

FRONT

PICTURE 1

March 21, 1990

Part Number 64F3994

Form Number S64F-3994-00

*EDITION Edition Notice*  
**Safety Information**

Refer to the *Hardware Maintenance Reference General Information* pamphlet in this manual for the following safety information:

- General Safety
- Electrical Safety.

**First Edition (March 1990)**

**The following paragraph does not apply to the United Kingdom or any country where such provisions are inconsistent with local law:**  
INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This publication could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time.

It is possible that this publication may contain reference to, or information about, IBM products (machines and programs), programming, or services that are not announced in your country. Such references or information must not be construed to mean that IBM intends to announce such IBM products, programming, or services in your country.

Requests for technical information about IBM products should be made to your IBM Authorized Dealer or your IBM Marketing Representative.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Commercial Relations, IBM Corporation, Purchase, NY 10577.

**| Copyright International Business Machines Corporation 1990. All rights reserved.**

Note to U.S. Government Users -- Documentation related to restricted rights -- Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

*FRONT\_1 Special Notices*

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of IBM's intellectual property rights or other legally protectible rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, programs, or services, except those expressly designated by IBM, are the user's responsibility.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Commercial Relations, IBM Corporation, Purchase, NY 10577.

The following terms, denoted by an asterisk (\*) in this publication, are trademarks of the IBM Corporation in the United States and/or other countries:

IBMeMicrolChannel/2

CONTENTS Table of Contents

EDITION	Edition Notice
FRONT_1	Special Notices
CONTENTS	Table of Contents
1.0	Product Description
1.1	Security
1.1.1	Cover Lock
1.1.2	Power-On Password
1.2	System-Board Features
1.2.1	Microprocessor
1.2.2	CMOS RAM and CMOS RAM Extension
1.2.3	ROM BIOS
1.2.4	Plasma-Display Adapter
1.2.5	Serial Port
1.2.6	Parallel Port
1.2.7	Diskette-Drive Controller
1.2.8	Pointing-Device Connector
1.2.9	External Diskette-Drive Connector
1.2.10	External-Display Connector
2.0	Option Compatibility
2.1	Drive and Diskette Compatibility
2.2	Fixed Disk Drives
2.3	Terminators
3.0	Operating Requirements
3.1	Power Supply
3.2	Power-On Self-Test (POST)
3.3	System Memory
3.3.1	System-Board Memory
3.3.2	Memory-Expansion Adapters
3.3.3	Memory Requirements and Limitations
3.3.4	Memory Errors
4.0	Specifications
5.0	Special Tools
6.0	Removals and Replacements
6.1	1005 Cover
6.2	1010 Battery and Speaker Assembly
6.3	1015 Option-Connector Assembly
6.4	1020 Adapters
6.5	1025 Fixed Disk Drive
6.6	1030 Power Supply
6.7	1035 Math Coprocessor
6.8	1040 Memory-Module Kits
6.9	1045 System-Board and Plasma-Display Adapter
6.10	1050 Plasma-Display Assembly
6.11	1055 Diskette Drive
6.11.1	1055 Diskette Drive (continued)
6.11.2	1055 Diskette Drive (continued)
6.11.3	1055 Diskette Drive (continued)
6.11.4	1055 Diskette Drive (continued)
7.0	Locations
7.1	Front View
7.2	Rear View
7.3	Interior View
7.4	System Board
7.5	Plasma-Display Adapter
8.0	Safety Grounds

## 1.0 Product Description

The IBM (\*) Personal System/2 (\*) Model P70 386 computers use the IBM Micro Channel (\*) architecture. The features of the Model P70 386 are:

- Security: power-on password
- System board:
  - 16- or 20-MHz 80386 Microprocessor.
  - 80387 Math Coprocessor connector.
  - 2MB or 4MB (MB = 1,048,576 bytes) of random access memory (RAM). System-board memory can be expanded to 8MB depending on the model. The total system memory capacity is 16MB.
  - 64 bytes of complementary metal-oxide semiconductor random access memory (CMOS RAM).
  - Read-only memory basic input/output system (ROM BIOS).
  - Video graphics array (VGA) with plasma-display panel (PDP) control.
  - Two expansion slots:
    - One 32-bit slot
    - One 16-bit slot.
  - Serial port.
  - Parallel port.
  - Diskette-drive controller.
  - Pointing-device connector.
  - External-display connector.
  - External-storage-device connector.
  - Fixed-disk-drive connector.
- Power supply:
  - Automatically switches to the 100-125 Vac or the 200-240 Vac range
  - 50 or 60 Hz
  - 90 watts.
- Battery (to keep CMOS RAM active when power is off)
- Speaker
- 101/102-key keyboard physically unique to the Model P70 386
- Plasma display
- Fixed disk drives supported (see "Fixed Disk Drives" in topic 2.2).

