Part Number List" on page 2-62 to determine the part number.
FI02205	Removable power cord	Use the following list to determine the part number for the power cord in your country: • USA 100V—part 2453011 • USA 200V/Thailand—part 1838576 • Italy/Chile—part 14F0069 • Switzerland—part 14F0051 • Sir Lanka—part 14F0015 • United Kingdom/Hong Kong—part 14F0033 • Germany—part 13F9979 • Australia/New Zealand—part 13F9940 • Denmark—part 13F9997 • Israel—part 14F0087
FI02206	Control panel	Exchange the following: • 0000—Chassis
FI02207	Fan assembly	Exchange the following: • 0000—Chassis
FI02210	Communications adapter	Exchange the following: • 6152—1-line EIA-232/V.24 Communications Adapter
FI02215	Interface error	Exchange the following: • 0000—Chassis • 0001—External 1/4-inch tape unit cable.
FI02350	IPL tape unit	Exchange the following: • 6343—External 1/4-inch tape unit. • 0001—External 1/4-inch tape unit cable.
FI02360	IPL disk unit	Exchange the following: • 6104—disk unit • 6601—disk unit

Type and Part Number List

Table 2-1. Type and Part Number List		
Type	**Description**	**Part Number**

0000	• Model P01
	  – Twinaxial chassis
	• Model P02
	  – Twinaxial chassis
		• Model P01
		  – 75G3392
		• Model P02
		  – 75G3427

0001	Cable to external 1/4-inch tape unit • United States and Canada .67 meter • United States and Canada 1.5 meter • All other countries .67 meter • All other countries 1.5 meter	 • 31F4222 • 74G8526 • 8191252 • 74G8529
0002	• 6104 disk unit address jumper • 6601 disk unit address jumper	• 21F1657 • 8193233
2586	9401 System Processor	See type 0000
2661	Twinaxial Workstation I/O Processor Model P01 Twinaxial Workstation I/O Processor Model P02	75G3392 75G3427
3117	8MB Main Storage Expansion	85F7463
6104	Disk Unit • Disk Drive and Logic Card **Note:** To determine which disk unit you have, look at the address jumpers. The address jumper on a 6104 disk unit is located on the same end as the signal and power connectors. The address jumper on a 6601 disk unit is located on the opposite end from the signal and power connectors.	 • 55F9806
6152	1-line EIA-232/V.24 Communications Adapter	21F9941
6343	External 1/4-inch tape unit See the external tape unit documentation.	
6601	Disk Unit • Disk Drive and Logic Card **Note:** To determine which disk unit you have, look at the address jumpers. The address jumper on a 6104 disk unit is located on the same end as the signal and power connectors. The address jumper on a 6601 disk unit is located on the opposite end from the signal and power connectors.	 • 45G9463
9143	Multiple Function I/O Processor (twinaxial) Model P01 Multiple Function I/O Processor (twinaxial) Model P02	75G3392 75G3427

Online Failing Item Cross Reference List

Table 2-2. Online Failing Item Cross Reference List

Online Failing Item	Description	Cross Reference
Type number (for example: 2661)		Use "Type and Part Number List" on page 2-62.
FI number (for example: FI00500)		Use "Failing Item (FI) Code Table" on page 2-55.
16G7126	System processor	Type 0000, see "Type and Part Number List" on page 2-62.
16G8491	Tape unit	See external tape unit documentation.
21F1530	Back planar board	Type 0000, see "Type and Part Number List" on page 2-62.
21F8719	Tape unit	See external tape unit documentation.
45G9470	Disk unit card assembly	Type 6601, see "Type and Part Number List" on page 2-62.
46G2862	MFIOP card	Type 0000, see "Type and Part Number List" on page 2-62.
55F5000	Disk unit card assembly	Type 6104, see "Type and Part Number List" on page 2-62.
55F5199	Disk unit card assembly	Type 6104, see "Type and Part Number List" on page 2-62.
72X5631	Terminating plug	Use part number 00G0968
74F2224	MFIOP card	Type 0000, see "Type and Part Number List" on page 2-62.
85F9872	Disk unit fan assembly	Type 0000, see "Type and Part Number List" on page 2-62.
Cable part number—21F1513		Use the information for type 0000 and 0001 in "Type and Part Number List" on page 2-62.
Internal cable with any other part number		Use the information for type 0000 in "Type and Part Number List" on page 2-62.
External cable		Use the part number located on the cable.
Not found in this list		See Chapter 6, "Parts Listing" on page 6-1, if you still have a problem, call your next level of support.

Chapter 3. Problem Isolation Procedures

Disk Unit Problem Isolation Procedures

DU-PIP1

This procedure determines the system reference code (SRC) to be used to isolate the problem.

1 Perform an initial program load (IPL) to dedicated service tools (DST) by doing the following:

   a. Power off the system if it is powered on (see "Power off" on page 5-2).
   b. Select IPL Type A and Mode M (see "Selecting IPL and Mode" on page 5-2).
   c. Power on the system (see "Power on" on page 5-2).

   Does a system reference code (SRC) appear on the control panel?

   No   **Yes**

   ↓   Go to step 4 of this procedure.

2 Does the Display Missing Disk Units display or the Suspend Missing Disk Units display appear on the console (see "VLIC PIP Display Examples" on page 3-30)?

   No   **Yes**

   ↓   If all the reference codes are 0000, go to "VLIC-PIP11" on page 3-24 and use cause code 0002. If any of the reference codes are not 0000, go to step 4 of this procedure and use the reference code that is not 0000.

              Note: Use the characters in the *Type* column to find the correct reference code table.

3 Look at all the error logs by selecting the *Error log utility* option under DST (see "System Tools" in the *Service Functions User's Guide*).

   Is an SRC logged as a result of this IPL?

Yes   **No**

↓   The problem cannot be isolated any more. Use the original SRC and exchange the parts, starting with the highest probable cause of failure (see the failing item list for this reference code in Chapter 2 of this guide). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 2-55. If you need help in finding disk unit part number locations in the system, see "Disk Unit FRU Locations" on page 3-7.

            This ends the procedure.

4 Record the SRC on the Problem Summary Form (see Appendix D, "Problem Summary Form" on page D-1).

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

Yes   **No**

↓   Go to Chapter 2, "Unit Reference Codes" on page 2-1. Use the new SRC to correct the problem.

            This ends the procedure.

5 The problem cannot be isolated any more. Use the original SRC and exchange the parts, starting with the highest probable cause of failure (see the failing item list for this reference code in Chapter 2 of this guide). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 2-55. If you need help in finding disk unit part number locations in the system, see "Disk Unit FRU Locations" on page 3-7.

This ends the procedure.

DU-PIP3

This procedure determines the system reference code (SRC) to be used to isolate the problem and to determine the failing device.

Ensure that after any disk unit is installed, the address jumpers are removed from the old disk

unit and installed on the new disk unit (see "Disk Unit Address Jumper Wire Connections (Type 61xx Disk Units)" on page 5-14 or "Disk Unit Address Jumper Connections (Type 66xx Disk Units)" on page 5-14).

1 Perform an initial program load (IPL) to dedicated service tools (DST) by doing the following:

    a. Power off the system if it is powered on (see "Power off" on page 5-2).
    b. Select IPL Type A and Mode M (see "Selecting IPL and Mode" on page 5-2).
    c. Power on the system (see "Power on" on page 5-2).

Does a system reference code (SRC) appear on the control panel?

No   **Yes**

↓   Go to step 4 of this procedure.

2 Does the Display Missing Disk Units display or the Suspend Missing Disk Units display appear on the console (see "VLIC PIP Display Examples" on page 3-30)?

No   **Yes**

↓   If all the reference codes are 0000, go to "VLIC-PIP11" on page 3-24 and use cause code 0002. If any of the reference codes are not 0000, go to step 4 of this procedure and use the reference code that is not 0000.

        Note: Use the characters in the *Type* column to find the correct reference code table.

3 Look at all the error logs by selecting the *Error log utility* option under DST (see "System Tools" in the *Service Functions User's Guide*).

Is an SRC logged as a result of this IPL?

Yes   **No**

↓   The problem cannot be isolated any more. Use the original SRC and exchange the parts, starting with the highest probable cause of failure (see the failing item list for this reference code). If the failing item list contains FI codes see "Failing Item (FI) Code Table" on page 2-55. If you need help in finding disk unit part number locations in the system, see "Disk Unit FRU Locations" on page 3-7.

        This ends the procedure.

4 Record the SRC on the Problem Summary Form (see Appendix D, "Problem Summary Form" on page D-1).

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

Yes   **No**

↓   Go to Chapter 2, "Unit Reference Codes" on page 2-1. Use the new SRC to correct the problem.

        This ends the procedure.

5 See "Disk Unit FRU Locations" on page 3-7 to help find the parts identified by FI code FI01106.

6 Perform the following:

    a. Power off the system.
    b. Disconnect the tape unit or one of the disk units, other than disk unit 1 (load-source disk unit) in the system unit, identified by FI code FI01106 by disconnecting the attachment cables.

        Note: Do not disconnect disk unit 1 (load-source disk unit) in the system unit even if it is identified by FI code FI01106 (see "Device Locations and Addresses" on page 5-15).

7 Power on the system.

Does an SRC appear on the control panel?

No   **Yes**

↓   Go to step 10 of this procedure.

8 Does an SRC appear on the Display Missing Disk Units display, or does the Suspend Missing Disk Units display appear on the console?

No   **Yes**

↓   Go to step 10 of this procedure.

9 Look at all the error logs by selecting the *Error log utility* option under DST (see "System Tools" in the *Service Functions User's Guide*).

Is an SRC logged as a result of this IPL?

Yes   **No**

↓   The last device disconnected from the system is failing.

Exchange the device and reconnect the devices you disconnected from the system.

Note: Before exchanging a disk unit, you should attempt to save customer data (see "Disk Service Support" on page 5-4).

This ends the procedure.

10 Record the SRC on the Problem Summary Form (see Appendix D, "Problem Summary Form" on page D-1).

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

No   **Yes**

↓   The last device disconnected from the system is not failing.

        a. Leave the device disconnected and go to step 6 of this procedure to continue isolation.
        b. If all devices identified by FI code FI01106 have been disconnected, except disk unit 1 in the system unit, reconnect all devices and go to step 13 of this procedure.

11 Is the SRC A600 5090, and are the Data display characters 0002 0000 for function 13, or are all the reference codes shown on the console 0000?

No   **Yes**

↓   The last device disconnected from the system is failing.

Exchange the device and reconnect the devices you disconnected from the system.

Note: Before exchanging a disk unit, you should attempt to save customer data (see "Disk Service Support" on page 5-4).

This ends the procedure.

12 Go to Chapter 2, "Unit Reference Codes" on page 2-1. Use the new SRC to correct the problem.

This ends the procedure.

13 Was disk unit 1 in the system unit one of the parts identified by FI code FI01106?

Yes   **No**

↓   The parts identified by FI code FI01106 are not the failing parts. Use the original SRC and exchange the parts, starting with the highest probable cause of failure (see the failing item list for this reference code). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 2-55. If you need help in finding disk unit part number locations in the system, see "Disk Unit FRU Locations" on page 3-7.

This ends the procedure.

14 The parts identified by FI code FI01106, other than disk unit 1, are not the failing parts. Disk unit 1 in the system unit may be failing. Use the original SRC and exchange the parts, starting with the highest probable cause of failure. See "Disk Unit FRU Locations" on page 3-7 to find the parts that need exchanging.

This ends the procedure.

DU-PIP4

This procedure helps determine when the disk drive and logic card should be exchanged for unit reference codes FFF5, FFF6, FFF8, and FFF9.

Unit reference codes FFF5, FFF6, FFF8, and FFF9 indicate temporary errors. However, when the number of these errors reaches a threshold count, the disk drive and logic card assembly should be exchanged at the customer's convenience, before the errors become permanent.

1 Look at all the magnetic media error log entries for a one-week time period by using the *Error log utility* option under SST (see "System Tools" in the *Service Functions User's Guide*).

Choose the "Display Report" option of the Display Summary of Magnetic Media Entries display for the device you want to analyze.

Is there an FFF5, FFF6, FFF8, or FFF9 disk unit reference code with an error type of "Threshold"?

No   Yes

↓   Exchange the disk drive and logic card of the disk unit shown in the error log entry. If you need help in finding disk unit part number locations in the system, see "Disk Unit FRU Locations" on page 3-7.

Note: Before exchanging a disk drive, you should attempt to save

customer data (see "Disk Service Support" on page 5-4).

This ends the procedure.

2 Are there FFF5, FFF6, FFF8, or FFF9 disk unit reference codes with an error type of "Statistical"?

Yes   No

↓   No service action is recommended at this time.

This ends the procedure.

3 See Table 3-1 on page 3-6 to find the recommended service action.

Is the recommended service action to exchange the disk drive and logic card?

No   Yes

↓   Exchange the disk drive and logic card of the disk unit shown in the error log entry. If you need help in finding disk unit part number locations in the system, see "Disk Unit FRU Locations" on page 3-7.

Note: Before exchanging a disk drive, you should attempt to save customer data (see "Disk Service Support" on page 5-4).

This ends the procedure.

4 No service action is recommended at this time.

This ends the procedure.

Table 3-1. Failure Analysis URC Table		
Unit Refer- ence Code	**Disk Unit Type**	**Recommended Service Action**
FFF5	All	If two or more of these unit reference codes are logged against a disk unit in one week, exchange the disk unit.
FFF6	61xx	If 16 or more of these unit reference codes are logged against a disk unit in one week, *or* if six or more of these unit reference codes are logged against a disk unit in a 3-day period, exchange the disk unit.
FFF6	66xx	Ignore the entries for these disk units. No service action is recommended at this time.
FFF5 FFF8 FFF9	All	If 15 or more of these unit reference codes, in any combination, are logged against a disk unit in 1 week, exchange the disk unit.

Disk Unit FRU Locations

This table is used to find the failing FRU location in the system. Go to the "Type and Part Number List" on page 2-62 to determine the part number.

Part Description	Location Procedure
Disk drive and logic card	1. The device address is the second character from the left in function 14 of the SRC. If an error is displayed on the console, the device address is the sixth character from the left in the *Address* field. 2. The failing FRU is located in the device location corresponding to the device address. See "Device Locations and Addresses" on page 5-15.

Power Problem Isolation Procedure

POW-PIP1

This procedure isolates a power problem.

1 Power off the system if it is powered on (see "Power off" on page 5-2).

2 Perform the following:

a. Remove the communications adapter (see "Adapter Card" on page 4-2).

b. If a tape unit is attached, disconnect the external tape unit cable from the system unit.

3 Power on the system (see "Power on" on page 5-2).

Do you still get SRC 0000 0005 or 0000 0006?

Yes   No

↓   Go to step 6.

4 Perform the following:

a. Power off the system (see "Power off" on page 5-2).

b. Remove the system covers (see "Cover" on page 4-6).

c. Remove the disk unit (see "Disk Unit" on page 4-7).

d. Power on the system (see "Power on" on page 5-2).

Do you still get SRC 0000 0005 or 0000 0006?

No   Yes

↓   Exchange the chassis. See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

         This ends the procedure.

5 Exchange the disk unit.

This ends the procedure.

6 Is there a tape unit?

Yes   No

↓   Go to step 9 of this procedure.

7 Perform the following:

a. Power off the system (see "Power off" on page 5-2).

b. Connect the external tape unit cable to the chassis.

c. Disconnect the external tape unit cable from the external tape unit.

d. Power on the system (see "Power on" on page 5-2).

Do you still get SRC 0000 0005 or 0000 0006?

No   Yes

↓   Exchange the external tape unit cable.

         This ends the procedure.

8 Perform the following:

a. Power off the system (see "Power off" on page 5-2).

b. Connect the external tape unit cable to the external tape unit.

c. Power on the system (see "Power on" on page 5-2).

Do you still get SRC 0000 0005 or 0000 0006?

No   Yes

↓   Exchange the external tape unit.

         This ends the procedure.

9 Exchange the communications adapter.

This ends the procedure.

System Processor/Storage Problem Isolation Procedures

PROC-PIP1

This procedure isolates a system processor or main storage problem.

1 Perform the following:

a. Power off the system (see "Powering Off and Powering On the System" on page 5-2).
b. Remove all of the main storage expansion cards (see "Main Storage Cards" on page 4-9).
c. Select the IPL type B and mode M (see "Selecting IPL and Mode" on page 5-2).
d. Power on the system (see "Powering Off and Powering On the System" on page 5-2).

Does the IPL or Install the System display appear?

Yes   No

↓   Perform the following:

    a. Exchange the Chassis. See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

    b. Install the main storage expansion cards in the new chassis in the same locations that they were removed from the old chassis.

    This ends the procedure.

2 Perform the following:

a. Select the *Use dedicated service tools (DST)* option.
b. Enter the customer password to get to the Use Dedicated Service Tools (DST) display.
c. Select the *Start a service tool* option.
d. Select the *Display hardware configuration* option.
e. Select the *Main storage information* option.

Does the main storage information on the Display Main Storage Information display show a status of `Failed` or `Errors detected`?

No   Yes

↓   Perform the following:

    a. Exchange the Chassis. See "Type and Part Number List" on page 2-62 to determine the part and see "Chassis" on page 4-2 for the procedure.

    b. Install the main storage expansion cards in the new chassis in the same locations that they were removed from the old chassis.

    This ends the procedure.

3 Perform the following:

a. Power off the system (see "Powering Off and Powering On the System" on page 5-2).
b. Install the main storage expansion cards in the same locations that they were removed from.
c. Power on the system (see "Powering Off and Powering On the System" on page 5-2).

Does the IPL or Install the System display appear?

Yes   No

↓   Exchange the main storage expansion cards (see "Main Storage Cards" on page 4-9).

    This ends the procedure.

4 Perform the following:

a. Select the *Use dedicated service tools (DST)* option.
b. Enter the customer password to get to the Use Dedicated Service Tools (DST) display.
c. Select the *Start a service tool* option.
d. Select the *Display hardware configuration* option.
e. Select the *Main storage information* option.

Do any storage cards have a status of
Failed or Errors detected on the Display
Main Storage Information display?

No   **Yes**

↓   Exchange the main storage expan-
        sion cards (see "Main Storage
        Cards" on page 4-9).

        This ends the procedure.

5 The problem may have been caused by a
bad main storage expansion card seating
condition, or it may be intermittent. If the
problem appears to be intermittent,
exchange the remaining parts in the failing
item list for the reference code that sent
you to this procedure

This ends the procedure.

Storage Device I/O Processor Problem Isolation Procedures

SDC-PIP3

This procedure isolates problems on the interface between the multiple function I/O processor (MFIOP) and the storage devices when the MFIOP is the most probable failing item.

Before performing this procedure, ensure that the disk address jumpers are installed correctly (see "Disk Unit Address Jumper Wire Connections (Type 61xx Disk Units)" on page 5-14 and "Disk Unit Address Jumper Connections (Type 66xx Disk Units)" on page 5-14).

1 Perform an initial program load (IPL) to dedicated service tools (DST) by doing the following:

a. Power off the system if it is powered on (see "Power off" on page 5-2).
b. Select IPL Type A and Mode M (see "Selecting IPL and Mode" on page 5-2).
c. Power on the system (see "Power on" on page 5-2).

Does a system reference code (SRC) appear on the control panel?

No   Yes

↓   Go to step 4 of this procedure.

2 Does the Display Missing Disk Units display or the Suspend Missing Disk Units display appear on the console (see "VLIC PIP Display Examples" on page 3-30)?

Note: Use the characters in the column labeled *Type* to find the correct reference code table.

No   Yes

↓   If all the reference codes are 0000, go to "VLIC-PIP11" on page 3-24 and use cause code 0002. If any of the reference codes are not 0000, go to step 4 of this procedure.

3 Look at all the error logs by selecting the *Error log utility* option under DST (see "System Tools" in the *Service Functions User's Guide*).

Is an SRC logged as a result of this IPL?

Yes   No

↓   The problem cannot be isolated any more. Use the original SRC and exchange the parts, starting with the highest probable cause of failure (see the failing item list for this reference code in Chapter 2 of this guide). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 2-55. If you need help in finding disk unit part number locations in the system, see "Disk Unit FRU Locations" on page 3-7.

This ends the procedure.

4 Record the SRC on the Problem Summary Form (see Appendix D, "Problem Summary Form" on page D-1).

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

Yes   No

↓   Go to Chapter 2, "Unit Reference Codes" on page 2-1. Use the new SRC to correct the problem.

This ends the procedure.

5 Perform the following:

a. Power off the system.
b. Disconnect the cables to disk unit 1.
c. Perform steps 6 through 11 of this procedure to determine if disk unit 1 is failing.
d. If disk unit 1 is not failing, repeat steps 6 through 11 of this procedure for the remaining disk units and the tape unit.
e. If a device is not isolated as the failing FRU, reconnect the devices and continue FRU isolation with step 12 of this procedure.

6 Power on the system.

Does an SRC appear on the control panel?

No   Yes

↓   Go to step 9 of this procedure.

7 Does the Display Missing Disk Units display or the Suspend Missing Disk Units display appear on the console (see "VLIC PIP Display Examples" on page 3-30)?

