FRONT

PICTURE 1

FRONT - 1

February 26, 1991

Part Number 15F2267

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EDITION Edition Notice
Safety Information

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

    General Safety during Work

    Safety with Electricity

    Safety Inspection Guide.

First Edition (February 1991)

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     80386SX   Intel Corporation
     80387SX   Intel Corporation.

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1.0 Product Description

The IBM (*) Personal System/2 (*) Model L40 SX is a laptop-size computer
that is functionally compatible with the IBM Personal Computer AT (*).
With a rechargeable battery, the computer can be operated where no
external power source is available. The features of Model L40 SX include:

    Security: Power-on password
    Power source:
    -   Rechargeable Battery
    -   AC Adapter, automatically switches to 90 - 137 V ac or 180 - 264 V
        ac
    -   Quick Charger
    -   50 or 60 Hz
    System board:
    -   20-MHz 80386SX (**) Microprocessor
    -   80387SX (**) Math Coprocessor socket
    -   Diskette-drive controller
    -   Parallel port
    -   Serial port
    -   External-display connector
    -   Pointing-device or numeric keypad connector
    -   System-expansion connector
    -   Minimum of 2MB (1MB = 1 048 576 bytes) random access memory (RAM),
        up to 18MB expandability on board
    -   Real-time-clock circuitry, configuration and status information
        storage provided by the real-time clock/complementary metal oxide
        semiconductor (RT/CMOS) RAM
    -   Read-only memory basic input/output system (ROM BIOS)
    -   Suspend and Resume modes
    Video Graphics Array (VGA) with Liquid Crystal Display (LCD) control
    Liquid Crystal Display
    -   640 X 480 PELs
    -   32 shades of gray addressable
    Built-in LCD status display
    A 60MB hard disk drive (fixed disk drive)
    A 1.44MB 3.5-inch diskette drive
    84/85-key keyboard physically unique to the Model L40 SX
    Speaker
    Separate 17-key numeric keypad
    Trackpoint
    Carrying case
    Optional Internal Data/Fax Modem (U.S./Canada only) or Serial Adapter
    Backup battery (to keep real-time clock circuitry, configuration, and
    status information active when power is off)
    Standby battery to supply power to the system during replacement of
    the rechargeable battery.

 (*) IBM, Personal Computer AT, and Personal System/2 are
     trademarks of the International Business Machines
     Corporation.

 (**) 80386SX and 80387SX are trademarks of the Intel
     Corporation.

Subtopics
1.1 Security
1.2 System Board Features

1.1 Security

Subtopics
1.1.1 Power-On Password

1.1.1 Power-On Password

System access can be controlled by using a power-on password. When a
power-on password is active, the password prompt, which resembles a small
key, appears on the screen each time the system is powered on. At the
password prompt, type the password and press Enter. The password does not
appear on the screen.

> ***To set a power-on password:***

> Select the **Set passwords and network server mode** from the Main Menu of
> the Reference Diskette.

> ***To service a system with an active, unknown power-on password:***

> See Figure 1.

> 1. Remove the keyboard and identify the jumper 1.

> 2. Move the jumper so that it connects the center pin and the pin on
>   the opposite end of the connector.

> 3. Power-on the computer.

> The computer detects the change and erases the password. It is not
> necessary to move the jumper to its original position.

PICTURE 2

PICTURE 3

Figure 1. Password Disabling Pins

1.2 System Board Features

The major features of the system board are:

    80386SX Microprocessor
    CMOS RAM
    ROM BIOS
    Suspend/Resume
    Display controller for LCD
    Diskette-drive controller
    Serial port
    Parallel port
    Pointing-device connector
    External-display connector
    System-expansion connector
    Connector for Internal Data/Fax Modem or Serial Adapter
    80387SX Math coprocessor socket
    Two additional memory-module sockets for memory expansion.

Subtopics
1.2.1 Microprocessor
1.2.2 RT/CMOS RAM and Battery
1.2.3 ROM BIOS
1.2.4 Suspend and Resume Modes
1.2.5 LCD Controller
1.2.6 Diskette-Drive Controller
1.2.7 Serial Port
1.2.8 Parallel Port
1.2.9 Pointing-Device Connector
1.2.10 External-Display Connector
1.2.11 System-Expansion Connector
1.2.12 Internal Data/Fax Modem

1.2.1 Microprocessor

The microprocessor interprets and carries out instructions. The 80386SX
Microprocessor is a 32-bit processor and operates in real-mode and
virtual-mode. The maximum speed of the microprocessor is 20-MHz.