(\*) IBM, Personal System/2, and Micro Channel are trademarks of the International Business Machines Corporation.

### Subtopics

1.1 Security

1.2 System-Board Features

1.1 Security

Subtopics

1.1.1 Cover Lock

1.1.2 Power-On Password

1.1.1 Cover Lock

The Model P70 386 does not have a cover lock. The system cover is held in place by three screws that can be loosened to remove the cover.

1.1.2 Power-On Password

A power-on password denies access to the system when the system is powered-on.

To service a system with an active and unknown power-on password, short together the two pins 1 on the system board.

PICTURE 2

With the assembly shorted, power-on the system. This deactivates the power-on password. Remove the short after the POST is finished.

To reactivate the power-on password, select the **Set features** option on the Reference Diskette, and follow the instructions.

## 1.2 System-Board Features

The major features of the system board are:

- 80386 Microprocessor
- CMOS RAM
- ROM BIOS
- Plasma-display adapter
- Serial port
- Parallel port
- Diskette-drive controller
- Pointing-device connector
- External-storage-device connector
- External-display connector.

### Subtopics

- 1.2.1 Microprocessor
- 1.2.2 CMOS RAM and CMOS RAM Extension
- 1.2.3 ROM BIOS
- 1.2.4 Plasma-Display Adapter
- 1.2.5 Serial Port
- 1.2.6 Parallel Port
- 1.2.7 Diskette-Drive Controller
- 1.2.8 Pointing-Device Connector
- 1.2.9 External Diskette-Drive Connector
- 1.2.10 External-Display Connector

*1.2.1 Microprocessor*

The microprocessor interprets and carries out instructions. The 80386 Microprocessor is a 32-bit processor and operates in two modes: real-address mode and virtual-address mode. The microprocessor speed is 16 or 20 MHz depending on the model.

### 1.2.2 CMOS RAM and CMOS RAM Extension

The CMOS RAM provides 64 bytes of storage. The first 50 bytes are used to store system-configuration and security information. The real-time clock uses the remaining 14 bytes to track the date, time, and battery level. A 2KB (KB = 1024 bytes) CMOS RAM extension stores additional configuration and system-status information.

The data stored in the CMOS RAM and CMOS RAM extension is kept active by the battery when the system is powered-off. If the stored data is lost due to a depleted or removed battery, the data can be restored using one of the following methods:

- If the user has a customized configuration that uses settings other than the default, run the restore configuration program on the user's backup copy of the Reference Diskette.
- If the configuration uses the default settings, run the automatic configuration program on the Reference Diskette.

1.2.3 ROM BIOS

ROM BIOS contains the instructions and routines that control the keyboard, diskette drives, fixed disk drive, displays, and other major input/output devices in the system. Some adapters have their own ROM modules containing extended BIOS routines that work with the system board ROM BIOS. The routines for performing the power-on self-test (POST) are also contained in the ROM BIOS.

#### 1.2.4 Plasma-Display Adapter

The plasma-display adapter contains the plasma-display controller and the Video Graphics Array (VGA). The plasma-display controller can display a maximum 640-by-480 picture elements (PELs) with 16 shades of gray on the plasma display.

An external display and the plasma display cannot be used at the same time. When an external display is attached, nothing is displayed on the Plasma Display even if the external display power is off. The VGA supports color and monochrome analog direct-drive displays in a variety of modes, including alphanumeric text mode and all-points-addressable (APA) graphics mode.

The VGA is a graphics controller on the plasma-display adapter. The VGA supports a maximum of 720-by-400 picture elements (PELs) in the text mode and 640-by-480 PELs in the graphics mode. The VGA can support 256 colors or 64 shades of gray at one time. Composite video is not supported.