Note: Use the characters in the column labeled *Type* to find the correct reference code table.

No   Yes

↓   If all the reference codes are 0000, the last device you disconnected is the failing item.

   This ends the procedure.

8 Look at all the error logs by selecting the *Error log utility* option under DST (see "System Tools" in the *Service Functions User's Guide*).

Is an SRC logged as a result of this IPL?

Yes   No

↓   The last device you disconnected is the failing item. Exchange it and reconnect all the devices you disconnected previously (see Chapter 4, "Removal Procedures" on page 4-1).

   Note: Before exchanging a disk drive or disk unit, you should attempt to save customer data. Go to "Start Disk Service Here" on page 5-4 before exchanging a disk unit.

   This ends the procedure.

9 Record the SRC on the Problem Summary Form (see Appendix D, "Problem Summary Form" on page D-1).

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

No   Yes

↓   The last device you disconnected is not failing. Leave the device disconnected. Continue FRU isolation by going to step 5 of this procedure.

10 Is the SRC B1xx 1802, and have you disconnected disk unit 1?

Note: Disk unit 1 is the load-source disk unit.

Yes   No

↓   Go to Chapter 2, "*Unit Reference Codes*" on page 2-1. Use the new SRC to correct the problem.

   This ends the procedure.

11 Perform the following:

a. Exchange the following parts (see Chapter 4, "Removal Procedures" on page 4-1):
   1) The last device you disconnected
   2) Chassis
b. Reconnect the devices you disconnected previously.

This ends the procedure.

12 The failing item is not one of the FRUs you reconnected in step 5 of this procedure. Exchange the remaining FRUs in the failing item list one at a time (see Chapter 4, "Removal Procedures" on page 4-1).

This ends the procedure.

SDC-PIP7

This procedure isolates problems on the interface between the multiple function I/O processor (MFIOP) and the storage devices.

1 Perform an initial program load (IPL) to dedicated service tools (DST) by doing the following:

a. Power off the system if it is powered on (see "Power off" on page 5-2).

b. Select IPL Type A and Mode M (see "Selecting IPL and Mode" on page 5-2).
c. Power on the system (see "Power on" on page 5-2).

Does reference code 914x B981 appear on the control panel?

Yes   No

↓   If no reference code occurs, the problem may be intermittent.

If a different reference code occurs, use it to correct the problem (see Chapter 2, "Unit Reference Codes" on page 2-1).

This ends the procedure.

2 Perform the following:

a. Power off the system.
b. Disconnect the SCSI bus cable from all devices (do not disconnect the SCSI bus cable from the MFIOP).
c. Power on the system.

Does reference code 914x B981 appear on the control panel?

No   Yes

↓   Exchange the FRUs in the failing item list for the SRC that sent you to this procedure, starting with the highest probable cause of failure, but do not exchange FI01107 (see the failing item list for this reference code in the "Unit Reference Code Tables" on page 2-3 and Chapter 4, "Removal Procedures" on page 4-1).

This ends the procedure.

3 Does reference code B1xx 1802 appear on the control panel?

Yes   No

↓   Go to Chapter 2, "Unit Reference Codes" on page 2-1. Use the new SRC to correct the problem.

This ends the procedure.

4 Perform the following:

a. Power off the system.
b. Reconnect the SCSI bus cable to disk unit 1 (the load-source).
c. Power on the system.

Does reference code 914x B981 appear on the control panel?

No   Yes

↓   Exchange the FRUs in the failing item list for the SRC that sent you to this procedure, starting with the highest probable cause of failure (see the failing item list for this reference code in the "Unit Reference Code Tables" on page 2-3 and Chapter 4, "Removal Procedures" on page 4-1).

Note: When you exchange the parts listed in FI01107, exchange only the parts for disk unit 1. Disk unit 1 is the only device you reconnected the SCSI bus cable to.

This ends the procedure.

5 Perform the following:

a. Power off the system.
b. Reconnect the SCSI bus cable to the next device.
c. Power on the system.

Does reference code 914x B981 appear on the control panel?

No   Yes

↓   The last device to which you connected the SCSI bus cable to is the most probable failing item. If exchanging the last device does not correct the problem, the chassis is the next most probable failing item. If exchanging the chassis does not correct the problem, one of the devices to which you previously connected the SCSI bus cable is the next most probable failing item (see Chapter 4, "Removal Procedures" on page 4-1).

This ends the procedure.

6 Have you reconnected the SCSI bus cable to all the devices?

Yes   No

↓   Go to step 5 of this procedure.

7 Either the problem is intermittent, or a bad SCSI bus cable connection was causing the problem.

This ends the procedure.

Twinaxial Workstation I/O Processor Problem Isolation Procedures

TWSC-PIP1

Use this procedure:

* To isolate a failure detected by the twinaxial workstation I/O processor when **no display** is available with which to perform online problem analysis

If you have a display available, perform online problem analysis (WRKPRB or ANZPRB commands).

Note: If you are using a PC you must install an emulation program.

DANGER

> **To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device.** *(RSFTD203)*

Warning: When instructed, remove and connect cables carefully. You may damage the connectors if you use too much force.

1 Ensure that the console is powered on.

> **Note:** Alternative consoles are not supported for the 9401.

> If you have twinaxial cables attached, disconnect any devices attached after the console and terminate at the console.

2 Is the system powered off?

> **Yes** **No**
>
> ↓ Go to step 5 of this procedure.

3 Perform the following:

a. Power on the system (see "Power on" on page 5-2).
b. Select the IPL type B and mode M (see "Selecting IPL and Mode" on page 5-2).
c. Wait for a display to appear on the console or a reference code to appear on the control panel.

Does a display appear on the console?

No **Yes**

↓ If you disconnected any devices after the console in step 1 of this procedure, perform the following:

> a. Power off the system (see "Power off" on page 5-2).
> b. Reconnect one device.
>
> > **Note:** Ensure that you terminate the device that you just reconnected and remove the termination from the previously terminated device.
>
> c. Power on the system (see "Power on" on page 5-2).
> d. If a reference code appears on the control panel, go to step 6 of this procedure.
> e. If no reference code appears, repeat steps a through d of this step until you have checked all devices disconnected before.
> f. Continue to perform the initial program load (IPL).
>
> **This ends the procedure.**

4 Does the same reference code that sent you to this procedure appear on the control panel?

Yes **No**

↓ Go to "Unit Reference Code Tables" on page 2-3 for this new problem.

> **This ends the procedure.**

5 Perform the following:

a. Select the IPL type B and mode M (see "Selecting IPL and Mode" on page 5-2).
b. Select Function 21 (Bring up DST).

c. Press Enter on the control panel.
d. Check the console for a display.

Does a display appear on the console?

No   Yes

↓   If you disconnected any devices
         after the console in step 1 of this
         procedure, perform the following:

         a. Power off the system (see
            "Power off" on page 5-2).
         b. Reconnect one device.

            Note: Ensure that you termi-
            nate the device that you just
            reconnected and remove the
            termination from the previously
            terminated device.
         c. Power on the system (see
            "Power on" on page 5-2).
         d. If a reference code appears on
            the control panel, go to step 6
            of this procedure.
         e. If no reference code appears,
            repeat steps a through d of this
            step until you have checked all
            devices disconnected before.
         f. Continue to perform the initial
            program load (IPL).

         This ends the procedure.

6 Ensure that the following conditions are
met:

   • The workstation addresses of all work-
     stations on the failing port must be
     correct.

     Each workstation on the port must have
     a separate address, from 0 through 2.
     See the workstation manual if you need
     help with checking addresses.
   • The last workstation on the failing port
     must be terminated. Any other work-
     stations on that port must not be termi-
     nated.
   • The cables attached to the console on
     the failing port must be tight and have
     no visible damage.

     If there were any cable changes in this
     area, check them carefully.

Did you find a problem with any of the
above conditions?

Yes   No

↓   Go to step 9 of this procedure.

7 Perform the following:

   a. Correct the problem.
   b. Select Function 21 (Bring up DST).
   c. Press Enter on the control panel.
   d. Check the console for a display.

Does a display appear on the console?

No   Yes

↓   Continue to perform the IPL.

         This ends the procedure.

8 Does the same reference code appear on
the control panel?

Yes   No

↓   Go to "Unit Reference Code
         Tables" on page 2-3 for this new
         problem.

         This ends the procedure.

9 Is the reference code one of the
following: 0001, 0003, 0005, 0006, 0101,
0103, 0104, 0105, 0106, 5004, 5082, B000,
D010, or D023?

No   Yes

↓   Go to step 11 of this procedure.

10 There is either a Licensed Internal Code
problem or two device failures on the work-
station I/O processor, console, or cables.
The console is the most probable cause for
this failure.

   • See the manuals for the failing display
     to attempt to correct the problem.
   • Exchange the following parts one at a
     time until you determine the failing item:
     a. Console (70%)
     b. Cables (20%)
     c. Chassis (10%)
   • If you have another working display,
     you can exchange the console and
     perform an IPL to attempt to correct the
     problem.

This ends the procedure.

11 To continue problem analysis, use a port tester, part 94X2040 or 59X4262, which you may have with your tools. Your port tester has either two or three lights.

Do you have a port tester available and a display cable with a barrel or twisted pair connector?

Yes   No

↓   Go to step 10 of this procedure.

12 DANGER

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

To use the port tester to isolate the problem, perform the following:

- Verify that the port tester is operating correctly by doing a self-test. A self-test can be made at any time, even when the port tester is attached to a port or cable. The self-test informs you if the port tester is ready to be used. Perform the following steps to do a self-test:
  a. Move the selector switch to the center (0) position.
  b. Push and hold the test pushbutton until all lights come on. The yellow lights should come on immediately, and the green light should come on approximately 5 seconds later. The port tester is ready for use if all lights come on.
- Leave the system power on.
- Connect the port tester to only one port or cable.

13 Find the input cable to the failing console and perform the following:

- a. Disconnect the input cable from the failing console.
- b. Connect the port tester to the input cable.

14 Set the selector switch on the port tester to the left (1) position for a twinaxial con-

nection and to the right (2) position for a twisted pair connection.

Press and hold the test switch on the port tester for 15 seconds and observe the lights.

If your port tester has three lights, do the following:

- If only the top (green) light is on, go to step 20 of this procedure.
- If both the top (green) and center (yellow) lights are on, go to step 16 of this procedure.

  Note: The center (yellow) light is always on for twisted pair cable and may be on for fiber optical cable.
- If only the bottom (yellow) light is on, go to step 17 of this procedure.
- If all lights are off, go to step 18 of this procedure.
- If all lights are on, go to step 15 of this procedure.

If your port tester has two lights, do the following:

- If only the top (green) light is on, go to step 20 of this procedure.
- If only the bottom (yellow) light is on, go to step 17 of this procedure.
- If both lights are off, go to step 18 of this procedure.
- If both lights are on, continue with step 15 of this procedure.

15 The tester is in the self-test mode. Check the position of the selector switch.

If the selector switch is not in the correct position, go to step 14 of this procedure.

If the selector switch is already in the correct position, the port tester is not working correctly. Exchange the port tester and go to step 12 of this procedure.

16 The cable you are testing has an open shield.

Note: The open shield can be checked only on the cable from the twinaxial work-station attachment to the device or from device to device. Only one section of cable can be checked at a time. See the

Twinaxial Workstation Controller Port Tester User's Guide for more information.

This ends the procedure.

17 The cable network is bad. The wires in the cable between the console and the twinaxial workstation attachment are reversed. Go to step 19 of this procedure.

18 The test indicated that there was no signal on the cable to the console. Connect the cable that was removed.

Remove the port tester and disconnect the cable from the port connector on the chassis. Connect the port tester to the port connector on the chassis. Press and hold the port tester test switch for 15 seconds and observe the lights:

- If the green light is on, exchange the cable.
- If all lights are off, exchange the chassis.

Power on and perform an IPL of the system.

This ends the procedure.

19 Cable maintenance is a customer responsibility.

See the manuals listed below for more information on correcting cable problems.

- If the IBM cable system is being used to attach the workstation, see the following manuals:

  - *IBM Cabling System Planning and Installation Guide*, GA27-3361
  - *Using the IBM Cabling System with Communication Products*, GA27-3620
  - *IBM Cabling System Problem Determination Guide for Twinaxial Applications*, GA21-9491

- If the telephone twisted-pair cable is being used to attach the console, see:

  - *IBM 5299 Model 3 Terminal Multi-connector and IBM Twinaxial to Twisted-pair Adapter Planning, Installation, and Problem Analysis Guide*, GA27-3749

- If a twinaxial cable is being used to attach the console, see:

  - *IBM 5250 Information Display System Planning and Site Preparation Guide*, GA21-9337
  - *Twinaxial Cabling Troubleshooting Guide*, SY31-0703

- The cable must be repaired or exchanged.

Then power on the system to perform an IPL.

This ends the procedure.

20 Is the reference code 0001 or 0101?

No	Yes
↓	Perform the following:

a. Exchange the following parts:

1) Console (90%)
2) Cables (10%)

b. Power on the system to perform an IPL.

This ends the procedure.

21 The port tester detects most problems, but it does not always detect an intermittent problem or some cable impedance problems. The tester may indicate a good condition although there is a problem with the workstation I/O processor card or cables.

- Exchange the following parts:
  a. Console (90%)
  b. Chassis (5%)
  c. Cables (5%)
- If you have another working display, you can exchange the console and perform an IPL to attempt to correct the problem.
- See the manuals for the failing display for more information.
- If exchanging the failing items does not repair the problem, and the reference code was 5002, 5082, or 50FF, there may be a Vertical Licensed Internal Code problem. Go to "VLIC-PIP3" on page 3-20.

- The problem may be caused by
  devices attached after the console on
  port 0.

This ends the procedure.

VLIC Problem Isolation Procedures

VLIC-PIP1

This system reference code (SRC) indicates a possible Licensed Internal Code problem during the *Install Licensed Internal Code* or *Restore Licensed Internal Code* function from the tape unit. When this problem occurs, you cannot copy the contents of main storage to the disk unit.

1 Perform the following:

    a. Select IPL type D, mode M (see "Selecting IPL and Mode" on page 5-2).

    b. Perform an initial program load (IPL) from the tape unit.

2 Select the same function that you performed earlier.

Does the same SRC occur?

No	Yes
↓	Ask your next level of support for assistance and report a Licensed Internal Code problem.

        This ends the procedure.

3 Does a different SRC occur?

No	Yes
↓	Use the new SRC to correct the problem (see Chapter 2, "Unit Reference Codes" on page 2-1). Report a Licensed Internal Code problem to your next level of support.

        This ends the procedure.

4 The IPL has completed successfully. Ask your next level of support for assistance and report a Licensed Internal Code problem.

This ends the procedure.

VLIC-PIP2

The system reference code (SRC) displayed is a status SRC. It shows the advancing of the *Install Licensed Internal Code* or *Restore Licensed Internal Code* functions. Normally, status SRCs change every few seconds. If the SRC does not change in 5 minutes, it indicates a hang condition or looping problem.

1 Does the displayed SRC change in 5 minutes?

No	Yes
↓	**This ends the procedure.**

2 Perform "VLIC-PIP1."

This ends the procedure.

VLIC-PIP3

The dedicated service tools (DST) found a permanent program error.

1 Does unit reference code (URC) 50FF occur?

No	Yes
↓	Go to step 4 of this procedure.

2 Select Function 21 (Bring up DST) and press Enter on the control panel to start DST again.

Does the DST Sign On display appear?

Yes	No
↓	Go to step 6 of this procedure.

3 Perform the following:

    a. Perform a main storage dump (see "Perform a Main Storage Dump to Disk" in the *Service Functions User's Guide*).

    b. Go to step 6 of this procedure.

4 Perform the following:

    a. Perform a main storage dump (see "Perform a Main Storage Dump to Disk" in the *Service Functions User's Guide*).

b. Select IPL type D, mode M (see "Selecting IPL and Mode" on page 5-2).

c. Select Function 03 (Start IPL) on the control panel and press Enter to perform an IPL.

Does a display appear?

No　**Yes**

↓　　**This ends the procedure.**

5 Exchange the chassis (see "Chassis" on page 4-2).

This ends the procedure.

6 Copy the main storage dump from the disk unit to the tape unit (see "Copying Main Storage Dump to Tape or Diskette" in the *Service Functions User's Guide*).

7 Report a Licensed Internal Code problem to your next level of support.

This ends the procedure.

VLIC-PIP4

Dedicated service tools (DST) or a service function under DST ended abnormally. DST was in the disconnected status or lost touch with the initial program load (IPL) console because of a console failure and could not communicate with the user.

1 Select Function 21 (Bring up DST) and press Enter on the control panel to start DST again (see "Selecting IPL and Mode" on page 5-2).

Does the DST Sign On display appear?

Yes　**No**

↓　　Go to step 3 of this procedure.

2 Perform the following (see "System Tools" in the *Service Functions User's Guide*):

a. Select the *Start a service tool* option.

b. Select the *Vertical Licensed Internal Code log* option.

c. Copy the contents of the Vertical Licensed Internal Code log to tape (see "Copy the Contents of VLIC Log" on page 5-13).

d. Return to this procedure and continue with step 3 of this procedure.

3 Perform a main storage dump (see "Perform a Main Storage Dump to Disk" in the *Service Functions User's Guide*).

4 Copy the main storage dump (see "Copying Main Storage Dump to Tape or Diskette" in the *Service Functions User's Guide*).

5 Report a Licensed Internal Code problem to your next level of support.

This ends the procedure.

VLIC-PIP7

The system detected a Licensed Internal Code or hardware problem associated with a specific I/O processor card, or with bus hardware.

This failure might only occur when a specific set of conditions is present.

1 Has an IPL been done after the failure occurred?

No　**Yes**

↓　　Go to step 3 of this procedure.

2 Perform the following:

a. Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2).

b. Select Function 03 (Start IPL) and press Enter on the control panel to perform an IPL.

3 Does the same system reference code (SRC) occur on the control panel, appear on a display, or appear in the error log?

No　**Yes**

↓　　Go to step 7 of this procedure.

4 Is the Display Missing Disk Units display or the Suspend Missing Disk Units display on the console, and are all of the reference codes 0000?

No   Yes

↓   Go to "VLIC-PIP11" on page 3-24 and use cause code 0002.

This ends the procedure.

5 Does the IPL complete successfully?

No   Yes

↓   Go to step 8 of this procedure.

6 A different SRC occurred. Use the new SRC to correct the problem (see Chapter 2, "Unit Reference Codes" on page 2-1).

This ends the procedure.

7 Exchange the chassis (see "Chassis" on page 4-2).

If the problem occurs again, ask your next level of support for assistance and report a Licensed Internal Code problem.

This ends the procedure.

8 Perform the following:

a. Copy the main storage dump from disk to tape (see "Copying Main Storage Dump to Tape or Diskette" in the *Service Functions User's Guide*).
b. Print the error log (see "Error Log Utility" in the *Service Functions User's Guide*).
c. Copy the I/O processor dump from disk to tape or diskette. Use the instructions for the dump to tape function (see "Copying the IOP Storage Dump to Tape or Diskette" in the *Service Functions User's Guide*).

Note: You need two tapes for these dumps: one for the main storage dump and one for the IOP dump.

9 Ask your next level of support for assistance and report a Licensed Internal Code problem.

This ends the procedure.

VLIC-PIP8

Vertical Licensed Internal Code has detected either an operating system program failure or a hardware failure.

1 Perform the following:

a. Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2).
b. Select Function 03 (Start IPL) and press Enter on the control panel to perform an IPL.

Does the same system reference code (SRC) occur?

No   Yes

↓   Go to step 6 of this procedure.

2 Does the same unit reference code (URC) appear on the console (see "VLIC PIP Display Examples" on page 3-30)?

No   Yes

↓   Go to step 5 of this procedure.

3 Does a different SRC occur, or does a different URC appear on the console?

No   Yes

↓   Use the new SRC to correct the problem (see Chapter 2, "Unit Reference Codes" on page 2-1). If the procedure for the new SRC sends you back to this procedure, go to step 5.

If all of the reference codes on the console are 0000, go to "VLIC-PIP11" on page 3-24 and use cause code 0002.

This ends the procedure.

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

Is the problem intermittent?

Yes   No

↓   **This ends the procedure.**

5 Copy the main storage dump to the tape unit (see "Copying Main Storage Dump to Tape or Diskette" in the *Service Functions User's Guide*).

6 Ask your next level of support for assistance and report a Licensed Internal Code problem.

This ends the procedure.

VLIC-PIP9

A C6xx xxxx or D6xx xxxx system reference code (SRC) is a status SRC and normally changes every few minutes. This is a status condition that does not need any more action.

However, some SRCs could remain for an hour for long-running operations, such as Directory Recovery.

Use this procedure if the system is *not active* or *hung*.