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virtual-mode. The maximum speed of the microprocessor is 20-MHz.

1.2.2 RT/CMOS RAM and Battery

The RT/CMOS RAM provides 128 bytes of storage. The real-time clock uses
14 bytes of this storage to track the date, time, and battery level. The
remaining 114 bytes are assigned to store system configuration and
security information.

The stored data in the RT/CMOS RAM is kept active by the backup battery
when the system is not powered on. If the stored data is lost due to a
depleted or removed backup battery, start the Reference Diskette to permit
the **Automatic configuration** program to run. The data also can be restored
by using the **Restore configuration** program on the customer's backup copy
of the Reference Diskette.

1.2.3 ROM BIOS

Read Only Memory - Basic Input/Output System (ROM BIOS) contains the
instructions and routines that control the keyboard, diskette drive, hard
disk drive, displays and other major I/O 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 Suspend and Resume Modes

The suspend and resume modes are unique methods to minimize the use of
power from the battery. When the computer enters Suspend mode, one beep
sounds and this icon PICTURE 4 appears in the system-status display. All
tasks are stopped and their present states are stored in memory to save
power.

Note: The one beep does not sound when ***Low battery alarm*** option is set to
off in the Set Features.

When the computer returns to Resume mode, PICTURE 5 icon starts blinking
and the computer restores the same states as when it entered Suspend mode.
One beep sounds when the resume operation completes.

   The system enters Suspend mode when:

   -   Closing the computer display
   -   Spending the time specified by ***System power off*** option in the Set
       Features Menu
   -   Detecting the battery-low condition
   -   Entering *PS2 OFF* command in the Set Features program
   -   Activating the temperature sensor (Temperature icon appears)
   -   Attempting to turn on the system outside the humidity range (Dew
       Point icon appears).

   The system returns to Resume mode when:

   -   Opening the computer display
   -   Entering *PS2 ON at HH:MM:SS* command in the Set Features program
   -   Detecting the ring indicator on the communication interface
   -   Returning to the operating range of temperature and humidity.

Note: ***System power off*** and ***Display off*** options specified in the Set
Features are no effect while the System Checkout diagnostics is
running. The system speed is automatically switched to 20 MHz and
remains effect until the system reset is performed.

1.2.5 LCD Controller

The LCD controller contains the LCD Controller and the VGA. The LCD
Controller can display a maximum 640 by 480 picture elements (PELs) with
32 addressable shades of gray on the LCD.

An external display and the LCD cannot be used at the same time. You can
choose which display is to be active by setting the Set features option.
When an external display is selected, nothing is displayed on the LCD even
if the external display power is off.

The VGA is a graphics controller on the LCD controller. It supports color
and monochrome analog direct-drive displays in a variety of alphanumeric
(A/N) text and all-points-addressable (APA) graphics modes.

The VGA supports a maximum of 720 by 400 PELs in text mode, and a maximum
of 640 by 480 PELs in graphics mode. The VGA can support 256 colors or 64
shades of gray at one time. Composite video is not supported.

1.2.6 Diskette-Drive Controller

The controller connects to the diskette drives through two 17-pin flexible
cables on the system board. Signals and voltages are supplied through
these cables that plug into the connectors. These signals and voltages
can operate one IBM 3.5-inch diskette drive.

1.2.7 Serial Port

The serial port is fully programmable and supports asynchronous
communications. The 9-pin D-shell connector provides the signals to drive
a standard EIA-232D device and is identified by the system configuration
as SERIAL_1 or SERIAL_2.

Note: Conflicts occur when two or more communication lines are addressed
the same. Use the **Set configuration** option on the Reference
Diskette to check that no two lines have the same address.

1.2.8 Parallel Port

The parallel port makes possible the attachment of devices that accept 8
bits of parallel data at standard transistor-transistor logic (TTL)
levels. The port can be used as a general input/output port for any
device or application that matches its input/output capabilities. It has
a 25-pin, D-shell connector and is primarily designed for printers. 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 two lines have the same
address.

1.2.9 Pointing-Device Connector

The pointing-device connector is located at the rear of the computer and
accepts a mouse, numeric keypad, or Trackpoint.
The Model L40 SX has only one pointing-device connecter. However, it is
possible for you to concurrently use the numeric keypad and either a mouse
or a Trackpoint through another pointing-device connector located at the
rear of the numeric keypad.