### 1.2.5 Serial Port

The serial port is fully programmable and supports asynchronous communications. The 25-pin D-shell connector provides the signals to drive a device with a standard 25-contact, RS-232 connector and is identified by the system configuration as either SERIAL 1 or SERIAL 2.

If adapters with serial ports are installed in the system, they can be configured from SERIAL 1 to SERIAL 8.

**Note:** Conflicts occur when using multiple communication lines if two or more lines are addressed the same. Select the **Set configuration** option on the Reference Diskette. Select **View configuration** to verify that no lines are addressed the same.

### 1.2.6 Parallel Port

The parallel port allows the attachment of devices that accept eight bits of parallel data at standard transistor-transistor (TTL) levels. The port has a 25-pin, D-shell connector and is primarily designed for printers. However, the port can be used as an input/output port for any device or application that matches the input/output capabilities of the port. When adapters with additional parallel ports are installed, the system can support three different devices, each addressed separately as PARALLEL 1, PARALLEL 2, or PARALLEL 3.

**Note:** Conflicts occur when two or more devices are addressed the same. Use the **Set configuration** option on the Reference Diskette. Select **View configuration** to verify that no lines are addressed the same.

*1.2.7 Diskette-Drive Controller*

The controller connects to the diskette drives through a single 40-pin connector on the system board. Signals and voltages are supplied through the diskette-drive cable that plugs into the connector. These signals and voltages can operate one IBM 3.5-inch diskette drive.

1.2.8 *Pointing-Device Connector*

The pointing-device (mouse) connector is located in the rear of the system board.

*1.2.9 External Diskette-Drive Connector*

An external storage device, such as the IBM 5.25-Inch 360KB External Diskette Drive, can be attached to this connector.

*1.2.10 External-Display Connector*

An external PS/2 display can be attached to this connector.

## 2.0 Option Compatibility

The Model P70 386 uses some adapters designed for Models 50, 60, 70, and 80 computers. For more information, see the parts section in the *Hardware Maintenance Service* pamphlet for the system you are servicing.

### Subtopics

- 2.1 Drive and Diskette Compatibility
- 2.2 Fixed Disk Drives
- 2.3 Terminators

2.1 Drive and Diskette Compatibility

The following provides information concerning the identification of diskette drives.

Diskette Drive	Identifying Mark
3.5 Inch - 1.44MB	1.44 on the Eject Button

The following addresses the compatibility of diskettes to diskette drives.

Diskette Capacity	1.44MB Drive
1.0MB	Read/Write
2.0MB	Read/Write

**Note:** For additional information, see "Diskette Drives and Diskettes" in the *IBM Personal System/2 Hardware Maintenance Reference General Information* pamphlet in this manual.

## 2.2 Fixed Disk Drives

Several fixed disk drives are available for PS/2 systems. The fixed disk drive and fixed-disk-drive interface must be the same. For example, an enhanced small device interface (ESDI) adapter must be used with an ESDI drive. For supported fixed disk drives, see the parts section in the *Hardware Maintenance Service* pamphlet for the system you are servicing.

The Model P70 386 uses a fixed disk drive that automatically positions the read/write heads in nondata areas when the system is powered-off. No special precautions are required regarding parking the heads when moving the computer.

### 2.3 Terminators

Diskette Drives: do not use or require terminators.

ESDI Fixed Disk Drives: do not use or require terminators.

SCSI Fixed Disk Drives: one or more cables are used to connect the fixed-disk adapters to the fixed disk drives. For each cable used, the last drive on the cable must have a terminator.

The location, quantity, and appearance of the terminator may vary from drive to drive. An identification label or tag (usually "T-RES") is attached to the terminator for easy identification.

**Note:** For additional information, see "SCSI Devices" in the "Options and Adapters (Micro Channel)" section of this manual.

### 3.0 *Operating Requirements*

The following describes the operations that occur from the time the system is powered-on until the minimum operating requirements are met.

#### Subtopics

3.1 Power Supply

3.2 Power-On Self-Test (POST)

3.3 System Memory

### 3.1 Power Supply

The power supply automatically switches to the 100-125 Vac or 200-240 Vac range. The ac input is converted to dc outputs that supply the system with proper operating voltages.

When the system is powered-off for 10 seconds or more and then powered-on, the power supply generates a 'power good' signal that resets system logic. The presence of the 'power good' signal indicates that the power supply is operating properly and that the minimum under-voltage sense levels have been established. This means that all system-board power requirements have been met.