The conditions in the following list indicate that the system is *active*. Do not perform this procedure if any of the following appears:

• A changing status SRC (C6xx xxxx or D6xx xxxx)
• A display on any workstation
• A blinking Processor Active light on the control panel

1 Perform a main storage dump (see "Perform a Main Storage Dump to Disk" in the *Service Functions User's Guide*).

2 Select Function 03 (Start IPL) and press Enter to perform an IPL.

3 Copy the main storage dump to tape (see "Copying Main Storage Dump to Tape or Diskette" in the *Service Functions User's Guide*).

4 Ask your next level of support for assistance and report a Licensed Internal Code problem.

This ends the procedure.

VLIC-PIP10

This procedure isolates the cause of the system running out of space in the system ASP.

1 Select Function 03 (Start IPL), press Enter on the control panel, and sign on to DST.

2 Select the *Work with disk units* option. Have the system operator add disk space to the system auxiliary storage pool (see *Advanced Backup and Recovery Guide*).

3 Select the *IPL the system* option from the Use Dedicated Service Tools (DST) display.

Does the same system reference code (SRC) occur?

Yes   No

↓   **This ends the procedure.**

4 Perform an IPL from the disk unit to DST.

5 Copy the main storage dump to tape (see "Copying Main Storage Dump to Tape or Diskette" in the *Service Functions User's Guide*).

6 Ask your next level of support for assistance and report a Licensed Internal Code problem.

This ends the procedure.

VLIC-PIP11

This procedure isolates a system STARTUP failure in the initial program load (IPL) mode.

1 Is reference code 5091 displayed?

No   Yes

↓   One or more disk units has the wrong type and model number in the vital product data (VPD).

Go to step 4 of this procedure.

2 Look at the Data display characters for Function 13 or use the cause code given by another procedure. You can find these Data display characters by either:

- Looking at the information for Function 13 on the Problem Summary Form, which was filled out earlier or use the cause code given by another procedure.
- Selecting Function 13 and pressing Enter on the control panel. The 8 characters of the SRC are displayed.

Refer to the 4 leftmost Data display characters for Function 13 The 4 leftmost characters are the **cause code**. If the **cause code** is:

- **0001**, system configuration indicates there is only one disk unit.

  perform an IPL to dedicated service tools (DST).

  Use the *Display or change disk configuration* option under the Work with Disk Units display to check configuration.

  This ends the procedure.

- **0002**, disk units are missing from the disk configuration.

  Go to step 6 of this procedure.

- **0004**, the Licensed Internal Code for one or more disk units needs to be updated.

  Go to step 3 of this procedure.

- **0006**, a write operation to identify a disk unit failed.

  Go to step 6 of this procedure.

- **0008**, a disk unit has no more alternate sectors to assign.

  Go to step 9 of this procedure.

- **0009**, the procedure to restore a disk unit from the tape unit did not complete.

  Go to step 10 of this procedure.

- **0010**, the disk configuration has changed.

  The operating system must be installed again.

  All customer data must be restored (see *Advanced Backup and Recovery Guide*).

  This ends the procedure.

- **0011**, the serial number of the control panel does not match the system serial number.

  Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2) and perform an IPL. You will be prompted for the system serial number.

  This ends the procedure.

- **0012**, the operation to write the vital product data (VPD) to the control panel failed.

  Exchange the chassis (see "Chassis" on page 4-2).

  This ends the procedure.

- **0013**, one or more disk units has the wrong type and model number in the vital product data (VPD).

  Go to step 4 of this procedure.

- **0014**, a Vertical Licensed Internal Code problem occurred.

  Ask your next level of support for assistance.

  This ends the procedure.

- **0015**, the system cannot determine the correct load-source disk unit when the system is using mirrored protection.

  Go to step 11 of this procedure.

- **0016**, a disk unit is no longer using mirrored protection.

Wait 6 minutes. If the same reference code appears, go to step 6 of this procedure.

- **0017**, a disk unit using mirrored protection has less mirrored protection than it did during the previous IPL.

  Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2) and perform an IPL to determine the new and previous levels of mirrored protection.

  This ends the procedure.

- **0018**, the load-source disk unit is using mirrored protection and is configured at an incorrect address.

  Ensure that the load-source disk unit is in device location 1.

  This ends the procedure.

- **0019**, one of the load-source disk units is using mirrored protection and is configured at a different address than it was during the last IPL.

  Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2) and perform an IPL to determine the current and previous load-source device address.

  This ends the procedure.

- **001A**, the load-source disk unit is using mirrored protection. The disk unit in use does not have the correct level of data.

  Go to step 11 of this procedure.

- **001B**, one or more disk units are no longer using mirrored protection.

  Wait 30 seconds. If the same reference code appears, go to step 6 of this procedure.

- **001C**, disk units required to update the system configuration are missing.

  Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2) and perform a manual IPL to determine the cause of the problem.

  This ends the procedure.

- **001D**, Licensed Internal Code has been installed on the incorrect disk unit of the load-source mirrored pair.

  The correct disk unit has been used to perform an IPL. The correct disk unit may not contain the same level of Licensed Internal Code that was installed on the incorrect disk unit . The type, model, and address of the active device are displayed in Functions 14 through 17 of the SRC.

  If the correct load-source disk unit in position 1 contains the correct level of Licensed Internal Code, perform the following:

  a. Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2) and perform an IPL from a disk unit.
  b. When the Display Incorrect Licensed Internal Code Install display appears on the console, press Enter on the control panel.

  If the correct load-source disk unit in position 1 of the system unit does not contain the correct level of Licensed Internal Code, restore the Licensed Internal Code to the disk unit in position 1 of the system unit (see "Restoring Licensed Internal Code" in the *Service Functions User's Guide*).

  This ends the procedure.

- **0021**, the system password verification failed.

  Perform an IPL and enter the correct system password by doing the following:

  a. Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2).
  b. Select Function 03 (Start IPL) and press Enter on the control panel to perform an IPL (see "Initial Program Load (IPL) Summary" in the *Service Functions User's Guide*). You will be prompted for the correct system password.
  c. Enter the correct system password. If the correct system password is not available:

- Select the *Bypass the system password* option from the prompt.
- Have the customer contact the marketing representative immediately to order the AS/400 System Password RPQ.

This ends the procedure.

- **0023**, a missing disk unit was detected.

  Go to step 13 of this procedure.

- **0024**, the system type needs to be entered.

  Perform an IPL and enter the correct system type by doing the following:

  a. Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2).
  b. Select function 03 (Start IPL) and press Enter on the control panel to perform an IPL (see "Initial Program Load (IPL) Summary" in the *Service Functions User's Guide*). You will be prompted for the correct system type.
  c. Enter the correct system type.

  This ends the procedure.

- **0099**, a Vertical Licensed Internal Code program error occurred.

  Ask your next level of support for assistance.

This ends the procedure.

3 Perform the following:

  a. Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2).
  b. Perform an IPL to disk (Function 03).

  If the same reference code appears, ask your next level of support for assistance.

  If no reference code appears and the IPL completes successfully, the problem has been corrected.

  If a different reference code appears, use it to correct the problem (see Chapter 2, "Unit Reference Codes" on page 2-1).

  This ends the procedure.

4 Perform the following:

  a. Look at the Data display characters for Function 15.

     The second character from the left of Function 15 is the address of the disk unit.
  b. See "Device Locations and Addresses" on page 5-15 to find where this device number and the associated disk unit is located in the system.

5 Exchange the disk unit (see "*Disk Unit*" on page 4-7).

  This ends the procedure.

6 Go to step 11 of this procedure if the Display Load Source Failure display appears after you perform an IPL. If you have already performed step 11 of this procedure, continue with the remainder of this step.

  Note: Verify the disk address jumpers (see "Disk Unit Address Jumper Wire Connections (Type 61xx Disk Units)" on page 5-14 or "Disk Unit Address Jumper Connections (Type 66xx Disk Units)" on page 5-14).

  Is the Display Missing Disk Unit display or the Suspend Missing Disk Unit display on the console?

  Yes   **No**

  ↓   Perform the following:

            a. Look at the Data display characters for Function 15.

               The second character from the left of Function 15 is the address of the failing disk unit This address matches the device location number for the disk units.

            b. Go to step 8 of this procedure to find the part number of the failing item.

7 The first 4 characters under *Address* are the address of the I/O processor. The next 2 characters are the address of the failing

disk unit. This address matches the device location for disk units.

See "Device Locations and Addresses" on page 5-15 to find where this device location number and the associated disk unit are located on the system.

8 Determine the disk unit type number.

You can determine the part number of the disk unit by looking at a label located on the disk unit. You must remove the disk unit to see this label.

Exchange the following parts:

a. For the type of disk unit you have (see "Type and Part Number List" on page 2-62):

   • Disk drive and logic card

b. Chassis

This ends the procedure.

9 Perform the following:

a. Look at the Data display characters for Function 15.

   The address of the disk unit is the second character from the left of Function 15.

b. Exchange the disk unit (see "Disk Unit" on page 4-7).

   You can determine the part number of the disk unit by looking at a label located on the disk unit. You must remove the disk unit to see this label.

See the "Type and Part Number List" on page 2-62 to determine the part numbers of the following:

   • Disk drive and logic card

This ends the procedure.

10 Perform the following:

a. Look at the Data display characters for Function 15.

   The address of the disk unit is the second character from the left of Function 15. This address matches the device location number for the disk unit.

b. Perform the procedure "Restoring Data to the Disk Unit" on page 5-13.

   Note: If an error is indicated, perform problem isolation from the start.

   This ends the procedure.

11 Perform the following:

a. Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2) and perform an IPL. The Display Missing Disk Units display or the Display Load-Source Failure display appears.

b. Press Enter on the control panel.

c. Enter the DST password, 22222222.

d. Select the *Work with disk units* option.

e. Select the *Display disk configuration* option.

f. Select the *Display configuration status* option.

g. Find the two disk units displayed as Unit 1 on the Display Configuration Status display.

h. Swap these two disk units with each other and perform an IPL.

If the problem is corrected, **this ends the procedure.**

If a different reference code appears, use it to correct the problem. If the same reference code appears, reinstall the disk units in their original locations and go to step 6 of this procedure.

12 Ask your next level of support for assistance and report a Licensed Internal Code problem.

This ends the procedure.

13 The system has detected missing disk units due to the wrong internal format.

Perform an IPL by doing the following:

a. Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2) and perform an IPL (see "Initial Program Load (IPL) Summary" in the

Service Functions User's Guide). To determine the cause of the problem see "VLIC PIP Display Examples" on page 3-30.

This ends the procedure.

VLIC-PIP13

The I/O processor sensed that a disk unit is not operational.

1 Perform the following:

a. Look at the Data display characters for Function 19 You can find these Data display characters by either:

- Looking at the information for Function 19 on the Problem Summary Form, which was filled out earlier.
- Selecting Function 19 and pressing Enter on the control panel. The 8 characters of the system reference code (SRC) are displayed.

b. Record these 8 characters for future reference.

2 Perform the following:

a. Go to Chapter 2, "Unit Reference Codes" on page 2-1.
b. Do not use the data recorded for Function 11-2 as the SRC to determine what you should do for this problem. Instead, use the data recorded for Function 19

This ends the procedure.

VLIC-PIP14

An I/O processor indicated a device or I/O processor error to the system.

The information obtained in this step should be saved for use by your next level of support.

1 Look at the Data display characters for Function 13 and Function 15 on the Problem Summary Form.

Function 13 of the SRC contains the address of the I/O processor that reported the error. The address is the 4 rightmost characters of Function 13.

Function 15 of the SRC contains error information for the failing device or I/O processor. The 4 leftmost characters are the device or feature identifier and the 4 rightmost characters are the unit reference code.

2 Perform the following:

a. Select IPL type A, mode M (see "Selecting IPL and Mode" on page 5-2).
b. Select Function 03 (Start IPL).
c. Press Enter on the control panel to perform an IPL to DST.

Does a display appear on the console (see "VLIC PIP Display Examples" on page 3-30)?

Yes   No

↓   Go to step 4 of this procedure.

3 Save the information you get in this step for use by your next level of support.

Perform the following:

a. Copy the main storage dump to tape (see "Copying Main Storage Dump to Tape or Diskette" in the *Service Functions User's Guide*).
b. Print the system error log for the magnetic storage subsystem.
c. Copy the I/O processor dump from disk to tape or diskette. Use the instructions for the dump to tape or diskette function (see "Copying the IOP Storage Dump to Tape or Diskette" in the *Service Functions User's Guide*).

Note: You need two tapes for these dumps: one for the main storage dump and one for the IOP dump.

d. After the dumps have been copied to tape, continue the IPL to the AS/400 Main Menu.

4 Does the same reference code that sent you to this procedure occur?

Yes   No

↓   If no reference code occurs, the
      problem is intermittent. Continue
      with step 5 of this procedure.

      If a different reference code occurs,
      go to Chapter 2, "Unit Reference
      Codes" on page 2-1 and use the
      new reference code to correct the
      problem.

      This ends the procedure.

5 Ask your next level of support for assist-
ance. Report the problem and all informa-
tion you got during this procedure.

This ends the procedure.

VLIC PIP Display Examples

Format of VLIC PIP Displays: There are several displays for disk unit failures that have the format of the display shown in Figure 3-1.

```
                    Suspend Missing Disk Units

The following disk units are missing from the system disk
configuration:
                   C
           A    B  Serial          D           E
ASP  Unit Type Model Number       Address      Reference Code
 1    2   6102 0015  10-12345__   0010-0100FFFF    1400
 1    3   6102 0015  10-22345__   0010-0200FFFF
 0    0   2643 0001  10-7654321   0010-FFFFFFFF    3100
 __   __  ____ ____  _____      ____:____       ____
 __   __  ____ ____  _____      ____:____       ____
 __   __  ____ ____  _____      ____:____       ____
 __   __  ____ ____  _____      ____:____       ____
 __   __  ____ ____  _____      ____:____       ____
 __   __  ____ ____  _____      ____:____       ____
                                                         More...

Press Enter to suspend missing disk units and continue the IPL.

F6=Use Dedicated Service Tools (DST)
F11=Display unit status
```

Figure 3-1. Format of VLIC PIP Displays

Type **A** : This field shows the type number of the failing disk unit or magnetic storage I/O processor. Use this field to find the correct device service information.

Model **B** : This field shows the model number of the failing disk unit or magnetic storage I/O processor.

Serial Number **C** : This field shows the serial number of the failing disk unit or magnetic storage I/O processor.

Address **D** : The first 4 characters in this field are the card address of the failing magnetic storage I/O processor or the magnetic storage I/O processor of the failing disk unit.

The sixth character from the left is the device address of the failing disk unit.

Reference Code **E** : This field shows the unit reference code of the failing disk unit or magnetic storage I/O processor.

Find the correct unit reference code guide using the *Type* field and follow the instructions for that unit reference code.

If the *Type* field contains B6xx, the problem is in the Licensed Internal Code. Look in the "Unit Reference Code Tables" on page 2-3 under B6xx for the unit reference code shown in the *Reference Code* field.

In Figure 3-1, on the line where the *Unit* field contains 0, the *Type* field contains 2643, and the *Reference Code* field contains 3100, use the 3100 reference code to correct the problem. The disk unit shown above it (type 6102, serial number 10-12345, address 0010-0100, reference code 0000) is failing because of the 3100 reference code.

If the *Unit* field contains 0 and the *Type* field contains a magnetic storage I/O processor or Licensed Internal Code, the *Reference Code* field contains the cause of the failure for all disk units shown with the same first 4 characters in the *Address* field.

Suspend Missing Disk Units (All Reference Codes = 0000):

If you see the display shown in Figure 3-2 (showing missing disk units and all the reference codes are 0000), perform the following:

1. Print or record all the disk units shown with reference codes of 0000. For devices with reference codes of 0000, go to "VLIC-PIP11" on page 3-24, step 2, and use cause code 0002. If any entries on the display have reference codes that are not 0000, use those reference codes with the device shown in the *Type* field to correct the problem.

```
                    Suspend Missing Disk Units

The following disk units are missing from the system disk
configuration:

                    Serial
ASP  Unit Type Model Number       Address      Reference Code
 1    1   6102 0015  10-12345__   0010-0100FFFF    0000
 1    2   6102 0015  10-12346__   0010-0200FFFF    0000
 __   __  ____ ____  _____      ____:____       ____
 __   __  ____ ____  _____      ____:____       ____
 __   __  ____ ____  _____      ____:____       ____
 __   __  ____ ____  _____      ____:____       ____
 __   __  ____ ____  _____      ____:____       ____
 __   __  ____ ____  _____      ____:____       ____
                                                         More...

Press Enter to suspend missing disk units and continue the IPL.

F6=Use Dedicated Service Tools (DST)
F11=Display unit status
```

Figure 3-2. Suspend Missing Disk Units (All Reference Codes = 0000)

2. Use the *Display disk configuration* option on the Work with Disk Configuration display under Work with Disk Units to display the system disk configuration status (see Figure 3-3 on page 3-31).

```
                    Display Disk Configuration Status

              Serial
  ASP  Unit  Number      Type  Model  Address        Status
  _1_                                                 Mirrored
   __   _1   10-12345__  6102  0015   0010-0100FFFF   Active_____
   __   _1   10-12347__  6102  0015   0010-0300FFFF   Active_____
   __   _2*  10-12346__  6102  0015   0010-0200FFFF   Suspended_____
   __   _2   10-12348__  6102  0015   0010-0400FFFF   Active_____
   __   __   _____   ___   __     ____-____       _____
   __   __   _____   ___   __     ____-____       _____
   __   __   _____   ___   __     ____-____       _____
   __   __   _____   ___   __     ____-____       _____
   __   __   _____   ___   __     ____-____       _____

                                                              More...

  Press Enter to continue.

  F3=Exit  F5=Refresh  F11=Display non-configured units  F12=Cancel
```

Figure 3-3. Display Disk Configuration Status

Suspend Missing Disk Units (One Missing Disk Unit):
If you see the display shown in Figure 3-4 (showing one missing disk unit), perform the following:

1. Use the *Display disk configuration* option on the Work with Disk Configuration display under Work with Disk Units to display the system disk configuration status (see Figure 3-5).

```
                    Suspend Missing Disk Units

  The following disk units are missing from the system disk
  configuration:

                          Serial
  ASP  Unit  Type  Model  Number      Address        Reference Code
  _1_  _2_   6102  0015   10-12345__  0010-0100FFFF   0000
   __   __   ___   ___    _____    ____-____       ____
   __   __   ___   ___    _____    ____-____       ____
   __   __   ___   ___    _____    ____-____       ____
   __   __   ___   ___    _____    ____-____       ____
   __   __   ___   ___    _____    ____-____       ____
   __   __   ___   ___    _____    ____-____       ____

                                                          More...

  Press Enter to suspend missing disk units and continue the IPL.

  F6=Use Dedicated Service Tools (DST)
  F11=Display unit status
```

Figure 3-4. Suspend Missing Disk Units (One Missing Disk Unit)

2. As shown in Figure 3-5, one other disk unit is attached to the same disk I/O processor as the missing disk unit. The missing disk unit is causing the failure.

```
                    Display Disk Configuration Status

              Serial
  ASP  Unit  Number      Type  Model  Address        Status
  _1_  _1_   10-12345__  6102  0015   0010-0100FFFF   Active_____
  _1_  _1_   10-12347__  6102  0015   0010-0300FFFF   Active_____
  _1_  _2*  10-23456__  6102  0015   0010-0200FFFF   Suspended_____
  _1_  _2_   10-23458__  6102  0020   0010-0400FFFF   Active_____
   __   __   _____   ___   __     _____        _____
   __   __   _____   ___   __     _____        _____
   __   __   _____   ___   __     _____        _____
   __   __   _____   ___   __     _____        _____
   __   __   _____   ___   __     _____        _____

                                                              More...

  Press Enter to continue.

  F3=Exit  F5=Refresh  F11=Display non-configured units  F12=Cancel
```

Figure 3-5. Display Disk Configuration Status

Suspend Missing Disk Units (All Devices on One MSIOP Failing):
If you see the display shown in Figure 3-6 (showing all the disk units attached to the magnetic storage I/O processor at address 0010 failing), you cannot determine the failing item. Perform the following:

1. Exchange the magnetic storage I/O processor.

```
                    Suspend Missing Disk Units

  The following disk units are missing from the system disk
  configuration:

                          Serial
  ASP  Unit  Type  Model  Number      Address        Reference Code
  _1_  _1_   6102  0020   10-12345__  0010-0100FFFF   0000
  _1_  _2_   6102  0020   10-78454__  0010-0200FFFF   0000
   __   __   ___   ___    _____    ____-____       ____
   __   __   ___   ___    _____    ____-____       ____
   __   __   ___   ___    _____    ____-____       ____
   __   __   ___   ___    _____    ____-____       ____
   __   __   ___   ___    _____    ____-____       ____

                                                          More...

  Press Enter to suspend missing disk units and continue the IPL.

  F6=Use Dedicated Service Tools (DST)
  F11=Display unit status
```

Figure 3-6. Suspend Missing Disk Units (All Devices on One MSIOP Failing)

2. If this does not correct the problem, exchange the disk units.

Display Missing Disk Units (All Reference Codes = 0000):

If you see the display shown in Figure 3-7 on page 3-32 (showing missing disk units and all the reference codes are 0000), perform the following:

1. Print or record all the disk units shown with reference codes of 0000. For devices with reference codes of 0000, go to "VLIC-PIP11" on page 3-24, step 2, and use cause code 0002. If any entries on the display have reference codes that are not 0000, use those reference codes with the device shown in the *Type* field to correct the problem.

```
                    Display Missing Disk Units

The following disk units are missing from the system disk
configuration:

                     Serial
ASP  Unit  Type  Model  Number    Address        Reference Code
_1_  _1_   6102  0015   10-12345  0010-0100FFFF      0000
_1_  _2_   6102  0015   10-12346  0010-0200FFFF      0000
__   __    __    __     _____   ___-___            __
__   __    __    __     _____   ___-___            __
__   __    __    __     _____   ___-___            __
__   __    __    __     _____   ___-___            __
__   __    __    __     _____   ___-___            __
__   __    __    __     _____   ___-___            __
                                                     More...

Press Enter to use Dedicated Service Tools (DST).

F11=Display unit status
```

Figure 3-7. Display Missing Disk Units (All Reference Codes = 0000)

2. Use the *Display disk configuration* option on the Work with Disk Configuration display under Work with Disk Units to display the system disk configuration status (see Figure 3-8).

```
                    Display Disk Configuration Status
             Serial
ASP  Unit   Number   Type  Model  Address        Status
_1_  _1_    10-12345  6102  0015   0010-0100FFFF   Active_____
_1_  _1_    10-12347  6102  0015   0010-0300FFFF   Active_____
_1_  _2*    10-23456  6102  0015   0010-0200FFFF   Suspended_____
_1_  _2_    10-23458  6102  0020   0010-0400FFFF   Active_____
__   __     _____   __    __     ___-___         _____
__   __     _____   __    __     ___-___         _____
__   __     _____   __    __     ___-___         _____
__   __     _____   __    __     ___-___         _____
__   __     _____   __    __     ___-___         _____
                                                   More...

Press Enter to continue.

F3=Exit  F5=Refresh  F11=Display non-configured units  F12=Cancel
```

Figure 3-8. Display Disk Configuration Status

Display Missing Disk Units (One Missing Disk Unit):

If you see the display shown in Figure 3-9 (showing one missing disk unit), perform the following:

1. Use the *Display disk configuration* option on the Work with Disk Configuration display under Work with Disk Units to display the system disk configuration status (see Figure 3-10).

```
                    Display Missing Disk Units

The following disk units are missing from the system disk
configuration:

                     Serial
ASP  Unit  Type  Model  Number    Address        Reference Code
_1_  _2_   6102  0015   10-12345  0010-0100FFFF      0000
__   __    __    __     _____   ___-___            __
__   __    __    __     _____   ___-___            __
__   __    __    __     _____   ___-___            __
__   __    __    __     _____   ___-___            __
__   __    __    __     _____   ___-___            __
__   __    __    __     _____   ___-___            __
                                                     More...

Press Enter to use Dedicated Service Tools (DST).

F11=Display unit status
```

Figure 3-9. Display Missing Disk Units (One Missing Disk Unit)

2. As shown in Figure 3-10, one other disk unit is attached to the same disk I/O processor as the missing disk unit. The missing disk unit is causing the failure.

```
                    Display Disk Configuration Status
             Serial
ASP  Unit   Number   Type  Model  Address        Status
_1_                                                Mirrored
     _1_    10-12345  6102  0015   0010-0100FFFF   Active_____
__   _1_    10-12347  6102  0015   0010-0300FFFF   Active_____
__   _2*    10-12346  6102  0015   0010-0200FFFF   Suspended_____
__   _2_    10-12348  6102  0015   0010-0400FFFF   Active_____
__   __     _____   __    __     _____         _____
__   __     _____   __    __     _____         _____
__   __     _____   __    __     _____         _____
__   __     _____   __    __     _____         _____
__   __     _____   __    __     _____         _____
                                                   More...

Press Enter to continue.

F3=Exit  F5=Refresh  F11=Display non-configured units  F12=Cancel
```

Figure 3-10. Display Disk Configuration Status

Display Missing Disk Units (All Devices on One I/O Processor Failing):

If you see the display shown in Figure 3-11 on page 3-33 (showing all the disk units attached to the magnetic storage I/O processor at address 0010 failing), you cannot determine the failing item. Perform the following:

1. Exchange the magnetic storage I/O processor.

```
                    Display Missing Disk Units

The following disk units are missing from the system disk
configuration:

                        Serial
ASP  Unit Type Model  Number      Address        Reference Code
_1_  _2_  6102 0015  10-12345__  0010-0100FFFF    1400
_1_  _3_  6102 0015  10-12346__  0010-0200FFFF    1400
__   __   __   __    _____    ____-___         __
__   __   __   __    _____    ____-___         __
__   __   __   __    _____    ____-___         __
__   __   __   __    _____    ____-___         __
__   __   __   __    _____    ____-___         __
                                                       More...

Press Enter to use Dedicated Service Tools (DST).

F11=Display unit status
```

Figure 3-11. Display Missing Disk Units (All Devices on One I/O Processor Failing)

2. If this does not correct the problem, exchange the disk units.

```
                    Display Disk Configuration Status

          Serial
ASP  Unit Number      Type Model  Address        Status
_1_  _1_  10-12345__  6102 0015  0010-0100FFFF   Active_____
_1_  _1_  10-12347__  6102 0015  0010-0300FFFF   Active_____
_1_  _2*  10-23456__  6102 0015  0010-0200FFFF   Suspended_____
_1_  _2_  10-23458__  6102 0020  0010-0400FFFF   Active_____
__   __   _____    __   __    _____        _____
__   __   _____    __   __    _____        _____
__   __   _____    __   __    _____        _____
__   __   _____    __   __    _____        _____

                                                       More...
Press Enter to continue.

F3=Exit  F5=Refresh  F11=Display non-configured units  F12=Cancel
```

Figure 3-12. Display Disk Configuration Status

Display Missing Disk Units (No Mirrored Protection):

If you see the display shown in Figure 3-13, the disk units shown do not have mirrored protection. You must repair the disk units shown before the IPL can continue.

```
                    Display Missing Disk Units

The following disk units are missing from the system disk
configuration:

                        Serial
ASP  Unit Type Model  Number      Address        Reference Code
_1_  _2_  6102 0015  10-12345__  0010-0100FFFF    102E
_1_  _3_  6102 0015  10-12346__  0010-0200FFFF    102E
__   __   __   __    _____    _____         __
__   __   __   __    _____    _____         __
__   __   __   __    _____    _____         __
__   __   __   __    _____    _____         __
__   __   __   __    _____    _____         __
__   __   __   __    _____    _____         __
                                                       More...
Press Enter to use Dedicated Service Tools (DST).

F11=Display unit status
```

Figure 3-13. Display Missing Disk Units (No Mirrored Protection)

Display Missing Disk Units (Restore Data Not Complete):

If you see the display shown in Figure 3-14, a disk data restore operation or a restore storage operation is not complete for the disk drives shown. You must complete the disk data restore or the restore storage before the IPL can continue.

```
                    Display Missing Disk Units

A restore of the data on one or more units has not completed.
The following disk units have incomplete data:

                        Serial
ASP  Unit Type Model  Number      Address        Status
_1_  _3_  6102 0015  10-12345__  0010-0300FFFF   Unprotected
__   __   __   __    _____    ____-___        _____
__   __   __   __    _____    ____-___        _____
__   __   __   __    _____    ____-___        _____
__   __   __   __    _____    ____-___        _____
__   __   __   __    _____    ____-___        _____
__   __   __   __    _____    ____-___        _____
                                                       More...
Press Enter to use Dedicated Service Tools (DST).
```

Figure 3-14. Display Missing Disk Units (Restore Data Not Complete)

Display Missing Disk Units (VPD Not Correct):

If you see the display shown in Figure 3-15 on page 3-34, the vital product data for the disk drives shown is not correct. Use the *Address* field to find the failing disk unit. Use the *Work with vital product data (VPD)* option on the Work with Disk Unit Information display under Work with Disk Units to correct the vital product

data. The *Type* field indicates that the machine type reported by the disk unit was not identified by the system. The *Model* field indicates any four numbers.

```
                Display Missing Disk Units

The following disk units have incorrect vital product data:

                         Serial
ASP  Unit  Type  Model   Number      Address        Status
_1_  _2_   ****  ****    10-12345__  0020-0100FFFF  Active___
___  ___   ____  ____    _____    ____-____      _____
___  ___   ____  ____    _____    ____-____      _____
___  ___   ____  ____    _____    ____-____      _____
___  ___   ____  ____    _____    ____-____      _____
___  ___   ____  ____    _____    ____-____      _____
___  ___   ____  ____    _____    ____-____      _____
___  ___   ____  ____    _____    ____-____      _____

                                              More...
Press Enter to use Dedicated Service Tools (DST).
```

Figure   3-15. Display Missing Disk Units (VPD Not Correct)

Display Missing Disk Units (Configuration Change Not Complete):

If you see the display shown in Figure 3-16, a system disk configuration change cannot be completed because the disk units shown are missing or suspended. Correct the problem using the reference codes. If the reference code is 0000, or if the problem is corrected, use the *Suspend/resume mirrored protection* option on the Work with Disk Unit Recovery display under Work with Disk Units to enable mirrored protection. If you were performing the system disk configuration, perform the configuration again.

```
                Display Missing Disk Units

A system configuration change that is not complete cannot
be completed.  Disk units required to complete the
configuration change are missing or suspended.  The following
disk units are missing or suspended:

                         Serial
ASP  Unit  Type  Model   Number      Address        Reference Code
_1_  _2_   6102  0015    10-12345__  0010-0200FFFF  0000
___  ___   ____  ____    _____    _____       ____
___  ___   ____  ____    _____    _____       ____
___  ___   ____  ____    _____    _____       ____
___  ___   ____  ____    _____    _____       ____
___  ___   ____  ____    _____    _____       ____
___  ___   ____  ____    _____    _____       ____
                                              More...
Press Enter to use Dedicated Service Tools (DST).

F11=Display unit status
```

Figure   3-16. Display Missing Disk Units Display (Configuration Change Not Complete)

Accept Missing Disk Units:

If you see the display shown in Figure 3-17, an error caused the system to suspend mirrored protection on the disk units shown. You may continue the IPL with suspended units or use the reference codes to correct the problem. If you correct the problem, you must enable mirrored protection on the disk units shown after you repair them. Use the *Suspend/Resume Mirrored Protection* option on the Work with Disk Unit Recovery display under Work with Disk Units to enable mirrored protection.

```
                Accept Missing Disk Units

The following disk units are part of a mirrored pair and were
suspended by the system due to an error:

                         Serial
ASP  Unit  Type  Model   Number      Address        Reference Code
_1_  _2_   6102  0015    10-12345__  0100-0200FFFF  102E
___  ___   ____  ____    _____    _____       ____
___  ___   ____  ____    _____    _____       ____
___  ___   ____  ____    _____    _____       ____
___  ___   ____  ____    _____    _____       ____
___  ___   ____  ____    _____    _____       ____
                                              More...
Press Enter to continue the IPL.

F6=Use Dedicated Service Tools (DST)
F11=Display unit status
```

Figure   3-17. Accept Missing Disk Units

Assign Missing Load-Source Disk:

If you see the display shown in Figure 3-18 on page 3-35, one of the two mirrored load-source disk units is missing, and the system can identify the device as an non-configured disk unit. The disk unit displayed matches the missing device by type, model, and serial number. You may press the Enter key to assign the displayed device as the other load-source mirrored disk device.

```
          Assign Missing Load-Source Disk

The system could not locate one disk unit of the load-source
mirrored pair.  The following disk unit is the non-configured
disk unit located at that address.

Disk unit:
  Type . . . . . . . . . . . . . . . . . . :   6102
  Model  . . . . . . . . . . . . . . . . . :   0020
  Serial number  . . . . . . . . . . . . . :   10-12345
  Address  . . . . . . . . . . . . . . . . :   0010-0100FFFF

Press Enter to continue the IPL and configure the displayed
disk unit as the mirrored pair of the load-source disk unit.




F6=Use Dedicated Service Tools (DST)
F11=Display previous protection levels
```

Figure   3-18. Assign Missing Load-Source Disk

Display Load-Source Failure: If you see
the display shown in Figure 3-19, the system has
determined that the load-source disk unit with mir-
rored protection does not have the correct level of
data.

```
          Display Load-Source Failure

The system could not use the load-source disk unit that
contains correct data.  The following disk unit contains the
correct data:

Disk unit:
  Type . . . . . . . . . . . . . . . . . . :   6102
  Model  . . . . . . . . . . . . . . . . . :   0010
  Serial number  . . . . . . . . . . . . . :   10-12345
  Address  . . . . . . . . . . . . . . . . :   0010-0100FFFF

Press Enter to use Dedicated Service Tools (DST).




F11=Display reference codes
```

Figure   3-19. Display Load-Source Failure

If the previous display is shown, look at the
system disk configuration for the disk units dis-
played under unit 1.

```
            Display Missing Disk Units

The following disk units are missing from the system disk
configuration:

                       Serial
ASP  Unit  Type  Model  Number      Address        Reference Code
_1_  _2_   6102  0015   10-12345__  0010-0100FFFF   0000
_1_  _3_   6102  0015   10-22346__  0010-0200FFFF   0000
_0_  _0_   2643  0001   10-3456789  0010-FFFFFFFF   3100
___  ___   ____  ____   _____   _____        ____
___  ___   ____  ____   _____   _____        ____
___  ___   ____  ____   _____   _____        ____
___  ___   ____  ____   _____   _____        ____
___  ___   ____  ____   _____   _____        ____
___  ___   ____  ____   _____   _____        ____
___  ___   ____  ____   _____   _____        ____
                                                          More...
Press Enter to use Dedicated Service Tools (DST).

F11=Display unit status
```

Figure   3-20. Display Missing Disk Units

The device listed with the last 4 characters of its
address equal to 0000 is failing. Exchange that
device with the other device displayed as unit 1
(serial number 10-34567 in this example).

If you see the display shown in Figure 3-21, you
have selected a service tool from the Use Dedi-
cated Service Tools (DST) display, and the
system cannot determine if the data on the load-
source disk unit is correct. This occurs on a load-
source disk unit with mirrored protection. If you
view any data using the selected service tool, it
may not be at the correct level. If you change any
data using the selected service tool, the change
may be deleted when the system corrects the
incorrect data.

```
            Display Load Source Failure

The system could not use the load-source disk unit that
contains correct data.  Use of a service tool may result in
incorrect data being used or changed by the service tool.

Press Enter to start a service tool.
Press F12 to return to cancel your choice.
```
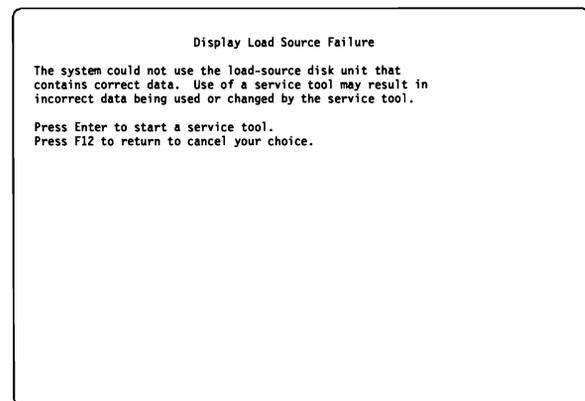
Figure   3-21. Display Load Source Failure

Display Incorrect Licensed Internal Code Install:

If you see the display shown in Figure 3-22, the Licensed Internal Code has been installed on a disk unit that is not recognized by the system as the disk unit using the correct level of data. Ensure that the displayed disk unit is operational and perform the Install Licensed Internal Code again.

```
                    Display Incorrect Licensed Internal Code Install

Licensed Internal Code has been installed on the incorrect
disk unit of the load-source mirrored pair.
If you continue the IPL, previously installed Licensed Internal
Code installed on the incorrect disk unit of the mirrored
load-source pair will be deleted.  The Licensed Internal Code
will be replaced by the Licensed Internal Code from the correct
disk unit.  The following disk unit is the correct disk unit.

Disk unit:
   Type . . . . . . . . . . . . . . . . . :   6102
   Model  . . . . . . . . . . . . . . . . :   0010
   Serial number  . . . . . . . . . . . . :   10-12345
   Address  . . . . . . . . . . . . . . . :   0010-0100FFFF




Press Enter to continue the IPL and replace the Licensed Internal Code.

F6=Use Dedicated Service Tools (DST)
```

Figure 3-22. *Display Incorrect Licensed Internal Code Install*

Chapter 4. Removal Procedures

Adapter Card

1 Power off the system. (See "Powering Off and Powering On the System" on page 5-2.)

2 Disconnect the cable attached to the adapter card.

3 Open the card latch. Pull the card from the slot.

Note: A card latch must be pressed together to release it from its hold. Then it can be opened to disengage the card.

RV2N501-0
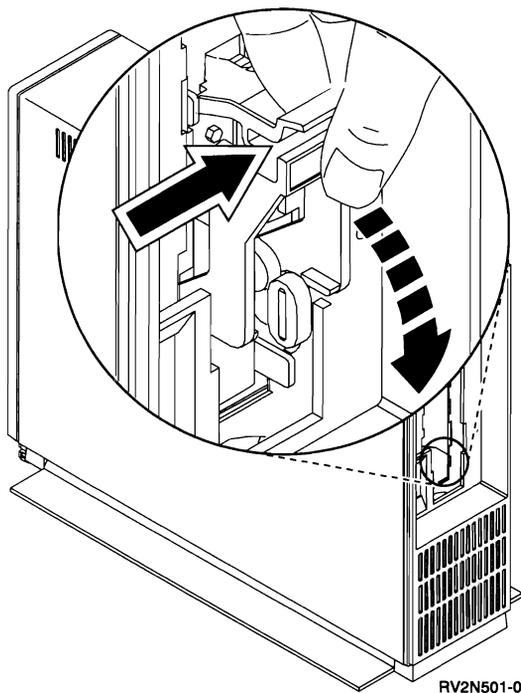
4 Install the adapter card by reversing the removal procedure.

This ends the procedure.

Chassis

Note: Set the system time and date after completing this procedure. (See "Setting the Date and Time" on page 5-3.)

1 Remove the 9401 cover, see "Cover" on page 4-6.

2 Is there an adapter card installed in the 9401.

Yes   No

↓   Go to step 4.

3 Open the card latch.

Pull the card from the slot.

Install the card in the new chassis.

Note: A card latch must be pressed together to release it from its hold. Then it can be opened to disengage the card.

4 Remove all airflow cards. Install the airflow cards in the new chassis.

5 Perform the following:

a. Remove the screws located on each end of the plate.
b. Pull the plate up and away from the chassis.

Note: Hooks are located at each corner of the plate. The hooks fit into slots in the chassis.
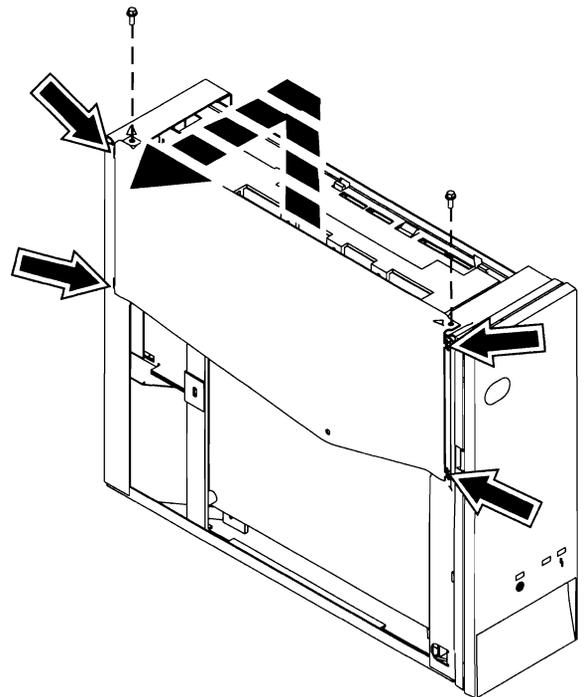
RV2N512-0

6 Are there main storage cards installed on the system processor card?

Yes   No

↓   Go to step 9.
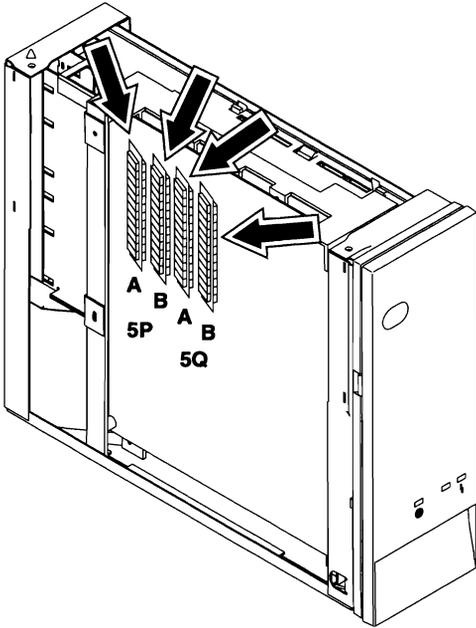
RV2N511-1

7 Warning: The system processor card and main storage cards are sensitive to electrostatic discharge. (See Appendix A, "Working with Electrostatic Discharge-Sensitive Parts" on page A-1.)