1.2.10 External-Display Connector

An external PS/2 display can be attached to this connector. To activate
the external PS/2 display, you need to change the display device as CRT
specified by the Set features. As long as the display device is defined
as LCD, nothing appears on the external PS/2 display. If an external PS/2
display is attached before the system is powered on, the external PS/2
display is active and nothing appears on the LCD display.

1.2.11 System-Expansion Connector

This 120-pin connector is used for system expansion.

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This 120-pin connector is used for system expansion.

1.2.12 Internal Data/Fax Modem

The Internal Data/Fax Modem enables the Model L40 SX to communicate with
Group 3 facsimiles and data modems that comply with CCITT (Consultative
Committee on International Telephone and Telegraph) recommendations.

The Internal Data/Fax Modem has the following features:

    Direct connection to a telephone line using a standard modular phone
    jack.

    Compatible with the public switched network.

    Supports the Hayes (**) (AT) command sets that allow the user to
    control modem operation.

    As a Data modem, full duplex operation is supported at speeds of 300,
    1200, and 2400 bits per second with both synchronous and asynchronous
    operation.

    As a Facsimile modem, G3 operation up to 9600 bits per second.

    Compatible with modems conforming to the Bell 103 or the Bell 212A
    protocol, MNP4 error correction and MNP5 data compression.

    Incoming 'ring indicator' signal causes the modem power to turn on by
    activating one of the interface signals.

    COM1 or COM2 can be assigned when addressing.

    A software Fax Utility program for easy sending/receiving facsimiles.

 (**) Hayes is a trademark of Hayes Microcomputer products, Inc.

2.0 Option Compatibility

The Model L40 SX has no internal expansion slot to accept any existing
adapters for the IBM PS/2.

Subtopics
2.1 Diskette Drive and Diskette
2.2 Hard Disk Drive

2.1 Diskette Drive and Diskette

The Model L40 SX uses a 1.44MB formatted diskette drive. (It has **1.44** on
the eject button). Both 1.0MB (formatted 720KB) and 2.0MB (formatted
1.44MB) capacity diskettes can be used in this drive.

2.2 Hard Disk Drive

The Model L40 SX has a hard disk drive that automatically positions the
read/write heads in nondata areas either when the system is powered off or
the system enters Suspend mode. No special precautions are required
regarding parking the heads when moving the computer. The hard disk drive
controller is on the drive assembly.

Note: Turn off the computer or close the display whenever moving the
computer to prevent damage to the hard disk drive.

3.0 Operating Requirements

The following describes the operations that take place from power-on until
the minimum operating requirements are met.

Subtopics
3.1 Power-On Self-Test (POST)
3.2 System Memory

3.1 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 checks only those
areas that permit the system to be operational enough to run advanced
diagnostics. The POST can detect two types of errors: critical and
noncritical.

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

Noncritical errors cause incorrect results that may not be apparent to the
user. An example of a noncritical error is a serial communications
failure. For a noncritical error the microprocessor displays an error
code and the testing stops; pressing F1 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, a single short beep is generated. Control is
then given to the BIOS routine called the system bootstrap loader. The
bootstrap loader attempts to load an operating system or program from
either a diskette or the hard disk drive. If neither is present in the
system, the Insert Diskette icon is displayed. This icon indicates that a
diskette should be inserted into drive A. After the diskette is inserted,
press F1 to resume operation. If F1 is pressed when no diskette is in the
diskette drive, the IBM Cassette BASIC screen appears.

3.2 System Memory

Subtopics
3.2.1 Memory Requirements and Limitations
3.2.2 Memory Errors

3.2.1 Memory Requirements and Limitations

The Model L40 SX has two megabytes of memory on the system board.
Additional memory-module kits can be installed into the two memory module
connectors on the system board. These connectors accept 2MB, 4MB, and/or
8MB memory-module kits in any combination except only one 4MB
memory-module kit can be installed in the system. If more than one 4MB
memory-module kit is detected, the POST displays a 226 error. The system
does not support two 4MB memory-module kits on the system board.

If an additional 2MB memory-module kit is first installed, it should be
installed on memory-module connector 1. If the additional memory-module
kit is 4MB or 8MB, it should first be installed on memory-module connector
2.

The system can support up to 18MB of memory.

Note: Whenever memory is added or removed from the system, run the
Automatic configuration program on the Reference Diskette.