Output (Vdc)	Minimum Under-Voltage Sense Level (Vdc)
+ 5.0	+ 4.5
+12.0	+10.8
-12.0	-10.2

The 'power good' signal turns on the green power-good light on the front of the system. If the green light is not on, the power supply is not functioning properly.

### 3.2 Power-On Self-Test (POST)

The POST is initiated automatically each time the system power is turned on.

The POST is a series of system checks and initializations that verify the correct operation of the system unit. The POST tests only those areas that allow the system to be operational enough to run advanced diagnostics. The POST can detect two types of errors: critical and noncritical.

*Critical errors* prevent the system from operating or cause incorrect results that are apparent to the user. Examples of critical errors are microprocessor or interrupt-controller errors. If the POST detects a critical error, all testing stops and the microprocessor attempts to display the error.

*Noncritical errors* cause incorrect results that might not be apparent to the user. An example of a noncritical error would be a serial communications failure. If the POST detects a noncritical error, all testing stops and the microprocessor displays an error code. Pressing the F1 key allows testing to continue.

When the Reference Diskette is in drive A, and a noncritical error is detected, the system displays the POST error message along with a message generated from the Reference Diskette. The Reference Diskette message instructs the user to take a specific action to correct the error.

After a successful POST, one short beep occurs. Control is then given to a BIOS routine called the system bootstrap loader. The bootstrap loader attempts to load an operating system or a program from either a diskette or the fixed disk drive. If neither is present in the system, the Insert Diskette icon is displayed (see the *IBM Personal System/2 Micro Channel Diagnostics* pamphlet in this manual). This icon indicates that a diskette should be inserted into drive A. After the diskette is inserted, press the F1 key to resume operation. If the F1 key is pressed when no diskette is in the diskette drive, the IBM Cassette BASIC screen appears.

3.3 *System Memory*

Subtopics

- 3.3.1 System-Board Memory
- 3.3.2 Memory-Expansion Adapters
- 3.3.3 Memory Requirements and Limitations
- 3.3.4 Memory Errors

3.3.1 *System-Board Memory*

The Model P70 386 system-board memory varies from model to model. The system board has at least 2MB of memory installed at the time of shipment. The system board supports a maximum of 8MB of memory. The 80386 System Board Memory Expansion Kit has a 3-by-32-pin connector that plugs directly into the system board.

### 3.3.2 Memory-Expansion Adapters

An optional memory adapter, the 80386 Memory-Expansion Adapter, is available to extend the memory capabilities of the Model P70 386. The 80386 Memory-Expansion Adapter is shipped with one 80386 Memory Expansion Kit. Three 80386 Memory-Expansion Adapters can be installed in the system. Each adapter can have three 80386 Memory Expansion Kits installed. The adapters can be installed in any of the 32-bit expansion slots on the system board. The amount of memory available can be constrained by hardware and the operating system in use. See the parts section in the *Hardware Maintenance Service* pamphlet for the system you are servicing for other supported options.

**3.3.3 Memory Requirements and Limitations**

The system board *does not* have to be fully populated before adding 80386 Memory-Expansion Adapters, and each memory-expansion adapter *does not* have to be filled to capacity before adding another memory-expansion adapter.

When memory is added or removed from the system, run the set configuration program on the Reference Diskette.

### 3.3.4 Memory Errors

The Model P70 386 activates and deactivates memory in 1MB blocks, except for the first 1MB of system-board memory. For this block, the following occurs:

- If the POST detects an error in the first 512KB of system-board memory, the first 1MB block of system-board memory is deactivated and the following occurs:
  - If an additional 1MB block of system-board memory is installed, the addresses assigned to the deactivated block are reassigned to the second block of system-board memory. This is only true for the first two 1MB blocks of system-board memory. After the first two blocks, an error code is displayed.
  - If additional system-board memory is not installed, no address reassignment occurs and an error code is displayed.
  - The first 512KB of memory address space cannot be assigned to adapter memory.

If the POST detects a memory error in any memory after the first 512KB of system-board memory, the 1MB block of memory is not deactivated and an error code is displayed. In this event, the customer-level diagnostics program can be run to deactivate the 1MB block and reassign the addresses. This program is on the backup copy of the Reference Diskette supplied with the system.

After the addresses are reassigned, the defective block is ignored by POST during subsequent power-ons.