To remove a main storage card, perform the following:

a. Push outward on the latches located at each end of the card.

b. Pull the card from the card socket and place it on an ESD mat.

Note the location of the notch **A** on the storage card. You will need to install the storage card in the socket with the notch in the same position.

Repeat this step for each of the main storage cards you want to remove.
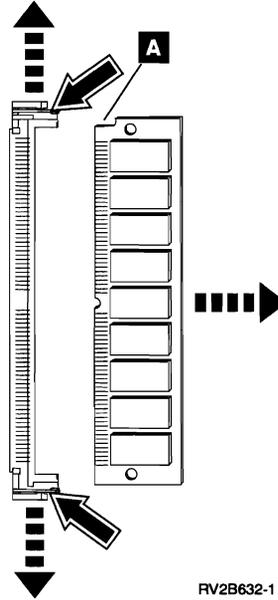
RV2B632-1

8 Install the main storage cards in the new chassis by reversing the removal procedure.

Do **not** install the metal plate at this time.

Note: When installing the cards, place a card in the socket. Push the top edge of the card toward the system processor card until the card latches in the socket.

9 Grip the battery holder clip at both ends and press in. Remove the holder from the chassis.
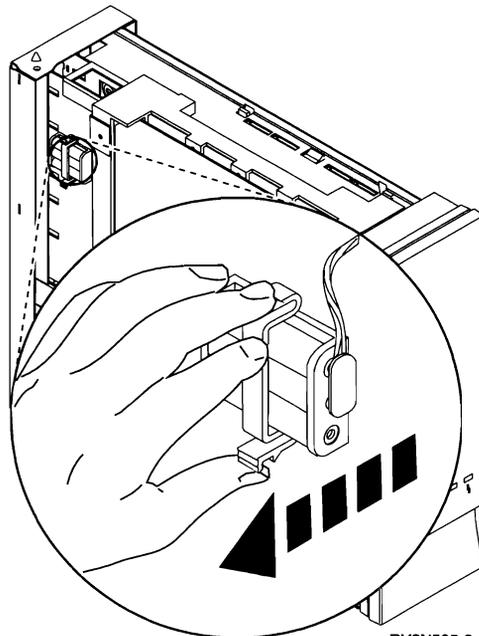
RV2N505-2

10 Disconnect the battery cable from the holder.

RV2N506-1
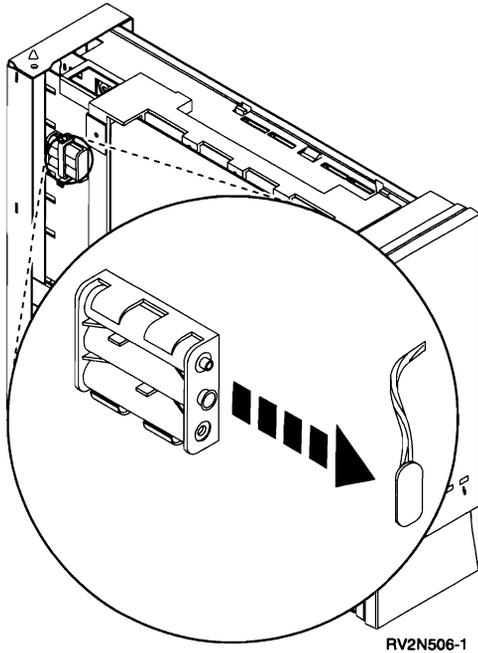
11 Install the battery holder in the new chassis by reversing the removal procedure.

Notes:

  a. Do **not** remove the batteries from the battery holder unless you are also exchanging the batteries at this time.

  b. It is recommended that all three batteries be exchanged every 18 months.

  c. If exchanging the batteries, be careful to observe polarity when installing them in the holder.

CAUTION:
The battery is an alkaline battery. Do not burn or charge the battery. Discard the battery as instructed by local regulations. *(RSFTC229)*

12 Install the metal plate removed earlier in this procedure.

13 Remove the disk unit by performing the following:

  a. **Warning:** When removing and installing the disk unit, care must be taken not to damage the exposed electrical parts.

  While pressing on the two tray tabs pivot the disk unit away from the chassis.
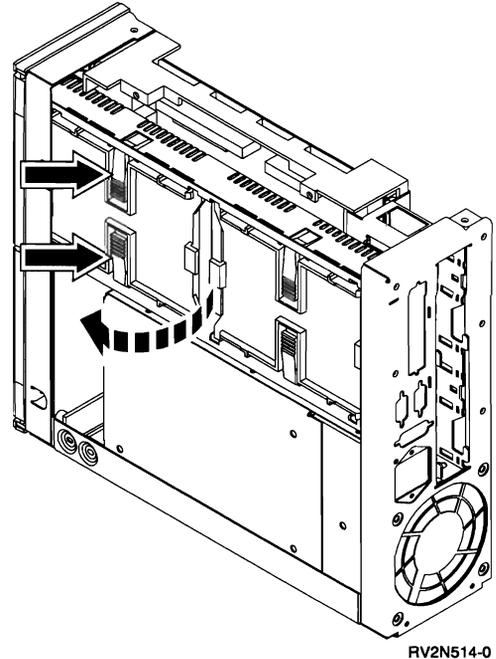
RV2N514-0

  b. Disconnect the signal and power cables from the end of the disk unit.
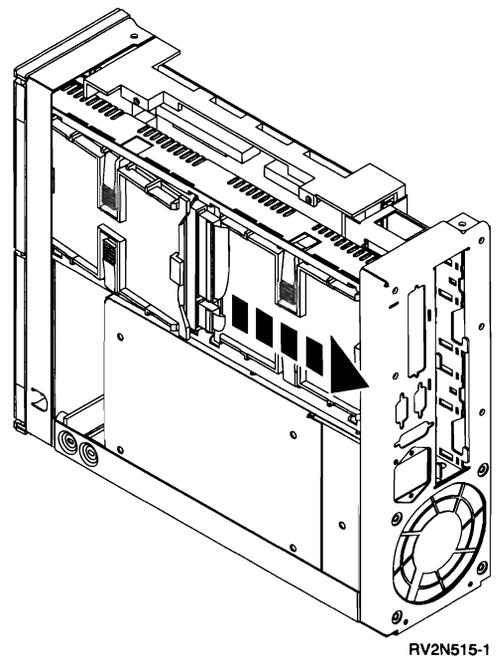
RV2N515-1

  c. Pivot the disk unit away from the chassis and pull it out.
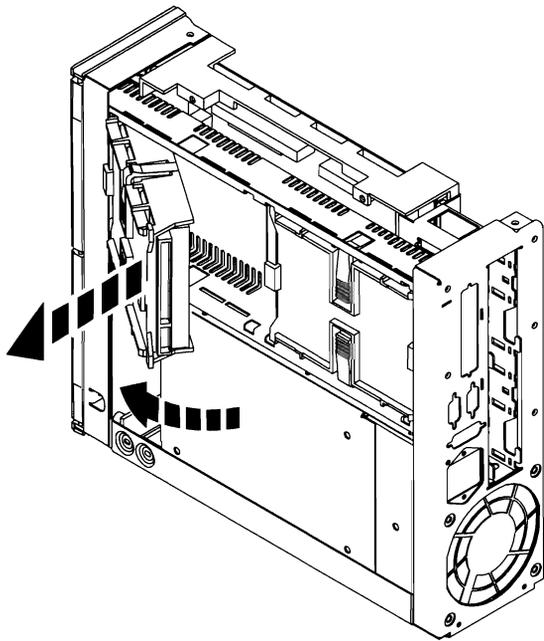
RV2N516-1

Repeat this step for each disk unit.

14 Install the disk unit in the new chassis by reversing the removal procedure.

15 Is an external tape unit attached to the system?

Yes   No

↓   **This ends the procedure.**

16 Disconnect the tape unit cable from the system unit.

When connecting the tape unit cable to the new chassis the following items *must* be performed to correctly complete this procedure.

    a. Remove the terminator on the external tape unit and discard it.
    b. Remove the terminator from the cable plug of the new chassis.
    c. Install the terminator you just removed from the chassis in the terminator location on the external tape unit.

This ends the procedure.

Control Panel Battery

Note: Set the system time and date after completing this procedure. (See "Setting the Date and Time" on page 5-3.)

1 Remove the 9401 cover, see "Cover" on page 4-6.

2 Perform the following:

    a. Remove the screws located on each end of the plate.
    b. Pull the plate up and away from the chassis.

    Note: Hooks are located at each corner of the plate. The hooks fit into slots in the chassis.
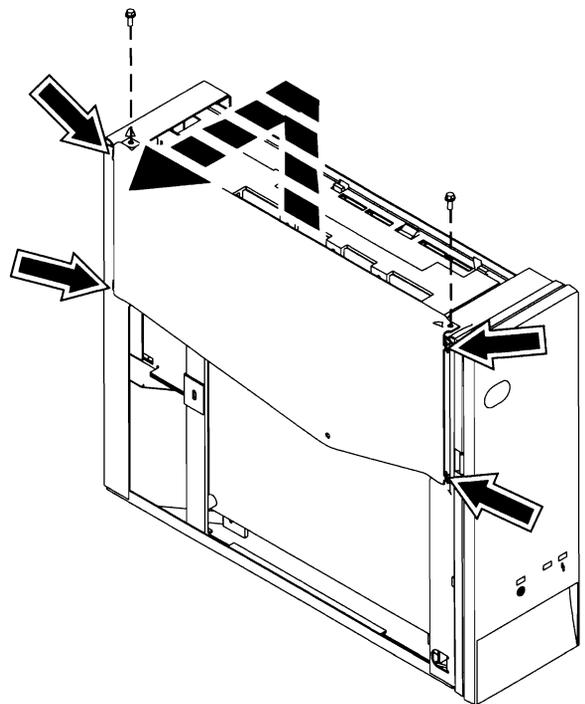
RV2N512-0

3 Grip the battery holder clip at both ends and press in. Remove the holder from the chassis.

RV2N505-2

**4** Disconnect the battery cable from the holder.

RV2N506-1

5 CAUTION:

The battery is an alkaline battery. Do not burn or charge the battery. Discard the battery as instructed by local regulations. *(RSFTC229)*

Pull the batteries out from the holder and exchange the batteries.

It is recommended that all three batteries be exchanged every 18 months.

RV2N507-1
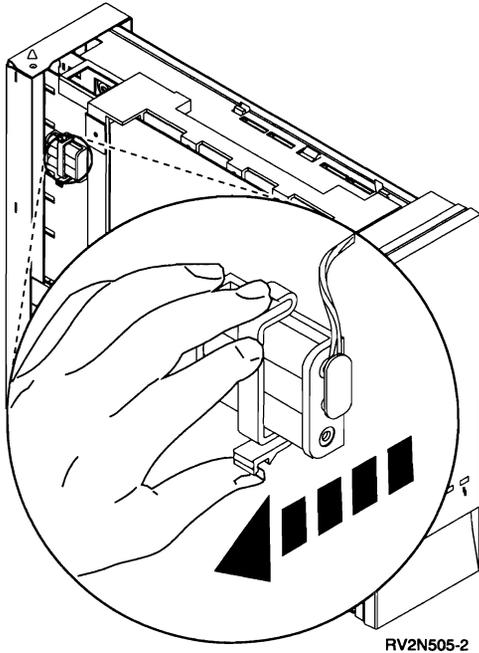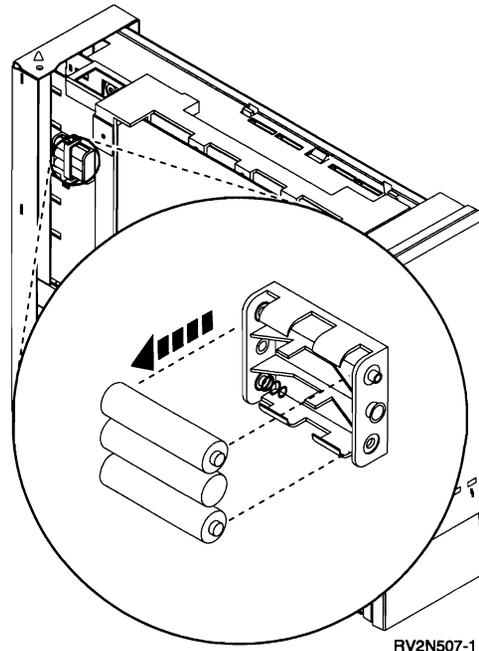
6 Install the control panel batteries by reversing the removal procedure.

Note: Be careful to observe polarity when installing batteries.

This ends the procedure.

Cover

1 Power off the system. (See "Powering Off and Powering On the System" on page 5-2.)

2 Disconnect the power cord from the electrical outlet.

3 Disconnect all cables attached to the 9401 including the power cord.

4 Perform the following:

   a. Press on the two tabs as shown.
   b. Pull the bezel toward you from the top.
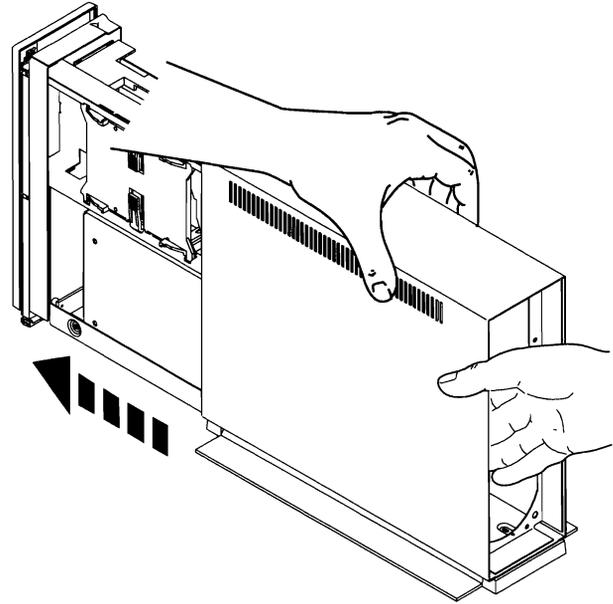   c. Lift to remove the bezel from the chassis.
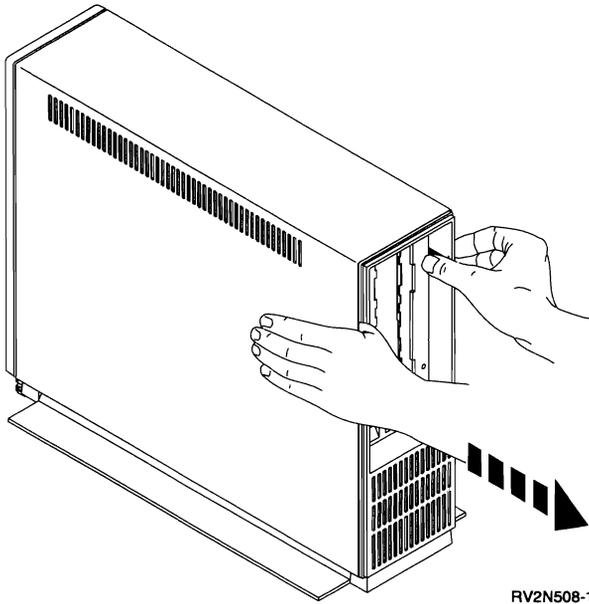
RV2N508-1

5 Remove seven screws from the back of the chassis. Do **not** remove screw **A**.
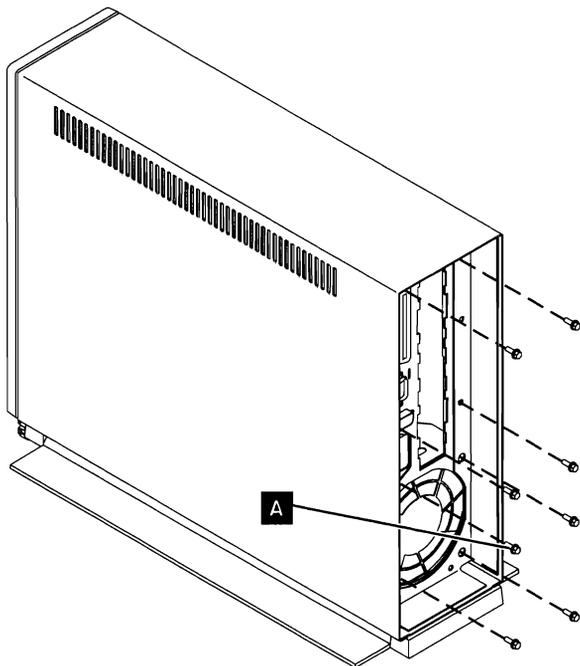
RV2N509-2

6 Place one hand on the top cover of the 9401. Place your other hand in the center of the back. Slowly push on the back of the 9401. The chassis assembly will slide out the front of the unit.

RV2N510-1

7 Install the chassis assembly in the cover by reversing the removal procedure.

This ends the procedure.

Disk Unit

Note: The figures in this procedure represent the removal of a disk unit. Your hardware may look slightly different.

1 If you have not been through the procedure "Start Disk Service Here" on page 5-4, go there before continuing with the next step of this procedure.

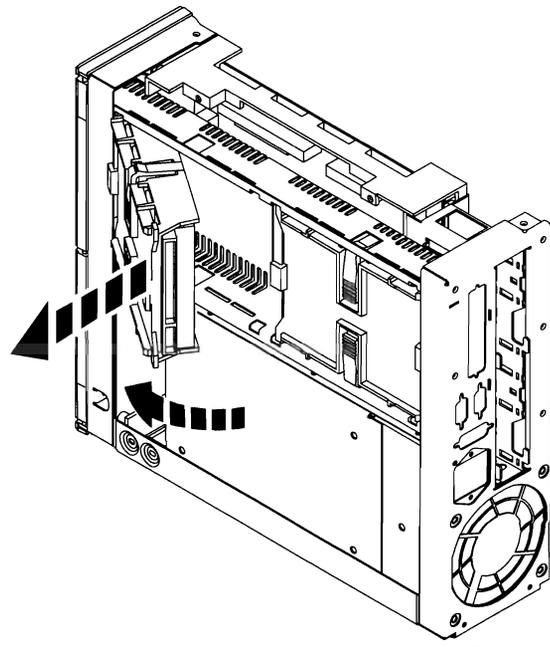**2** Remove the 9401 cover, see "Cover" on page 4-6.

3 **Warning:** When removing and installing the disk unit, care must be taken not to damage the exposed electrical parts.

While pressing on the two tray tabs pivot the disk unit away from the chassis.
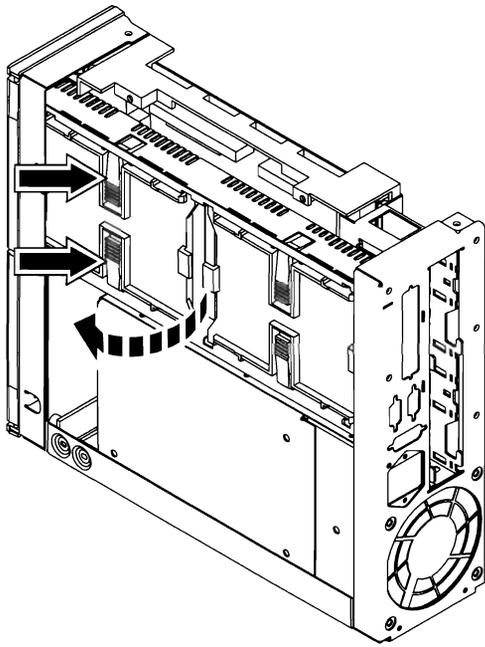
RV2N514-0

4 Disconnect the signal and power cables from the end of the disk unit.

RV2N515-1

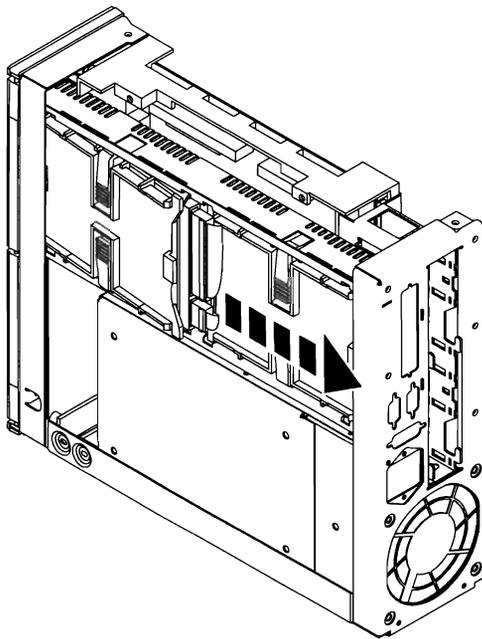**5** Pivot the disk unit away from the chassis and pull it out.

RV2N516-1

6 **Warning:** The disk drive and logic card are sensitive to electrostatic discharge. (See Appendix A, "Working with Electrostatic Discharge-Sensitive Parts" on page A-1.)