3.2.1 Memory Requirements and Limitations

The Model L40 SX has two megabytes of memory on the system board.
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connectors on the system board. These connectors accept 2MB, 4MB, and/or
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If an additional 2MB memory-module kit is first installed, it should be
installed on memory-module connector 1. If the additional memory-module
kit is 4MB or 8MB, it should first be installed on memory-module connector
2.

3.2.2 Memory Errors

The system memory consists of four banks of memory: banks 0 through 3.
The size of each memory bank is 2MB or 8MB (a 4MB memory module kit is
assigned to two 2MB banks.).

After the power is turned on, the POST tries to allocate 512KB of memory
to be tested in memory banks. If an error is detected in the 512KB of
memory, the POST disables each bank (system-board memory) one by one and
looks for another 512KB of memory in the banks which have been reassigned
by the POST. If the POST fails to allocate the 512KB of memory, one of
the following error codes appears and the test is terminated.

    211, system-board memory

    215, memory module kit either in connector 1 or 2.

4.0 Specifications

Subtopics

4.1 System

Size

    Depth: 272 mm (10.7 in.)
    Height: 53.2 mm (2.1 in.)
    Width: 325 mm (12.8 in.).

Weight

    Approximately 3.5 kg (7.7 lb.) with a rechargeable battery.

Environment

    Air Temperature:
    -    System On: 5.0° to 35.0° C (41.0° to 95.0° F)
    -    System On (with diskette): 10.0° to 35.0° C (50.0° to 95.0° F)
    -    System Off: -20° C to 60° C (-4.0° to 140.0° F)
    Humidity:
    -    System On: 5% to 95%
    -    System On (with diskette): 8% to 80 %
    -    System Off: 5% to 95%
    Maximum altitude: 2437 m (8000 ft.).

Heat Output
----

    140 British Thermal Units (BTUs) per hour (41 watts per hour).

4.2 AC Adapter

Input Voltage

    Low Range
    –   Minimum: 90 V ac
    –   Maximum: 137 V ac
    High Range
    –   Minimum: 180 V ac
    –   Maximum: 264 V ac.
    Frequency Range
    –   Minimum: 47 Hz
    –   Maximum: 63 Hz

Output Voltage

    +15 V dc

        Minimum: +14.25 V dc
        Maximum: +15.75 V dc

Maximum Current

    2.7A

4.3 Quick Charger

Input Voltage

Low Range
-   Minimum: 90 V ac
-   Maximum: 137 V ac
High Range
-   Minimum: 180 V ac
-   Maximum: 264 V ac
Frequency Range
-   Minimum: 47 Hz
-   Maximum: 63 Hz

Output Voltage

+15 V dc

Minimum: +14.25 V dc
Maximum: +15.75 V dc

Maximum Rush Current

30A

5.0 Special Tools

The following special tools are required to service the Model L40 SX.

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:

     Parallel Ports
     Serial Ports.

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

6.0 Repair Information

This section contains information about removals and replacements,
locations, and safety grounds.

    The arrows in the "Removals and Replacements" section show the
    direction of movement to remove a FRU or to turn a screw to release
    the FRU. The arrows are marked in numeric order to show the correct
    sequence of removal.

    When other FRUs must be removed before 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 field replaceable unit (FRU), power-off the system,
unplug all power cords from electrical outlets, remove the rechargeable
battery, then disconnect any interconnecting cables.

CAUTION:
The rechargeable battery contains small amounts of nickel and cadmium. Do
not disassemble it, throw it into fire or water, or short-circuit it.
Dispose of the rechargeable battery as required by local ordinances or
regulations.

Warning: The system board, adapters, and memory modules 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.

7.0 Removals and Replacements

7.1 1010 Keyboard Assembly

Subtopics
7.1.1 Keyboard Removal
7.1.2 Keyboard Replacement

7.1.1 Keyboard Removal

1. Turn off the computer and close the display if open.

2. Disconnect the power cable from the wall socket and from the computer.

3. Turn off all attached devices and disconnect them from the computer.

4. Remove the rechargeable battery from its compartment at the back of the computer.

5. Invert the computer and place it on its top on a flat surface.

6. Using a small screwdriver 2, remove the three caps 1 from the bottom of the computer. Save them for later insertion.

    PICTURE 6

7. Remove the three screws 3 revealed by the removal of the caps. Save them with the caps.

    PICTURE 7

8. Grasp the display 5 and base 4 as shown so as not to let the display fall open and invert them.

    PICTURE 8

9. Open the display.

10. Lift the front edge of the keyboard slightly so that its front edge 7 clears the case 8.

11. Slide the keyboard slightly forward so its rear edge clears the groove 6 in the top cover and flip it over so the keys are face down on a flat surface.