#### PICTURE 3

If errors occur one at a time, the system deactivates 1MB blocks of memory. However, if two errors occur at the same time on the same 80386 Memory Expansion Kit, the programs on the Reference Diskette cannot be loaded and an error message is displayed.

#### 4.0 Specifications

##### Size

- Depth: 126 mm (5 in.)
- Height: 303 mm (11.9 in.)
- Width: 465 mm (18.3 in.).

##### Weight

9 kg (20 lb).

##### Environment

- Temperature:
  - Power on: 10° to 35°C (50° to 95°F)
  - Power off: 5° to 60°C (41° to 140°F).
- Humidity:
  - Power on: 8% to 80%
  - Power off: 5% to 95%.
- Maximum altitude: 2134 m (7000 ft).

##### Heat Output

600 British thermal units (BTUs) per hour (150 watts per hour).

##### Electrical

- Input voltage (Sinewave input is required)
  - Low Range:
    - Minimum: 90 Vac
    - Maximum: 137 Vac.
  - High Range:
    - Minimum: 180 Vac
    - Maximum: 264 Vac.
- Input kilovolt-amperes (kVA)
  - Minimum Configuration (as shipped from IBM): Approximately .09 kVA
  - Maximum Configuration: Approximately .23 kVA.

### 5.0 Special Tools

The following special tools are required to service the Model P70 386.

#### **Volt-Ohm Meter**

A meter similar to the Triplet Model 310. (1)

#### **Wrap Plug**

The Tri-Connector wrap plug (IBM part 72X8546) is used during advanced diagnostic tests of the serial and parallel ports.

The Tri-Connector wrap plug replaces the following:

- (IBM part 8529228) Printer Adapter wrap plug
- (IBM part 8286126) Serial Port wrap plug
- (IBM part 8529280) Communications Adapter wrap plug
- (IBM part 62X1083) Communications wrap plug 25-pin
- (IBM part 62X1084) Communications wrap plug 9-pin.

#### PICTURE 4

(1) Manufactured by Triplet Corporation, Bluffton, Ohio 45817,  
U.S.A.

## 6.0 Removals and Replacements

The arrows in the removals and replacements section show the direction of movement to remove a FRU, to turn a screw, or to press a tab to release the FRU. The arrows are marked in numeric order to show the correct sequence of removal.

When other FRUs must be removed prior to removing the failing FRU, they are listed at the top of the page. Go to the removal procedure for each FRU listed, remove the FRU, and then continue with the removal of the failing FRU.

To replace a FRU, reverse the removal procedure and follow any notes that pertain to replacement. See "Locations" for internal cable connection and arrangement information.

### CAUTION:

Before removing any FRU, power-off the system, unplug all power cords from electrical outlets, and disconnect any interconnecting cables.

Warning: The system board, adapters, memory modules, and the math coprocessor are sensitive to, and can be damaged by, electrostatic discharge. Establish personal grounding by touching a ground point with one hand before touching these units.

**Note:** An electrostatic discharge (ESD) strap may be used to establish personal grounding.

### Subtopics

- 6.1 1005 Cover
- 6.2 1010 Battery and Speaker Assembly
- 6.3 1015 Option-Connector Assembly
- 6.4 1020 Adapters
- 6.5 1025 Fixed Disk Drive
- 6.6 1030 Power Supply
- 6.7 1035 Math Coprocessor
- 6.8 1040 Memory-Module Kits
- 6.9 1045 System-Board and Plasma-Display Adapter
- 6.10 1050 Plasma-Display Assembly
- 6.11 1055 Diskette Drive

6.1 1005 Cover

CAUTION:

Before removing any field replaceable unit (FRU), power off the system, unplug all power cords from their electrical outlets, and disconnect any interconnecting cables.

**Note:** Disconnect any cables attached to the adapters or external device connectors.

PICTURE 5

**1005 Cover (continued)**

- Push firmly at 3 and lift the cover to release the first latch. Then push firmly at 4, 5, 6, and 7 to release the remaining latches and remove the cover.

PICTURE 6

6.2 1010 Battery and Speaker Assembly

CAUTION:

The lithium battery presents a fire, explosion, or severe burn risk. Do not recharge it, remove its polarized connector from it, disassemble it, heat it above 100°C (212°F), incinerate it, or expose its cell contents to water. Dispose of the battery as required by local ordinances or regulations. When replacing the battery, use only Part No. 72X8498. Use of another battery could result in ignition or explosion of the battery. Replacement batteries can be ordered from IBM or IBM Authorized Dealers.