Warning: Do not hold or apply pressure to the disk enclosure cover. This can cause the disk enclosure cover to touch and damage the disks inside.

Place the disk unit with the disk tray up.

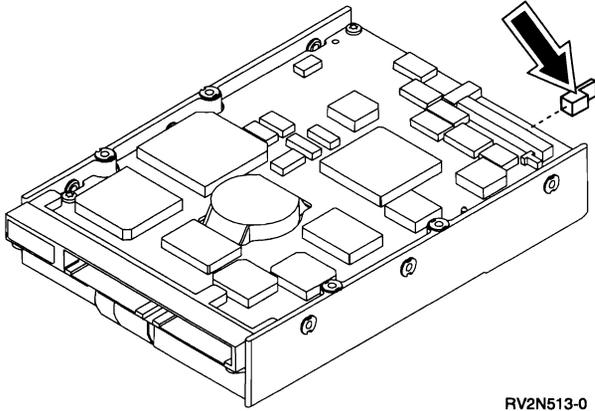Remove the screws that hold the disk tray to the disk unit.

7 Move the address jumper from the original disk unit to the new disk unit.

Note: The address jumper on a 6104 disk unit is located on the same end as the signal and power connectors. The address jumpers on a 6601 disk unit are located on the opposite end from the signal and power connectors.

RV2N513-0

8 Install the disk tray on the new disk unit.

On 6601 disk units, the disk unit tray end **A** must be oriented with the disk drive connectors as shown.
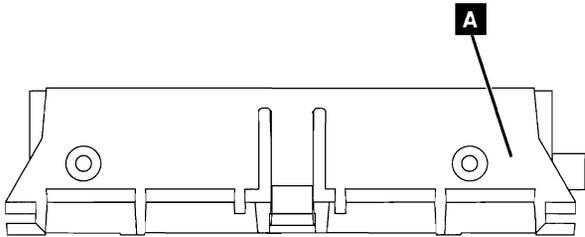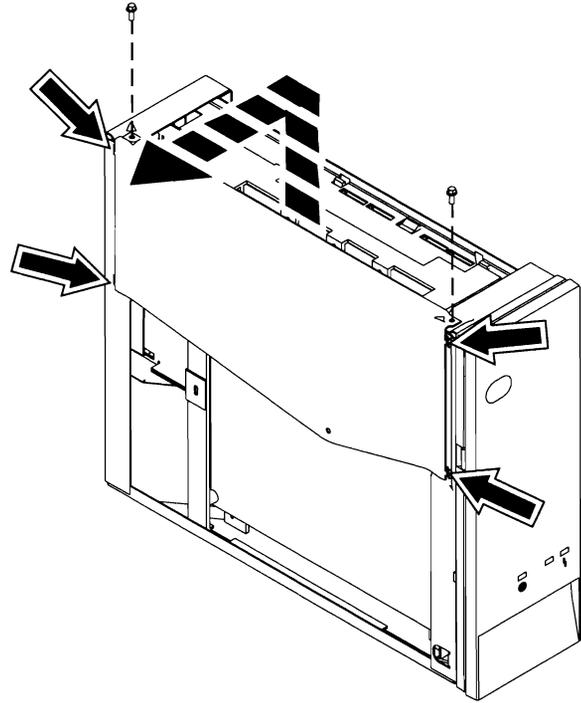

RV2N517-0

9 Install the disk unit by reversing the removal procedure.

This ends the procedure.

Main Storage Cards

Warning: The system processor card and main storage cards are sensitive to electrostatic discharge. (See Appendix A, "Working with Electrostatic Discharge-Sensitive Parts" on page A-1.)

1 Remove the 9401 cover. (See "Cover" on page 4-6.)

2 Perform the following:

a. Remove the screws located on each end of the plate.
b. Pull the plate up and away from the chassis.

Note: Hooks are located at each corner of the plate. The hooks fit into slots in the chassis.

RV2N512-0

3 Locate the main storage cards on the system processor card.
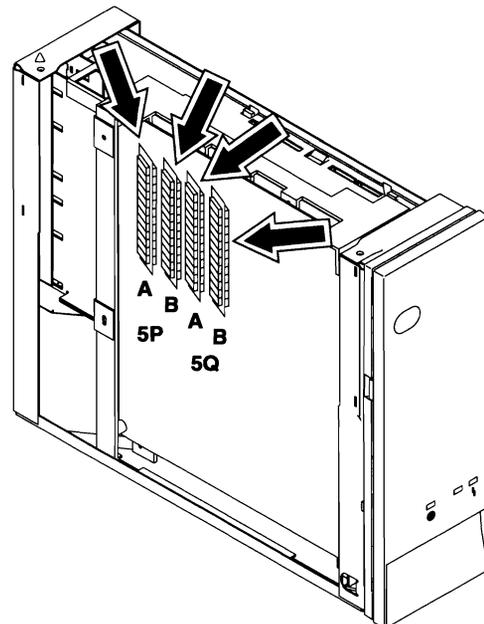
RV2N511-1

4 To remove a main storage card, perform the following:

a. Push outward on the latches located at each end of the card.

b. Pull the card from the card socket and place it on an ESD mat.

Note the location of the notch **A** on the storage card. You will need to install the storage card in the socket with the notch in the same position.

Repeat this step for each of the main storage cards you want to remove.

RV2B632-1
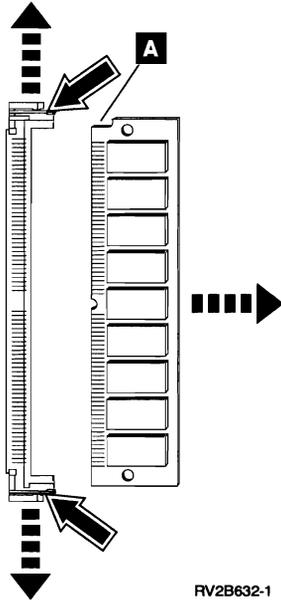
5

Note: When installing the cards, place a card in the socket. Push the top edge of the card toward the system processor card until the card latches in the socket.

Install the main storage cards by reversing the removal procedure.

This ends the procedure.

Chapter 5. Service Referenced Procedures

Powering Off and Powering On the System

Power on

Ensure that the AC power switch on the back of the 9401 is set to the On (I) position. Power on the system by pressing the power button on the control panel. The Power-on light will begin to blink as the system is powered on. The light will stop blinking and stay on when power-on is complete.

Power off

The recommended method to power off the 9401 is through the Power menu or by use of the PWRDWNSYS command. If you cannot use these methods, you can power off the 9401 by using the control panel Power button.

Note: If PC Support is running on the system console, a delayed power off using the PWRDWNSYS command is required. Any PC Support applications that are running **must** be stopped before the delayed power off is complete.

Warning: Using the control panel Power button to power off the 9401 system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

1. Open the front cover of the 9401.

2. The 9401 must be in manual (M) mode to power off. To select manual mode see "Selecting IPL and Mode."

3. On the control panel press the Power button.

4. The Power On light will begin to blink as the system is powered off. The light will stop blinking and stay off when power off is complete.

Selecting IPL and Mode

To display the last selected IPL type and mode do the following:

1. Press either the Up or Down button until Function 01 is shown in the Function/Data display.

2. Press the Enter button.

3. The last selected IPL type and mode are shown in the Function/Data display.

To change the IPL type, mode, or both, do the following:

Note: Function 02 has eight possible combinations of IPL and mode selections. There are four IPL selections in normal (N) mode and four IPL selections in manual (M) mode. Ensure you are selecting the correct IPL type and mode.

1. Press either the Up or Down button until Function 02 is shown in the Function/Data display.

2. Press the Enter button.

3. The last selected IPL type and mode are shown in the Function/Data display.

4. Press either the Up or Down button until the combination of IPL type and mode you want to select are displayed.

5. Press the Enter button.

6. The IPL type and mode shown in the display have been selected.

7. To verify the IPL type and mode selection do the following:

   a. Press either the Up or Down button until Function 01 is shown in the Function/Data display.

   b. Press the Enter button.

   c. The last selected IPL type and mode are shown in the Function/Data display.

Setting the Date and Time

Set the system time and date by doing the following.

The format for the *system date* can be YYMMDD, DDMMYY, or MMDDYY; where MM means month, DD means day, and YY means year. For example, the date for October 27, 1991 would be entered as 911027 for YYMMDD, 271091 for DDMMYY, or 102791 for MMDDYY. The default value is MMDDYY (this is the format used in the following instructions).

1. In the following step, replace *mmddyy* with the current date.

```
MAIN                  AS/400 Main Menu
Select one of the following:

    1. User tasks
    2. Office tasks
    3. General system tasks
    4. Files, libraries, and folders
    5. Programming
    6. Communications
    7. Define or change the system
    8. Problem handling
    9. Display a menu
   10. Information Assistant options
   11. PC Support tasks

   90. Sign off

Selection or command
===> chgsysval sysval(qdate) value('102791')_____

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F13=Information Assistant
F23=Set initial menu
(C) COPYRIGHT IBM CORP. 1980, 1993.
```

2. On the command line of the AS/400 Main Menu, type
   chgsysval sysval(qdate) value('mmddyy')
   as shown.

3. Press the Enter key.

   The format for the *time* is HHMMSS: where HH means hour (1 through 24), MM means minutes, and SS means seconds. For example, the time 4:30 p.m. (24-hour clock) would be entered as 163000.

4. In the following step, replace *hhmmss* with the current time.

```
MAIN                  AS/400 Main Menu
Select one of the following:

    1. User tasks
    2. Office tasks
    3. General system tasks
    4. Files, libraries, and folders
    5. Programming
    6. Communications
    7. Define or change the system
    8. Problem handling
    9. Display a menu
   10. Information Assistant options
   11. PC Support tasks

   90. Sign off

Selection or command
===> chgsysval sysval(qtime) value('163000')_____

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F13=Information Assistant
F23=Set initial menu
(C) COPYRIGHT IBM CORP. 1980, 1993.
```

5. On the command line of the AS/400 Main Menu, type
   chgsysval sysval(qtime) value('hhmmss')
   as shown.

6. Press the Enter key.

Disk Service Support

Start Disk Service Here

Before exchanging a disk unit, you must attempt to save customer data.

This procedure will direct you to the correct recovery procedure to use when attempting to save customer data.

1 Do you know whether your system has mirrored protection for the failing DASD?

Yes   No

↓   Go to "Determining if a System Has Mirrored Protection." Then return to step 2 of this procedure.

2 Does your system have mirrored protection for the failing DASD?

No   Yes

↓   Go to "Exchanging a Disk Unit with Mirrored Protection" on page 5-5.

This ends the procedure.

3 You are exchanging the disk unit.

Go to "Disk Unit Data Save and Initialize — Pump Data to Tape" on page 5-6.

This ends the procedure.

Determining if a System Has Mirrored Protection

Use this procedure to determine if a system is using mirrored protection.

1 Select the *Work with disk units* option on the System Service Tools (SST) or on the Dedicated Service Tools (DST) display.

2 Select the *Display disk configuration* option on the Work with Disk Units display.

3 Select the *Display disk configuration status* option on the Display Disk Configuration display.

Each auxiliary storage pool (ASP) is listed, showing the disk units that are members of the ASP. The *Status* column shows one of the following protection statuses for the ASP:

Unprotected

Checksummed

Mirrored

Device Parity

Disk units in an ASP with a protection status of *Mirrored* are configured for mirrored protection.

4 After looking at the Display Disk Configuration Status display, determine if mirrored protection is active. Note the address of the suspended file if any.

Return to the procedure that sent you here.

Exchanging a Disk Unit with Mirrored Protection

1 Is the status of the disk unit that is mirrored to the failing disk unit "Active"?

Yes   No

↓   Exchange the failing disk unit (see "Disk Unit" on page 4-7).

This ends the procedure.

2 Exchange the failing disk unit (see "Disk Unit" on page 4-7). Make a note of this page number because you will be returning to step 3 of this procedure.

3 Perform an initial program load (IPL) to dedicated service tools (DST) by doing the following:

  a. Power off the system if it is powered on (see "Power off" on page 5-2).
  b. Select IPL Type A and Mode M (see "Selecting IPL and Mode" on page 5-2).
  c. Power on the system (see "Power on" on page 5-2).

4 Go to dedicated service tools (DST) by doing the following:

  a. If the Missing Disk Units display appears, press the Enter key. If the IPL or Install the System display does not appear, press the Enter key again.
  b. Select the *Use dedicated service tools* option from the IPL or Install the System display.
  c. Enter 22222222 on the Dedicated Service Tools (DST) Sign On display.

  Note: If this password is not valid, ask the customer for the correct password.

5 Format and initialize the disk unit by doing the following:

  a. Select the *Work with disk units* option from the Use Dedicated Service Tools (DST) display.
  b. Select the *Work with disk unit recovery* option from the Work with Disk Units display.

  c. Select the *Disk unit problem recovery procedures* option from the Work with Disk Unit Recovery display.
  d. Select the disk unit on the display that is not configured.
  e. Select the *Initialize and format disk unit* option from the Disk Unit Problem Recovery Procedures display.
  f. Press F10 to initialize and format the disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).
  g. Press the Enter key after verifying that the status is complete.

6 Perform the following:

  a. Press F12 (Cancel) to return to the Select Disk Unit Recovery Procedures display.
  b. Press F12 (Cancel) to return to the Work with Disk Unit Recovery display.
  c. Select the *Replace configured unit* option from the Work with Disk Unit Recovery display.
  d. Select the configured disk unit that is being exchanged from the Select Configured Unit to Replace display.
  e. Select the replacement disk unit from the Select Replacement Unit display.

7 Perform the following:

  a. Return to the Use Dedicated Service Tools (DST) display.
  b. Select the *Perform an IPL* option to complete the IPL. Data is copied to the new disk unit during the IPL.

  This ends the procedure.

Resuming Mirrored Protection

Use this procedure to resume mirrored protection on suspended disk units.

1 Select the *Work with disk units* option on the System Service Tools (SST) display or on the Dedicated Service Tools (DST) display.

2 Select the *Work with disk unit recovery* option on the Work with Disk Units display.

3 Select the *Suspend/Resume mirrored protection* option on the Work with Disk Unit Recovery display.

4 Select a disk unit that has a status of suspended on the Suspend/Resume Mirrored Protection display. This is done by placing a *2* in the option column next to the disk unit you are selecting, then pressing the Enter key.

Note: Only one disk unit can be selected at a time. Repeat this step until all disk units have a status of resuming or active.

5 Are you in System Service Tools (SST)?

No	Yes
↓	The disk units that you selected will be made active while the system is operational.
	This ends the procedure.

6 Perform the following:

a. Return to the Dedicated Service Tools (DST) display.
b. Perform an IPL.

   Note: The disk units you selected are made active during the IPL.

This ends the procedure.

Disk Unit Data Save and Initialize — Pump Data to Tape

Note: To complete this procedure, you may need the latest set of SAVSYS or SAVSTG tapes made before the problem occurred and three blank tapes.

1 Are you exchanging a disk enclosure because a DASD failure caused system operations to stop completely?

Yes	No
↓	You may use the Remove Units from Configuration function of DST to move all data from the disk unit you want to exchange to the other disk units in the same ASP.
	Go to step 17 of this procedure.

2 Perform an initial program load (IPL) to dedicated service tools (DST) by doing the following:

a. Power off the system if it is powered on (see "Power off" on page 5-2).
b. Select IPL Type A and Mode M (see "Selecting IPL and Mode" on page 5-2).
c. Power on the system (see "Power on" on page 5-2).

3 Go to dedicated service tools (DST) by doing the following:

a. If the IPL or Install the System display appears, select the *Use dedicated service tools (DST)* option.
b. Enter 22222222 on the Dedicated Service Tools (DST) Sign On display.

Note: If this password is not valid, ask the customer for the correct password.

Does the Use Dedicated Service Tools (DST) display appear?

Yes	No
↓	Repeat step 2 of this procedure.
	If the same system reference code (SRC) occurs again, the customer's data is not recoverable. Go to step 5 of this procedure.
	If a different SRC occurs, use it to correct the problem (see "Starting Problem Analysis" in the *Problem Analysis* information for the system).
	This ends the procedure.

4 From the Use Dedicated Service Tools (DST) display, perform the following to save the customer data from the failing disk unit:

a. Select the *Work with disk units* option.

b. Select the *Work with disk unit recovery* option from the Work with Disk Units display.

c. Select the *Save disk unit data* option from the Work with Disk Unit Recovery display.

d. Select the disk unit that you want the data saved from on the Select Disk Unit Data to Save display.

If the disk unit is missing, you cannot save the customer data to tape at this time. Go to step 5 of this procedure.

e. Install a tape in the tape unit.

f. The Specify Volume Identifier prompt appears. Enter the volume identifier for the tape. Write down the tape volume identifier here_____. You will use the tape volume identifier later in this procedure.

g. The Select Tape or Diskette Unit prompt appears.

Select the tape unit that you loaded with a tape.

Note: If the tape volume identifier that you keyed in does not match the tape volume identifier written on the tape, the Device Intervention Required prompt appears. The message "Wrong volume loaded" appears at the bottom of the display. The tape volume identifier written on the tape is shown in the "Volume or file loaded" field. Press the Enter key. The Handle Tape or Diskette Intervention prompt appears. Select the *Format* option and press the Enter key to continue the save operation.

h. If the Check for Device Intervention Required display appears, press the Enter key to continue.

i. If the Handle Tape or Diskette Intervention display appears, select the *Format the tape* option.

The Save Disk Unit Data display appears. This display shows the percent of disk data saved.

j. After the tape is full, the Handle Tape or Diskette Intervention display appears.
   1) Insert the next tape into the tape unit.

   2) Enter the option to continue saving data to the tape you just inserted.

k. Continue saving the customer's data to tapes until the Save Disk Unit Data display shows that the status of the save is complete.

If the save operation does not complete or if there are large numbers of unreadable sectors on the disk unit being saved, the customer's data is not recoverable.

5 Perform the following:

a. Power off the system (see "Power off" on page 5-2).

b. Exchange the failing disk unit (see "Disk Unit" on page 4-7).

6 Did you exchanged disk unit 1 in the system unit?

No   Yes

↓   Go to step 10 of this procedure.

7 Format and initialize the new disk unit by doing the following:

a. Perform an IPL by doing step 2 of this procedure.

   Note: The Missing Disk Units display appears on the console. This indicates that a configured disk unit was removed.

b. Select the *Work with disk units* option from the Use Dedicated Service Tools (DST) display.

c. Select the *Work with disk unit recovery* option from the Work with Disk Unit display.

d. Select the *Disk unit problem recovery procedures* option from the Work with Disk Unit Recovery display.

e. Select the disk unit on the display that is not configured.

f. Select the *Initialize and format disk unit* option from the Disk Unit Problem Recovery Procedures display. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).

g. Press the Enter key.

8 Is most of the customer data recoverable (see step 4 of this procedure)?

Yes   No

↓   Go to step 14 of this procedure.

9 Restore the customer data from the tape to the new disk unit by doing the following:

a. Press F12 (Cancel) from the Disk Unit Problem Recovery Procedures display.
b. Select the *Restore disk unit data* option from the Work with Disk Unit Recovery display.
c. Enter the tape volume identifier. This is the volume identifier that you entered during the save procedure.
d. Install the first tape that the data was saved to in the tape unit.
e. Select the tape unit that you want the data restored from on the Select Tape or Diskette Unit display.
f. Select the disk unit that you want the data restored to on the Restore Disk Unit Data display.

The Restore Disk Unit Data display shows the percent of customer data restored.

After all customer data is restored from the tape to the disk, the display shows that the status of the restore operation is complete.

g. Press the Enter key to complete the restore operation.
h. Power off the system (see "Power off" on page 5-2).

Note: Any damaged objects that were restored during the restoring of the customer data have to be loaded again by the customer. Have the customer see the *Basic Backup and Recovery Guide*.

The system is ready for the next IPL.

This ends the procedure.

10 Perform an IPL from the tape unit and install the Licensed Internal Code (see "Licensed Internal Code Install and Restore Overview" in the *Service Functions User's Guide*, which does an IPL from the tape unit, installs the Licensed Internal Code,

and formats and initializes disk unit 1 in the system unit). Then return to step 11 of this procedure.

11 Recover the configuration to disk unit 1 in the system unit by doing the following:

a. Select the *Work with DST* option from the Install the Operating System display.
b. Enter the password 22222222.

Note: If this password is not valid, ask the customer for the correct password.

c. Select the *Work with disk units* option from the Use Dedicated Service Tools (DST) display.
d. Select the *Work with disk unit recovery* option from the Work with Disk Unit display.
e. Select the *Recover configuration* option from the Work with Disk Unit Recovery display. This option assembles the system configuration information on disk unit 1 in the system unit.

Notes:
1) A warning message appears stating that recovering the configuration destroys all system data unless the load-source data is restored before continuing past the DST main display. You will return to the DST main display following an IPL. This data will be restored later in this procedure if the customer data was recoverable (see step 4 of this procedure).
2) If you have a system with only one disk unit, a message may appear stating that your request to recover the configuration was not successful. The recover configuration function cannot be performed on a system with only one disk unit. Continue with the next step of this procedure.