    PICTURE 9

    PICTURE 10

12. Disconnect the two flexible cables 9 from the connectors on the system board.

    The cables are fragile. Use care in handling them.

    PICTURE 11

7.1.2 Keyboard Replacement

1. Reconnect the two flexible cables to the connectors on the system
    board.

2. Flip the keyboard over from its inverted position,

    PICTURE 12

3. Engage the rear 2 of the keyboard in the groove 1 of the top cover,
    slide it toward the display until it fits into the base. Firmly close
    the display.

    PICTURE 13

4. Grasp the display 4 together with the base 3 so it will not open when
    you invert them. Turn it upside down on a flat surface.

    PICTURE 14

5. Maintaining a slight downward pressure 6, fasten the keyboard to the
    base with the three screws 5 previously removed.

    PICTURE 15

6. Snap in the three caps 7 to cover the screws.

    PICTURE 16

7.2 1020   Top Cover

Subtopics
7.2.1 Top Cover Removal
7.2.2 Top Cover Replacement

7.2.1 Top Cover Removal

Keyboard Removal **(1010)**

1. Disconnect the two flexible cables from the connectors as shown.

    PICTURE 17

2. Open the left and right doors 4 and remove the three
    screws 3.

    PICTURE 18

3. Lift the top cover 5, then slide it forward to remove.
    Using a screwdriver, release the latch 6 if needed.

    PICTURE 19

    PICTURE 20

7.2.2 Top Cover Replacement

Warning: For the two flexible cables are very fragile, be careful when
handling them throughout this procedure.

1.   Reconnect the two flexible cables to the connectors on the system
     board.

2.   Place the rear of the top cover 1 back on the rear panel.

     Notes:

     a.   Make sure the two fingers located on both sides of the rear panel
          are inside of the top cover.

     b.   Position the three mounting tabs 3 are located outside of the rear
          panel 2.

     PICTURE 21

     PICTURE 22

3.   Firmly press the top cover as indicated by the arrows 4 so the five
     hooks 5 are engaged with their respective holes 6.

     PICTURE 23

4.   Fasten the top cover with the three screws 7.

     PICTURE 24

7.3 1030   System-Status Display Assembly

Keyboard Assembly **(1010)**
Top Cover **(1020)**

PICTURE 25

7.3 1030   System-Status Display Assembly

Keyboard Assembly **(1010)**
Top Cover **(1020)**

7.4 1035 Display Assembly

CAUTION:
The display assembly contains a high-voltage power supply.
To avoid electrical shock, make sure to power off the computer, unplug all
power cords from electrical outlet, and remove the rechargeable battery
before removing the display assembly.

The display assembly includes a fluorescent light that contains a small
amount of mercury. Dispose of the display assembly as required by local
ordinances or regulations.

    Keyboard Assembly **(1010)**
    Top Cover **(1020)**

PICTURE 26

Note: Hold the display assembly upright while removing four mounting
      screws 1.

PICTURE 27

7.5 1040 Hard Disk Drive

    Keyboard Assembly **(1010)**
    Top Cover **(1020)**
    Serial Adapter and Data/Fax Modem **(1070)**

Warning: A strong shock to the system can result in the permanent loss of
data and the formatting on the hard disk drive. Have the customer back up
all information on the hard disk drive.

PICTURE 28

7.6 1050 Diskette Drive

    Keyboard Assembly **(1010)**
    Top Cover **(1020)**

PICTURE 29

7.7 1060   System Board and Speaker

    Keyboard Assembly **(1010)**
    Top Cover **(1020)**
    Serial Adapter and Data/FAX Modem **(1070)**
    Hard Disk Drive **(1040)**
    Diskette Drive **(1050)**
    Backup Battery **(1087)**
    Standby Battery **(1090)**
    Display Assembly **(1035)**

Notes:

1. Disconnect all connectors and cables attached to the rear panel.

2. When you replace the system board with a new one, do not forget to
    remove the following parts from the old system board and install them
    on the new one.

        Memory-module kits (1082)
        Math Coprocessor (1085)

3. After installing a new system board, run *Automatic configuration* on
    your backup Reference Diskette to save your configuration data.