Cover (1005)

PICTURE 7

6.3 1015 Option-Connector Assembly

- Cover (1005)
- Adapters (1020).

**Notes:**

1. Loosen the screw1 (this screw cannot be removed).
2. Carefully remove all other screws2 shown (some of these screws have a washer).

PICTURE 8

6.4 1020 Adapters

Cover (1005)

**Note:** Before replacing an adapter, note the locations of the adapter and cables. When replacing an adapter, install the replacement adapter in the same slot as the adapter that was removed.

Stored configuration information depends on the location of the adapter. If the replacement adapter is installed in a different location, run the configuration program on the user's Reference Diskette to reset the system configuration information.

PICTURE 9

6.5 1025 Fixed Disk Drive

Warning: Improper shipping and handling can result in permanent loss of all data and formatting on the fixed disk drive. Have the user back up all information on the fixed disk drive.

Cover (1005)

PICTURE 10

**Note:** Loosen the screw 2 after placing the system unit horizontally.

PICTURE 11

**1025 Fixed Disk Drive (continued)**

PICTURE 12

PICTURE 13

**Note:** When installing a new fixed disk drive, remove the shieldA from the old fixed disk drive and install the shield on the new fixed disk drive.

**1025 Fixed Disk Drive (continued)**

**Note:** When installing a new fixed disk drive, remove the sliderB from the new fixed disk drive before installation. Return the slider with the removed fixed disk drive.

PICTURE 14

6.6 1030 Power Supply

- Cover (1005)
- Front cover (keyboard)
- Remove all ground wires connected to the frame of the power-supply assembly.

PICTURE 15

PICTURE 16

**Note:** Cable connectors A are wrapped in a plastic tube.

6.7 1035 Math Coprocessor

- Cover (1005)
- Remove any option adapter (1020) that may hinder removal and replacement of the math coprocessor.

Warning: Remove the math coprocessor carefully. Do not bend the pins when removing the math coprocessor. The math coprocessor can be damaged by electrostatic discharge, prying between the module and connector, or prying between the connector and the system board. Establish personal grounding by touching a ground point with one hand before touching the math coprocessor.

The system will not operate properly if the math coprocessor is not installed correctly or is the wrong type for the system.

**Note:** When replacing the math coprocessor, align it with the beveled corner of the socket.

PICTURE 17

6.8 1040 Memory-Module Kits

- Cover (1005)
- Adapters (1020), if necessary.

**Note:** To remove a memory-module kit, it is necessary to remove other memory-module kits.

PICTURE 18

## 6.9 1045 System-Board and Plasma-Display Adapter

- Cover (1005)
- Battery and speaker assembly (1010)  
Remove only the connectors.
- Option-connector assembly (1015)
- Math coprocessor, if installed (1035)
- Memory-module kits (1040).

**Notes:**

1. Disconnect all cables from the system board and the plasma display adapter.
2. Remove all screws<sup>1</sup> shown in the following figure.
3. When a new system board is installed, run the restore configuration program, on the Reference Diskette to restore the time, date, and any unique configuration data.

PICTURE 19

6.10 1050 Plasma-Display Assembly

- Front cover (Keyboard)

Remove the parts in the following sequence:

1. Open the plasma-display panel A.
2. Remove the two screws 1.
3. Lift the plasma-display assembly to free it from the hanger B, then move 2 the plasma-display assembly toward you.

PICTURE 20

**1050 Plasma-Display Assembly (continued)**

Reposition the system unit as shown and remove the parts in the following sequence:

1. Remove the two screws 3 to remove the connector cover C.
2. Remove the two cables 4.

PICTURE 21

**1050 Plasma-Display Assembly (continued)**

1. Remove the four screws 5.
2. Remove any ground wires if they interfere with the removal of the FRU. Reattach these ground wires during the installation of the FRU.

PICTURE 22

**Note:** The plasma-display panel contains a small amount of mercury, cadmium, and lead. Follow local ordinances or regulations for its disposal.