12 Is the customer data recoverable (see step 4 of this procedure)?

Yes   No

↓   The system ASP was cleared
because customer data was not
recoverable.

Go to step 16 of this procedure.

13 Restore the customer data from the tape to
the new disk unit by doing the following:

a. Select the *Work with DST* option from
the Install the Operating System
display.
b. Enter the password 22222222.

  Note: If this password is not valid, ask
  the customer for the correct password.
c. Select the *Work with disk units* option
from the Use Dedicated Service Tools
(DST) display.
d. Select the *Work with disk unit recovery*
option from the Work with Disk Unit
display.
e. Select the *Restore disk unit data* option
from the Work with Disk Unit Recovery
display.
f. Enter the tape volume identifier. This is
the volume identifier that you entered
during the save procedure.
g. Select the tape unit that you want the
data restored from on the Select Tape
or Diskette Unit display.
h. Install the first tape that the data was
saved to in the tape unit.
i. Select the disk unit that you want the
data restored to on the Restore Disk
Unit Data display.

  The Restore Disk Unit Data display
  shows the percent of customer data
  restored.

  Note: If the disk that was restored
  was the load-source disk, the system
  automatically performs an IPL to the
  DST main menu when the restore oper-
  ation is complete.

  After all customer data is restored from
  the tape to the disk, the display shows
  that the status of the restore operation
  is complete.
j. Press the Enter key to complete the
restore operation.
k. Power off the system (see "Power off"
on page 5-2).

Note: Any damaged objects that were
restored during the restoring of the cus-
tomer data have to be loaded again by
the customer. Have the customer see
the *Basic Backup and Recovery Guide*.

The system is ready for the next IPL.

This ends the procedure.

14 Because the disk data was not recoverable,
clear the auxiliary storage pool to which the
disk unit is assigned by doing the following:

a. Press F12 (Cancel) to return to the
Work with Disk Unit Recovery display.
b. Select the *Replace disk unit* option from
the Work with Disk Unit Recovery
display.
c. Select the configured disk unit that is
being exchanged from the Replace
Configured Unit display.
d. Select the replacement disk unit from
the Select Replacement Unit display
(this takes approximately 10 to 15
minutes).

Warning: The auxiliary storage pool to
which the disk unit is assigned will be
erased unless the auxiliary storage pool is
checksum protected. If the auxiliary
storage pool is not checksum protected, the
customer must restore the data to the auxil-
iary storage pool. Have the customer see
the *Basic Backup and Recovery Guide*.

15 If any disk units that you exchanged are in
ASP 1 and ASP 1 does not have checksum
protection, restore the Licensed Internal
Code using Function 23 (see "Restoring
Licensed Internal Code" in the *Service
Functions User's Guide*). This is done to
rebuild the Licensed Internal Code PTF
index.

16 The ASPs to which the disk units were
assigned may be cleared. The customer
should do the following:

• If the system ASP has checksum pro-
tection, have the customer see
"Replacing a Failed Disk Unit in the
System ASP" under "Checksum
Recovery Actions" in the "Working with
Checksum Protection" chapter of the

Advanced Backup and Recovery Guide.
The data in the system ASP is assembled again during the next IPL to the OS/400 program.

- If the system ASP does not have checksum protection, have the customer see "Recovering from Disk Unit Media Failures" in the "Working with Disk Recovery" chapter of the *Basic Backup and Recovery Guide.* The operating system (OS/400 Licensed Program) and all customer data must be restored.

- If the disk unit is in a user ASP (ASP 2 through ASP 16) and the user ASP has checksum protection, the data in the user ASP is assembled again during the next IPL to the OS/400 program.

- If the disk unit is in a user ASP (ASP 2 through ASP 16) and the user ASP does not have checksum protection, some data in the ASP may be lost. See "Recovering from a Disk Media Failure in a User ASP" under "Recovering from Disk Unit Media Failures" in the "Working with Disk Recovery" chapter of the *Basic Backup and Recovery Guide.*

This ends the procedure.

17 The remaining steps of this procedure require a dedicated system.

Have the customer do a normal power-off procedure of the system.

18 Perform an initial program load (IPL) to dedicated service tools (DST) by doing the following:
a. Power off the system if it is powered on (see "Power off" on page 5-2).
b. Select IPL Type A and Mode M (see "Selecting IPL and Mode" on page 5-2).
c. Power on the system (see "Power on" on page 5-2).

Is either the IPL or Install the System display shown or is DST available?

Yes   No

↓   Go to step 2 of this procedure.

19 Select the *Use dedicated service tools (DST)* option from the display or by using a function key. You need the customer password to get to the Use Dedicated Service Tools (DST) display.

20 Perform the following:
a. On the Use Dedicated Service Tools (DST) display, select the *Work with disk units* option.
b. Select the *Work with disk configuration* option.
c. Select the *Display disk configuration* option.
d. Select the *Display disk configuration status* option.
e. Record the ASP, unit, serial number, type, and address of the disk unit.
f. On the Display Disk Configuration Status display, ensure that:
  - The disk unit is not the load-source disk unit (disk unit 1).
  - There are no disk units that are missing from the configuration.

    Note: A missing unit is indicated by an asterisk (*) next to the unit number.
  - The status field of the disk unit to be removed shows *Configured.*

Are all these conditions true?

Yes   No

↓   You cannot use the Remove Units from Configuration function.

         Go to step 2 of this procedure.

21 Perform the following:
a. Return to the Display Disk Configuration display.
b. Select the *Display disk configuration capacity* option.

Does the *% Used* field for the disk unit to be removed show an asterisk (*)?

No   Yes

↓   You cannot use the Remove Units from Configuration function.

        Go to step 4 of this procedure.

22 Return to the Work with Disk Units display.

23 Perform the following:

a. On the Work with Disk Units display, select the *Work with disk unit recovery* option.
b. Select the *Disk unit problem recovery procedures* option.
c. Select the disk unit to analyze.
d. Select the *Analyze disk unit surface* option.
e. Press the Enter key to analyze the disk unit surface.
f. Wait until the Analyze function is complete.

   Note: This takes several minutes.

Is the number of sectors with errors zero?

Yes   No

↓   You cannot use the Remove Units from Configuration function.

         Go to step 2 of this procedure.

24 Return to the Work with Disk Units display.

25 Perform the following:

a. On the Work with Disk Units display, select the *Work with disk configuration* option.
b. Select the *Work with ASP configuration* option.
c. Select the *Remove units from configuration* option.
d. Select the disk unit to be removed.

   Note: If the disk unit is not displayed, go to step 2 of this procedure.
e. If the Confirm Continuation display appears, press the Enter key to continue. Wait for the next display.
f. If there is enough storage in the ASP, the Confirm Remove Disk Units display appears. If there is not enough storage, an error message display appears.

Does any error message display appear?

No   Yes

↓   Go to step 2 of this procedure.

26 Press the Enter key to verify the Remove Disk Units function.

27 The Remove Disk Units function takes several minutes. When it is complete, a message appears stating whether it was successful.

Was the Remove Disk Units function successful?

Yes   No

↓   Go to step 2 of this procedure.

28 On the Work with ASP Configuration display, select the *Display disk configuration capacity* option.

29 Press F11 to display non-configured units.

Is the unit you removed shown as a non-configured unit?

Yes   No

↓   Go to step 2 of this procedure.

30 Do you want to exchange the disk unit now?

Note: You can exchange the disk unit at a later time because the disk unit is removed from the configuration.

Yes   No

↓   **This ends the procedure.**

31 Power off the system (see "Power off" on page 5-2).

Exchange the failing disk unit (see "Disk Unit" on page 4-7).

32 Format and initialize the new disk unit by doing the following:

a. Perform an IPL by doing step 2 of this procedure.
b. Go to dedicated service tools (DST).
c. Select the *Work with disk units* option from the Use Dedicated Service Tools (DST) display.

d. Select the *Work with disk unit recovery* option from the Work with Disk Unit display.

e. Select the *Disk unit problem recovery procedures* option from the Work with Disk Unit Recovery display.

f. Select the disk unit on the display that is not configured.

g. Select the *Initialize and format disk unit* option from the Disk Unit Problem Recovery Procedures display. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).

h. Press the Enter key.

33 In this step, you use the ASP, unit, serial number, type, and address information you recorded in step 20 of this procedure.

Perform the following:

a. Return to the Work with Disk Units display.

b. On the Work with Disk Units display, select the *Work with disk configuration* option.

c. Select the *Work with ASP configuration* option.

d. Select the *Add units to existing ASP* option.

e. Select the ASP that the disk units were removed from.

f. Select the unit to add to the ASP.

g. When the Confirm Add Units display appears, press the Enter key to continue. Wait for the next display.

34 The Add Disk Units function takes several minutes. When it is complete, a message appears stating whether it was successful.

Was the Add Disk Units function successful?

Yes   No

↓   Ask your next level of support for assistance.

This ends the procedure.

35 On the Work with ASP Configuration display, select the *Display disk configura-tion capacity* option. The unit you added should be shown in the correct ASP.

This ends the procedure.

SST/DST Procedures

Restoring Data to the Disk Unit

1 Set the control panel to Manual mode and perform a type A IPL.

2 On the IPL or Install the System display, select the *Use dedicated service tools (DST)* option.

3 Sign on to dedicated service tools (DST).

4 Select the *Work with disk units* option.

5 Select the *Work with disk unit recovery* option.

6 Select the *Restore disk unit data* option.

This ends the procedure.

Copy the Contents of VLIC Log

1 **Warning:** The file is not closed until the *End Vertical Licensed Internal Code* option is selected. If you remove the tape or diskette before this option is selected, the information on the tape or diskette cannot be used.

2 Select the *Start a service tool* option from the Use Dedicated Service Tools (DST) display.

3 Select the *Vertical Licensed Internal Code log* option.

4 Select either:

- Dump entries to tape from the VLIC log
- Dump entries to diskette from the VLIC log

5 Perform the following:

a. At the bottom of the Dump Entries to Tape from VLIC Log display, type a 3 (Dump entry header and complete entry).
b. Press the Enter key.

6 You will be prompted through the remainder of the displays used in this procedure.

When the contents of the VLIC log are copied, a message appears indicating that the dump (copy) is completed.

a. Press the Enter key.
b. Select the *End Vertical Licensed Internal Code* option.

Note: Remember that the file is not closed until the *End Vertical Licensed Internal Code* option is selected.

This ends the procedure.

Locations

Disk Unit Address Jumper Wire Connections (Type 61xx Disk Units)

The following diagrams show the wire connections on the address jumpers, as viewed when installed on a disk unit.

Disk Unit Address 1 (Red Wires)

⊞ Indicates
Key Position
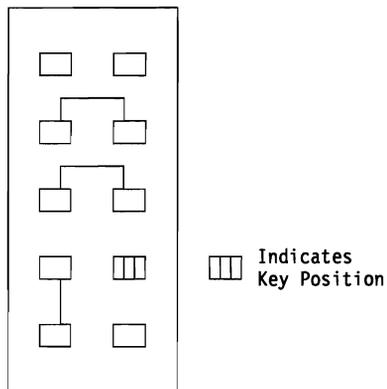
Disk Unit Address Jumper Connections (Type 66xx Disk Units)
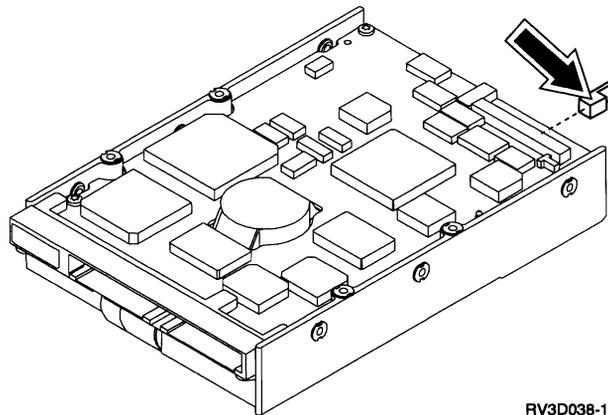
RV3D038-1

The following diagrams show the position of the address jumpers when installed on a disk unit.
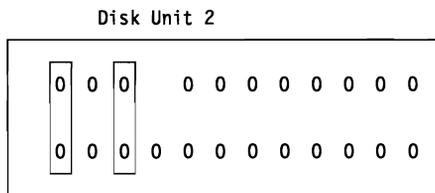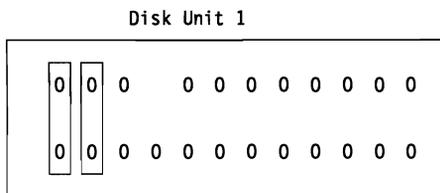
Device Locations and Addresses

System Unit, Right Side View

```
+-------------------------------------------------------------+
| +---+ +---+                            +--------+            |
| | C | | P |   +-----------------------+|        |            |
| | o | | a |   |                       ||        |            |
| | n | | n |   |  +----------+   +----------+     |           |
| | t | | e |   |  |          |   |          ||    |           |
| | r | | l |   |  |Disk Unit |   |Disk Unit |+----+           |
| | o | | / |   |  |    2     |   |    1     |                 |
| | l | | P |   |  |          |   |          |  +------+        |
| |   | | l |   |  +----------+   +----------+  | IOA  |        |
| |   | | a |   |                               |      |        |
| |   | | n |   +------------+    +--------------+      |       |
| |   | | a |    MFIOP       |    |                     |       |
| |   | | r |                |    | Power Supply  +---+ |       |
| |   | |   |                |    |               | f | |      |
| +---+ +---+                +----+               | a | |      |
|                                 |               | n | |      |
|                                 +---------------+---+-+      |
+-------------------------------------------------------------+
```
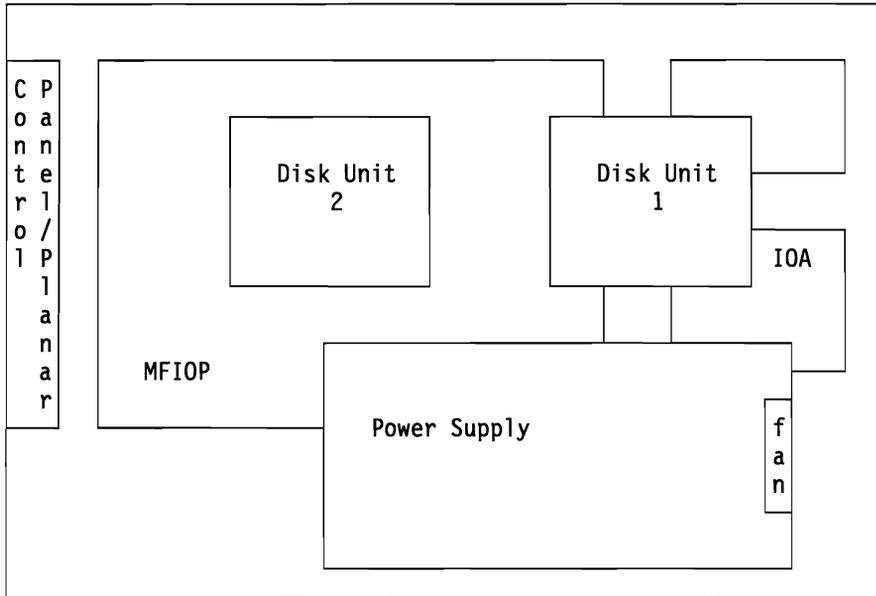
Device	Unit Address
Disk Unit 1	0100 FFFF
Disk Unit 2	0200 FFFF
External Tape Unit	0700 FFFF

Chapter 6. Parts Listing

How To Use This Parts Listing

- SIMILAR ASSEMBLIES: If two assemblies contain a majority of identical parts, they are broken down on the same list. Common parts are shown by one index number. Parts peculiar to one or the other of the assemblies are listed separately and identified by description.

- AR: (As Required) in the *Units* column indicates that the quantity is not the same for all machines.

- NP: (Non-Procurable) in the *Units* column indicates that the part is non-procurable and that the individual parts or the next higher assembly should be ordered.

- NR: (Not Recommended) in the *Units* column indicates that the part is procurable but not recommended for field replacement, and that the next higher assembly should be ordered.

- R: (Restricted) in the *Units* column indicates that the part has a restricted availability.

- INDENTURE: The indenture is marked by a series of dots located before the parts description. The indenture indicates the relationship of a part to the next higher assembly. For example:

Indenture Relationship of Parts

(No dot)   MAIN ASSEMBLY

(One dot)   • Detail parts of a main assembly

(One dot)   • Sub assembly of the main assembly

(Two dot)   • • Detail part of a one-dot sub assembly

(Two dot)   • • Sub assembly of a one-dot sub assembly

(Three dot) • • • Detail part of a two-dot sub assembly

Asm-Index	Part Number	Units	Description
3-	2512667	1	Cover Asm, Rear, Red
	2513714	1	Cover Asm, Rear, White
			For Next Higher Asm,
			See Assembly 1-2
-1	5373637	1	•Seal, Top
-2	5356429	2	•Clip, Retaining
-3	1847630	1	•Finger Stock Asm
-4	1847602	NR	••Channel, Finger Stock
-5	5373639	AR	•Seal, Bottom
-6	5356429	2	•Clip, Retaining
-7		NP	•Cover, Rear, Without Paint
-5	0416629	R	•Screw, Panel

Assemblies

Assembly 1: Final Assembly
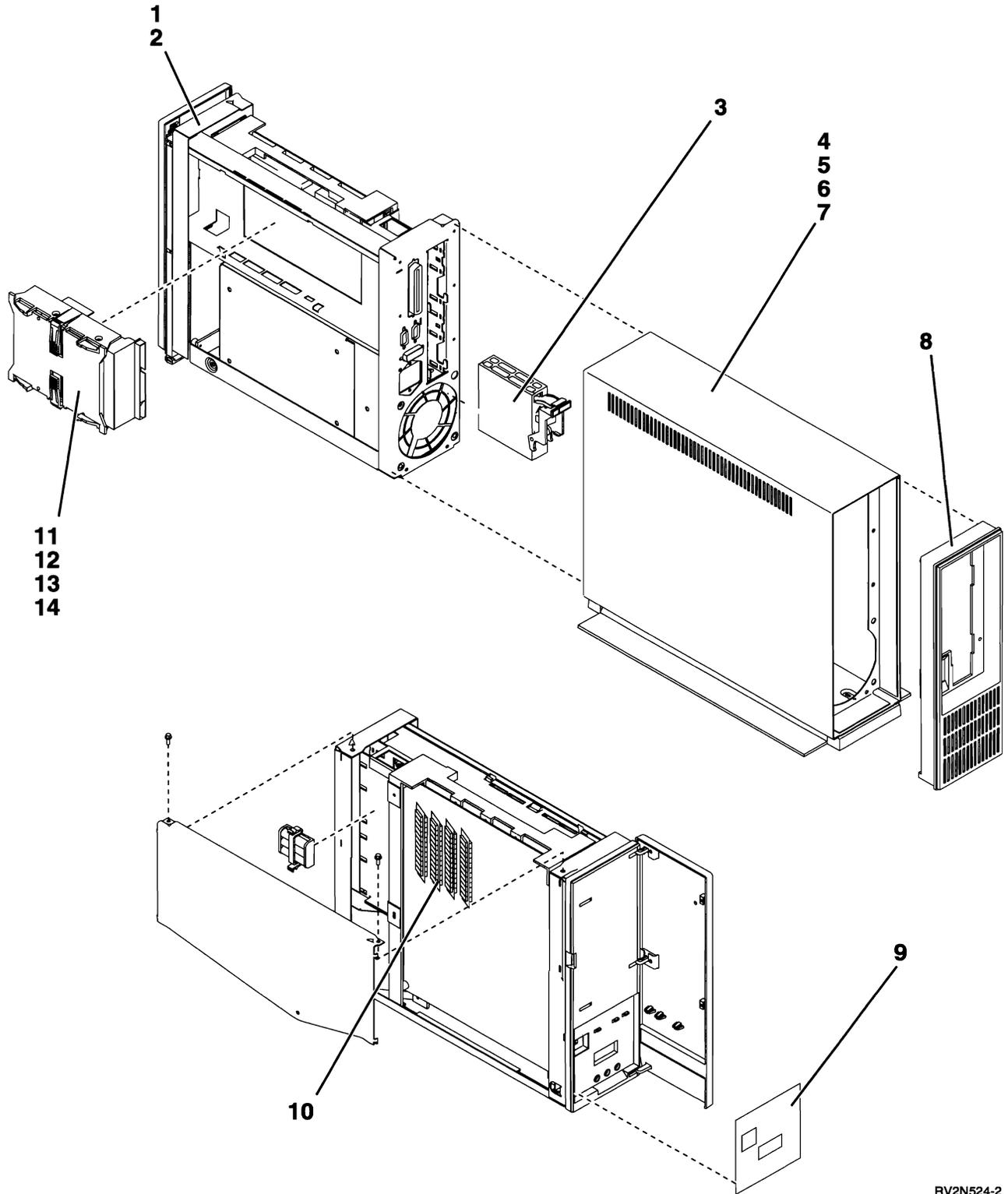
RV2N524-2

Asm–Index	Part Number	Units	Description
1–1		1	Chassis Asm, SEE ASSEMBLY 2
–2	1621830	5	Screw
–3	21F9941	1	1-line EIA-232/V.24 Communications Adapter Card Asm
–4	75G3376	NP	Cover, Wrap around
–5	75G3371	NP	Pedestal
–6	1622660	NR	Screw
–7	75G3377	NR	Foot
–8	75G3369	1	Bezel, Rear
–9	75G3411	1	Control Panel Overlay, English
–9	75G3412	1	Control Panel Overlay, French
–9	75G3413	1	Control Panel Overlay, German
–9	75G3414	1	Control Panel Overlay, Japanese (Kanji)
–9	75G3415	1	Control Panel Overlay, Spanish
–9	75G3416	1	Control Panel Overlay, Italian
–9	75G3420	1	Control Panel Overlay, TAI CHI TRAD (ROC)
–9	75G3421	1	Control Panel Overlay, Korean
–9	75G3425	1	Control Panel Overlay, Norwegian
–9	75G3429	1	Control Panel Overlay, Belgian/Dutch
–10	85F7463	1	8MB Main Storage Expansion
–11	75G3366	1	Holder, Disk Unit (Model P01)
–11	75G3422	1	Holder, Disk Unit (Model P02)
–12	55F9806	1	Disk Unit, FC 6104
–12	45G9463	1	Disk Unit, FC 6601
–13	1621307	4	Screw, FC 6104
–13	0038442	4	Screw, FC 6601
–14	21F1657	AR	Jumper, Address (6104)
–14	8193233	AR	Jumper (6601)