                         PICTURE 30

7.8 1070 *Serial Adapter and Data/FAX Modem*

    Keyboard Assembly **(1010)**
    Top Cover **(1020)**
    Memory-Module Kit (on Connector 2) **(1082)**

The following shows the removal of the Serial adapter. When you remove
the Data/Fax Modem adapter, perform the same procedure as shown.

PICTURE 31

7.9 1082 Memory-Module Kits

Keyboard Assembly **(1010)**

PICTURE 32

Notes:

1. Do not install two 4MB memory-module kits on the system board.
    Otherwise, the total memory size is lower than its actual size. Only
    one 4MB memory-module kit can be used in the system.

2. If an additional memory-module kit is first installed, follow the
    instructions to allow the system to work under optimum conditions.

        When installing a 2MB memory-module kit, install it into
        memory-module connector 1.
        When installing a 4MB or 8MB memory-module kit, install it into
        memory-module connector 2.

3. If two additional memory-module kits are installed, a combination of
    one 8MB and non-8MB, install the 8MB into memory-module connector 2.

7.10 1085 Math Coprocessor

Warning: Do not bend the pins when removing the math coprocessor. The
math coprocessor can be damaged by electrostatic discharge. Establish
personal grounding by touching a ground point with one hand before
touching the math coprocessor.

   Keyboard Assembly **(1010)**

PICTURE 33

Note: When reinstalling the math coprocessor, align the dot 1 on the math
     coprocessor with the beveled corner 2 of its socket, then firmly
     press it into place.

Note: When reinstalling the math coprocessor, align the dot 1 on the math

7.11 1087 Backup Battery

CAUTION:
The backup battery is a lithium battery and presents a fire, explosion, or
sever burn risk. Do not recharge it, remove its polarized connector,
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 backup battery, use only
Part No. 79F0986. Use of another battery could result in ignition or
explosion of the battery. Replacement batteries can be ordered from IBM
or IBM Authorized Dealers.

    Keyboard Assembly **(1010)**
    Top Cover **(1020)**

                        PICTURE 34

7.12 1090 Standby Battery

CAUTION:
The standby battery contains a small amount of nickel and cadmium. Do not
disassemble it, recharge it, throw it into fire or water, or short-circuit
it. Dispose of the battery as required by local ordinances or
regulations. Use only Part No. 79F0992, when replacing the standby
battery.

    Keyboard Assembly **(1010)**
    Top Cover **(1020)**

PICTURE 35

8.0 Locations

Subtopics
8.1 Front View
8.2 Rear View
8.3 Interior View

8.1 Front View

   1   Display (LCD)
   2   Release Buttons
   3   Contrast Control
   4   Brightness Control
   5   Power Switch
   6   Diskette-Eject Button
   7   Diskette Drive
   8   System-Status Display
   9   Numeric Keypad
  10   Mouse
  11   Keyboard
  12   Top Cover
  13   Economy Switch

PICTURE 36

8.2 Rear View

     1   Power Jack
     2   Pointing-Device Connector
     3   Parallel Connector
     4   Serial Connector
     5   Rechargeable Battery
     6   External PS/2 Display Connector
     7   System-Expansion Connector
     8   Rear Panel
     9   Communication-Interface Connector
         for an Optional Serial Adapter or Internal Data/Fax Modem

PICTURE 37

8.3 Interior View

    1   Display (LCD)
    2   Rechargeable Battery
    3   Diskette Drive
    4   System Board
    5   Speaker
    6   Hard Disk Drive
    7   Backup Battery
    8   Standby Battery

PICTURE 38

Subtopics
8.3.1 System Board

8.3.1 System Board

   1   Suspend/Resume Switch
   2   Backup Battery Connector
   3   Battery Contacts
   4   Standby-Battery Connector
   5   Diskette-Drive Connectors
   6   Display Power Connector
   7   Math Coprocessor
   8   Memory-Module Connector 1
   9   Memory-Module Connector 2
  10   Speaker Connector
  11   Keyboard connectors
  12   Jumper (password disable)
  13   Switch-Assembly Connector
  14   System-Status Display Connector
  15   Option Connector
  16   Hard Disk Drive Connectors
  17   Display Signal Connectors
  18   Suspend/Resume Switch Connector

PICTURE 39

8.4 *System-Status Display and Switches*

PICTURE 40

8.4 - 1