6.11 1055 Diskette Drive

- Cover (1005)
- Front cover (Keyboard)

If the machine serial number is:

- xxxx49999 or earlier, do the steps described on pages 6.11 through 6.11.2.
- xxxx50001 or later, do the steps described on pages 6.11.3 through 6.11.4.

**S/N xxxx49999 or Earlier**

1. Remove the two screws 2 that hold the two ground wires.
2. Cut the cable tie 3 that fastens the diskette-drive signal cable.
3. Disconnect the connector 1 from the system board.
4. Raise the plasma display (1050).

PICTURE 23

Subtopics

- 6.11.1 1055 Diskette Drive (continued)
- 6.11.2 1055 Diskette Drive (continued)
- 6.11.3 1055 Diskette Drive (continued)
- 6.11.4 1055 Diskette Drive (continued)

6.11.1 1055 Diskette Drive (continued)

**Note:** While pulling the left edge of the diskette-drive cover 4, slide the cover up to remove.

PICTURE 24

6.11.2 1055 Diskette Drive (continued)

1. Loosen the diskette-drive mounting screw 9. Do not remove the screw.
2. Slide the diskette drive upward to release it from the two hangers 6 behind the diskette drive.
3. Pull the diskette drive as far as possible from the system unit.
4. Remove the four screws 7.
5. Disconnect the connector 8 from the diskette drive.
6. Remove the diskette drive 5 from the tilt assembly 10.

**Note:** After reinstalling the diskette drive, make sure the diskette-drive signal cable does not interfere with the opening and closing of the diskette drive.

PICTURE 25

6.11.3 1055 Diskette Drive (continued)

S/N xxxx50001 or Later

1. Raise the plasma display (1050).
2. Pull the left edge of the diskette-drive cover to permit the diskette drive to swing forward.
3. Disconnect the connector 3 from the diskette drive.
4. Remove the diskette drive from the diskette-drive cover 4.
  - a. Remove the two screws 5.
  - b. Slide the diskette drive in the direction of the arrow and remove it as shown in Detail PICTURE 26 on page 6.11.4.

**Note:** Pull one of the sides of the diskette-drive cover outside to permit easy removal of the diskette drive.

5. Remove the four screws 2 and the two brackets 1 from both sides of the diskette drive.

PICTURE 27

6.11.4 1055 Diskette Drive (continued)

PICTURE 28

Detail PICTURE 29

7.0 Locations

Subtopics

7.1 Front View

7.2 Rear View

7.3 Interior View

7.4 System Board

7.5 Plasma-Display Adapter

7.1 Front View

- 1 Handle
- 2 Eject button
- 3 Diskette drive
- 4 Diskette-drive in-use light
- 5 Fixed-disk in-use light
- 6 Power-good light
- 7 Power switch
- 8 Brightness control
- 9 Plasma display
- 10 Keyboard.

PICTURE 30

7.2 Rear View

- 1 External-display connector
- 2 Pointing-device connector
- 3 Serial port
- 4 External diskette-drive connector
- 5 Parallel port
- 6 Adapter connector (if adapter is installed)
- 7 Power-cord connector.

PICTURE 31

7.3 Interior View

- 1 Speaker assembly
- 2 Battery
- 3 Expansion slot (32-bit)
- 4 Expansion slot (16-bit)
- 5 Plasma-display adapter
- 6 System board
- 7 Fixed disk drive
- 8 Power supply (with fan).

PICTURE 32

7.4 System Board

- 1 Speaker connector
- 2 Battery connector
- 3 Expansion connector
- 4 Plasma-display-adapter connector
- 5 Parallel-port connector
- 6 Serial-port connector
- 7 Pointing-device connector
- 8 Keyboard connector
- 9 External diskette-drive connector
- 10 Fixed-disk-drive connector
- 11 Power-supply connector
- 12 80387 Math Coprocessor connector
- 13 Jumper (password disable)
- 14 Indicator connector
- 15 Diskette-drive connector
- 16 Memory-module kit, connector position 4
- 17 Memory-module kit, connector position 3
- 18 Memory-module kit, connector position 2
- 19 Memory-module kit, connector position 1.

PICTURE 33

7.5 Plasma-Display Adapter

- 1 Plasma-display connector
- 2 External-display connector.

PICTURE 34

8.0 Safety Grounds

1 Screw connection

PICTURE 35

(S/N xxxx49999 or earlier)

PICTURE 36

(S/N xxxx50001 or later)