Assembly 2: Chassis Assembly
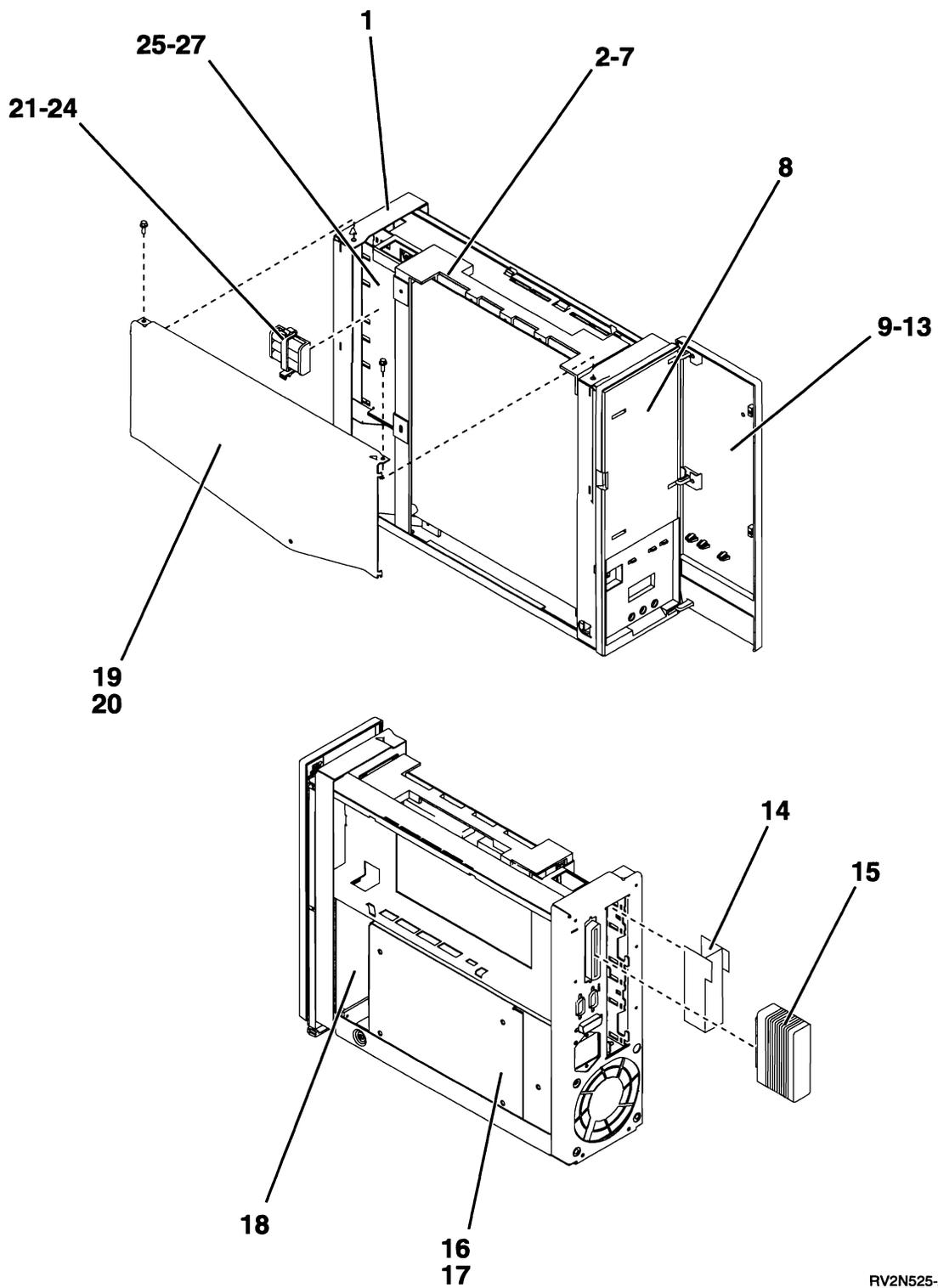
RV2N525-2

Asm– Index	Part Number	Units	Description
2–1	75G3392	1	Chassis Asm, Twinaxial (Model P01)
–1	75G3427	1	Chassis Asm, Twinaxial (Model P02)
			Control Panel Overlay not included, must be ordered with Chassis Assembly.
–2	75G3367	NR	• Card Holder
–3	8193199	NR	• MFIOP - Twinaxial
–4	16G7126	NR	• Processor
–5	1621830	NR	• Screw
–6	1622676	NR	• Screw
–7	1622660	NR	• Screw
–8	75G3351	NR	• Bezel, Control Panel
			Control Panel Overlay not included, must be ordered with Bezel.
–9	75G3353	NR	• Front Cover Door Asm
			System Logo not included, must be ordered with Door Asm.
–10	75G3355	NR	• • Door, Front
			System Logo not included, must be ordered with Door.
–11	75G3354	NR	• • Lens, Light Pipe
–12	75G3356	NR	• • Hinge, Door
–13	75G3358	NR	• System Logo, Model P01
–13	17G4673	NR	• System Logo, Model P02
–14	75G3352	NR	• Plate, Comm Blank
–15	00G0968	NR	• Terminator, SCSI
–16	75G3381	NR	• Power Supply, Model P01
			See Assembly 4 for correct power cord.
–16	75G3423	NR	• Power Supply, Model P02
			See Assembly 4 for correct power cord.
–17	1621830	NR	• Screw
–18	8193205	NR	• Control Panel Asm
–19	74G9621	NR	• Plate
–20	1621830	NR	• Screw
–21	75G3368	NP	• Battery Holder/Clip Asm
–22	21F1600	NR	• • Holder, Battery
–23	74G9655	NR	• • Clip, Battery Holder
–24	21F1599	3	• Battery, AA
–25	75G3370	NR	• Comm Cage
–26	1621829	NR	• Screw
–27	75G3372	NR	• EMC Shield
–	75G3359	NR	• Cable Asm, Twinaxial Workstation
–	75G3360	NR	• Cable Asm, UPS-MI-Control Panel-SCSI (Model P01)
–	75G3398	NR	• Cable Asm, SCSI (Model P02)
–	17G4675	NR	• Cable Asm, UPS-MI-Control Panel (Model P02)
–	75G3397	NR	• Cable Asm, Twinaxial D-shell to D-shell
–	75G3364	NR	• Cable Asm, Twinaxial D-shell to Barrel
–	75G3365	NR	• Carrying Bag
–	21F3045	AR	• Model Unique Licensed Internal Code, 1/4-Inch Cartridge

Assembly 3: Power Supply Cord Number Chart

1	**5**	**7**
2		**8**
3	**6**	**9**
4		**10**
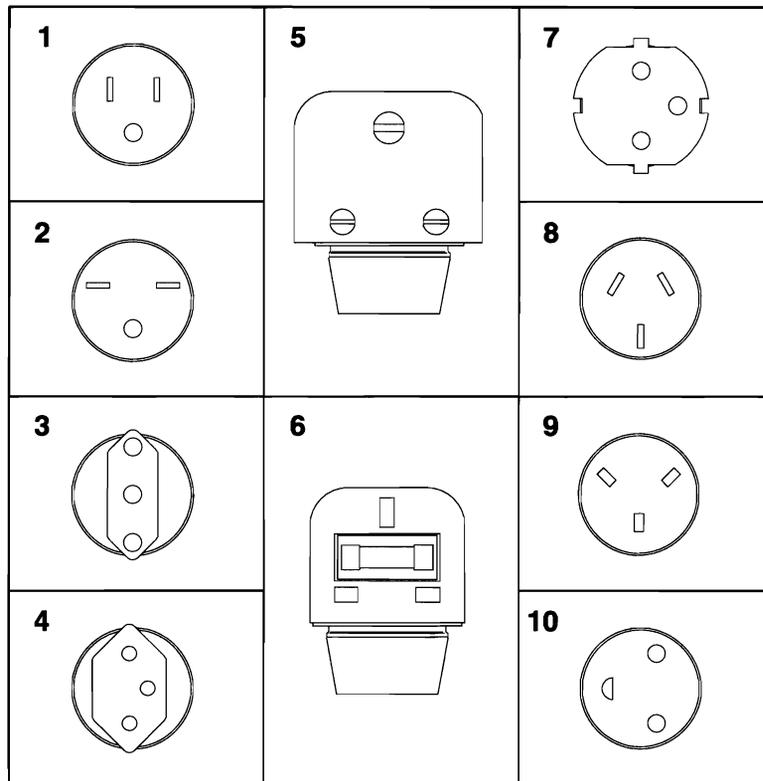
RV2B688-0

Asm– Index	Part Number	Units	Description
3–			POWER SUPPLY CORDS
–1	2453011	1	Power Supply Cord-US 110
–2	1838576	1	Power Supply Cord-US, Thailand 220
–3	14F0069	1	Power Supply Cord-Chile
–3	14F0069	1	Power Supply Cord-Italy
–4	14F0051	1	Power Supply Cord-Switzerland
–5	14F0015	1	Power Supply Cord-Sri Lanka
–6	14F0033	1	Power Supply Cord-Hong Kong
–6	14F0033	1	Power Supply Cord-United Kingdom
–7	13F9979	1	Power Supply Cord-Germany
–8	13F9940	1	Power Supply Cord-Australia, New Zealand
–9	14F0087	1	Power Supply Cord-Israel
–10	13F9997	1	Power Supply Cord-Denmark

Chapter 7. Part Number Index

Appendix A. Working with Electrostatic Discharge-Sensitive Parts

When holding or installing electrostatic discharge-sensitive (ESD) parts, use the ESD handling kit (IBM part 6428316) or similar. Read the instructions inside the top cover of the carrying case.

All system logic cards are sensitive to electrostatic discharge (ESD). To prevent damage to ESD-sensitive logic cards, follow these instructions:

- Switch off power to the system or device before removing logic cards.

- Keep the ESD-sensitive card in the original shipping container until you install the card in the machine.

- When holding logic cards, move your body as little as possible to prevent an increase of static electricity from clothing fibers, carpet fibers, and furniture.

- Just before touching the ESD-sensitive card, discharge any static electricity in your body by touching the metal frame or cover of the machine. If possible, keep one hand on the frame when, for example, you are installing or removing a logic card.

- Hold the ESD-sensitive card by the edge or connector shroud cover. Do not touch the pins. If you are removing a field-replaceable module, use the correct tool.

- Return the card to the special container when it is not being used. Do not place the ESD-sensitive card on the machine cover or on a metal table. Machine covers and metal tables are electrical grounds. They make a discharge path from the ESD-sensitive card through your body to ground, increasing the risk of damage to the card. Large metal objects can be discharge paths without being grounded.

- Prevent ESD-sensitive cards from being accidentally touched by other persons. Reinstall machine covers when you are not working on the machine. Do not place unprotected ESD-sensitive cards on a table.

- Be careful when working with ESD-sensitive cards during cold weather heating. Cold weather heating causes low humidity and increases the risk of static electricity.

Appendix B. Preventive Maintenance (PM) Checklist

All items in the following list should be completed during every preventive maintenance call.

___ 1. Perform control panel lamp test (function 04).

___ 2. Review the PTF level:

PTFs correct problems that look like hardware failures. Discuss with the customer the importance of installing PTFs on a regular basis to decrease possible down time. Show the following procedure to any new system operator.

   a. Determine the last cumulative PTF package that was installed. Enter DSPPTF 5738SS1 (the Display PTF command) to display the cumulative PTF package level. For example, **TC94012** as the first entry indicates the date of the latest PTF package installed (the 94 in the entry indicates 1994; the 012 indicates the 12th day of the year).

   b. Recommend that the customer install the latest cumulative PTF package if three months have passed since a cumulative PTF package has been installed. If the customer does not install the entire cumulative PTF package, recommend that at least the High Impact and Pervasive (HIPER) PTFs on the latest cumulative PTF package be installed. The instructions that come with the cumulative PTF package can be used to load HIPER PTFs.

Do the following to order the latest cumulative PTF package. (Cumulative PTF packages are available to all basic license holders).
   1) Enter SNDPTFORD SF99vrm (vrm=300 for Version 3 Release 0.5 Modification 0).
   2) Enter SNDPTFORD SF98vrm to obtain the Preventive Service Planning (PSP) information about the PTF package.

   Note: You can also use GO CMDPTF (the Go command) for a menu to order a PTF package.

___ 3. Perform the Control Panel Battery Check. Use WRKPRB (the Work with Problem command) and check for error entries indicating the control panel battery is low.

___ 4. Review the Error Log for possible problems (see "Error Log Utility" under "System Service Tools" in the *Service Functions User's Guide*).

Note: If the Error Log is wrapping too frequently, increase the Error Log sizes to the recommended values under the Error Log utility using STRSST.

___ 5. Inspect the system for safety hazards (loose cables, open doors, bent covers).

___ 6. Inspect the site environment where the system is kept.

Make recommendations to the customer for items that do not meet IBM specifications. These items include:

   The system is in a limited area
   Poor ventilation
   Blocked air vents
   The environment is hot
   The environment has dust

___ 7. Use the I/O device service information to determine and perform I/O device preventive maintenance.

___ 8. Vacuum if necessary.

___ 9. Clean all system and I/O covers.

___ 10. Record any action in the Service Log in the *Account Management Planning Guide* or in Appendix E, "Service Log" on page E-1.

___ 11. Compare the serial number on the system to the one on the label of the Model-Unique Licensed Internal Code (MULIC) tape. If they do not match, contact your next level of support.

___ 12. Inform the customer about any problems found on the system (hardware, software, performance).

Inform IBM personnel in other functions as suitable (Marketing Representative,

System Engineer, Software Support, Administration, Field Manager).

__ 13. Review your preventive maintenance actions and analysis with the customer:

- Explain what you performed.
- Describe any problems you found and their solution.
- Answer questions.
- Address concerns.
- Take action as needed.

- Thank the customer for the maintenance business.

How to Record Your Time (Service Code - SC): By recording:

- SC 01 and the machine type and serial number for any repairs.

- SC 08 and the machine type and serial number for any preventive maintenance or customer update time.

Appendix C. System Safety Inspection

System Safety Inspection

A safety inspection for the system should be performed:

- When it is inspected for an IBM* maintenance agreement
- When IBM service is requested and no service has recently been performed by IBM
- When an alterations and attachments review is performed
- When changes have been made to the equipment that might affect its safety

If the inspection indicates safety conditions that are not acceptable, the conditions must be corrected before IBM services the machine.

Note: The correction of any unsafe condition is the responsibility of the owner of the system.

While performing this inspection, special attention must be given to these areas:

- Feature and model changes and engineering change (EC) upgrades
- Additions of non-IBM power supplies or attachments
- Missing safety covers
- Removed, faded, or painted-over labels
- Replacement requirements concerning parts for primary power
- Any other items related to the product's safety

Before you start, you must have completed the *Electrical Safety Education Course for IBM Customer Engineers* (self-study course 77170 or similar).

You will need these items:

- An IBM customer engineer (CE) tool kit (or similar)
- A copy of customer engineering memorandums (CEMs), which include engineering change announcements (ECA) and service aids (SA) documents for the unit
- Latest machine history, if possible
- *Electrical Safety for IBM Customer Engineers*, S229-8124
- A Fluke** 8060A digital voltmeter (part 8496278) or similar

Perform each safety check on the following pages, and place a check mark in front of each item as you complete it.

AC Power Cord

__ 1. Remove the power cord from the electrical outlet.

__ 2. Check the power cord and power plug for visible cracks, wear, or damage.

__ 3. Check for 1.0 ohm or less of resistance between the power cord ground and the power supply frame.

Covers

__ 1. Ensure that the covers are not damaged and that no sharp edges are present.

Safety Labels

__ 1. Ensure that the Do Not Open-Do Not Service label (85F7880) is attached to the right side (from the front) of the power supply.

Appendix D. Problem Summary Form

Use the problem summary form in this appendix to record information displayed on the control panel when a problem occurs on the system.

Note: You may copy these forms as necessary.

1 Describe the problem.

_____

_____

2 Record the date and time. _____

3 Record any control panel lights that are on.

__ • Power Active

__ • Processor Active

__ • Attention

4 Record the information shown for functions 1 and 11-2 through 20-2.

Note: All functions may not display, depending on the failure.

Function 1

| ___ ___ ___ ___ | ___ ___ ___ ___ |

Function 11-2

| ___ ___ ___ ___ | ___ ___ ___ ___ |

Function 12-2

| ___ ___ ___ ___ | ___ ___ ___ ___ |

Function 13-2

| ___ ___ ___ ___ | ___ ___ ___ ___ |

Function 14-2

___ ___ ___ ___	___ ___ ___ ___

Function 15-2

___ ___ ___ ___	___ ___ ___ ___

Function 16-2

___ ___ ___ ___	___ ___ ___ ___

Function 17-2

___ ___ ___ ___	___ ___ ___ ___

Function 18-2

___ ___ ___ ___	___ ___ ___ ___

Function 19-2

___ ___ ___ ___	___ ___ ___ ___

Function 20-2

___ ___ ___ ___	___ ___ ___ ___

5 Return to the procedure that sent you here.

Use the problem summary form in this appendix to record information displayed on the control panel when a problem occurs on the system.

Note: You may copy these forms as necessary.

1 Describe the problem.

_____

_____

2 Record the date and time. _____

3 Record any control panel lights that are on.

___ • Power Active

___ • Processor Active

___ • Attention

4 Record the information shown for functions 1 and 11-2 through 20-2.

Note: All functions may not display, depending on the failure.

Function 1

| ___ ___ ___ ___ | ___ ___ ___ ___ |

Function 11-2

| ___ ___ ___ ___ | ___ ___ ___ ___ |

Function 12-2

| ___ ___ ___ ___ | ___ ___ ___ ___ |

Function 13-2

| ___ ___ ___ ___ | ___ ___ ___ ___ |

Function 14-2

___	___	___	___		___	___	___	___

Function 15-2

___	___	___	___		___	___	___	___

Function 16-2

___	___	___	___		___	___	___	___

Function 17-2

___	___	___	___		___	___	___	___

Function 18-2

___	___	___	___		___	___	___	___

Function 19-2

___	___	___	___		___	___	___	___

Function 20-2

___	___	___	___		___	___	___	___

5 Return to the procedure that sent you here.

Appendix E. Service Log

Machine Type and Serial Number: 9401-

Date	Description of Problem/Action Taken (Do not record hours or part numbers.)	Service Representative

Date	Description of Problem/Action Taken (Do not record hours or part numbers.)	Service Representative

Reader Comments—We'd Like to Hear from You!

Application System/400
9401 Service Information
Version 2

Publication No. SY44-0038-01

Overall, how would you rate this manual?

	Very Satisfied	Satisfied	Dissatis-fied	Very Dissatis-fied
Overall satisfaction				

How satisfied are you that the information in this manual is:

Accurate				
Complete				
Easy to find				
Easy to understand				
Well organized				
Applicable to your tasks				
THANK YOU!				

Please tell us how we can improve this manual:

_____
_____
_____
_____
_____

May we contact you to discuss your responses? __ Yes __ No

    Phone: (____) _____   Fax: (____) _____

To return this form:

- Mail it
- Fax it
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  - Other countries: **(+1)+507+253-5192**
- Hand it to your IBM representative.

Note that IBM may use or distribute the responses to this form without obligation.

Name _____   Address _____
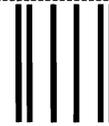
Company or Organization _____   _____

Phone No. _____   _____

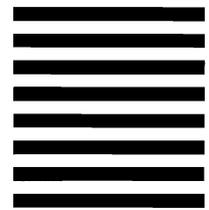**IBM** ®

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