FRONT

PICTURE 1

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1.0 IBM Personal System/2 Hardware Maintenance Library

The IBM (*) Personal System/2 (*) Hardware Maintenance Library (HML)
consists of two manuals and also the Reference Diskettes and Advanced
Diagnostics Diskettes that contain the advanced diagnostics tests. The
HML provides the information needed to diagnose and isolate problems to a
field replaceable unit (FRU).

The *Hardware Maintenance Reference* manual has model-specific pamphlets
that provide reference information. The information includes general
information, product descriptions, removal and replacement procedures,
repair information, and introductory information about the advanced
diagnostic tests. A supplemental section is included for options,
adapters, and other information.

The *Hardware Maintenance Service* manual provides the necessary information
for a trained service person to diagnose a failure to the FRU. This
manual contains a general information pamphlet, model-specific service
pamphlets, and an external devices parts catalog. This manual also
includes the Reference Diskettes and Advanced Diagnostic Diskettes that
contain the advanced diagnostic tests.

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      International Business Machines Corporation.

2.0 General Safety

Use these rules to ensure general safety:

Observe good housekeeping in the area of the machines during and after maintenance.

When lifting any heavy object:

-   Ensure that you can stand safely without slipping.

-   Distribute the weight of the object equally between your feet.

-   Use a slow lifting force. Never move suddenly or twist when you attempt to lift.

-   Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back. *Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.*

Do not perform any action that causes hazards to the customer or that makes the equipment unsafe.

Before you start the machine, ensure that other service representatives and the customer's personnel are not in a hazardous position.

Put removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.

Keep your tool case away from walk areas so that other people will not trip over it.

Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.

Insert the ends of your necktie or scarf inside other clothing, or fasten them to your clothing with a clip, preferably nonconductive, that is approximately 8 centimeters (3 inches) from the ends.

Do not wear jewelry, chains, metal-frame eyeglasses, or metal clothing fasteners.

Remember: A metal object lets more current flow if you touch a live conductor.

Wear safety glasses when you are:

-   Using a hammer to drive pins or similar parts
-   Drilling with a power hand-drill
-   Using spring hooks or attaching springs
-   Soldering parts
-   Cutting wire or removing steel bands
-   Cleaning parts with solvents, chemicals, or cleaning fluids
-   Working in any other conditions that might be hazardous to your eyes.

After maintenance, reinstall all safety devices such as shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.

Remember: Safety devices protect personnel from hazards. You destroy the purpose of the devices if you do not reinstall them before completing your service call.

Reinstall all covers before returning the machine to the customer.

3.0 Electrical Safety

Observe these additional rules when working on equipment powered by
electricity:

Find the room emergency power-off (EPO) switch or disconnecting
switch. If an electrical accident occurs, you can then operate the
switch quickly.

Do not work alone under hazardous conditions or near equipment that
has hazardous voltages.

Disconnect all power to the machine:

-   Before removing or installing main units
-   Before working near power supplies
-   Before doing a mechanical inspection of power supplies
-   Before installing changes in machine circuits.

Before you start to work on the machine, unplug the machines power
cable. If you cannot unplug the cable easily, ask the customer to
switch off the wall box that supplies power to the machine and to lock
the wall box in the off position.

If you need to work on a machine that has *exposed* electrical circuits,
observe the following precautions:

-   Ensure that another person, familiar with the power-off controls,
    is near you.

    Remember: Another person must be there to switch off the power,
    if necessary.

    CAUTION:
    Some hand tools have handles covered with a soft material that
    does not insulate you when working with live electrical currents.
    Use only tools and testers that are suitable for the job you are
    doing.

-   Use only one hand when working with powered-on electrical
    equipment; keep the other hand in your pocket or behind your back.

    Remember: There must be a complete circuit to cause electrical
    shock. By observing the above rule, you may prevent a current
    from passing through your body.

-   When using testers, set the controls correctly and use the
    approved probe leads and accessories for that tester.

    CAUTION:
    Many customers have, near their equipment, rubber floor mats that
    contain small conductive fibers to decrease electrostatic
    discharges. Do not use this type of mat to protect yourself from
    electrical shock.

-   Stand on suitable rubber mats (obtained locally, if necessary) to
    insulate you from grounds such as metal floor strips and machine
    frames.

Observe the special safety precautions when you work with very high
voltages; these instructions are in the safety sections of maintenance
information. Use extreme care when measuring high voltages.

Regularly inspect and maintain your electrical hand tools to keep them
in a safe operational condition.

Do not use worn or broken tools and testers.

Never assume that power has been disconnected from a circuit. First,
check that it has been switched off.

Always look carefully for possible hazards in your work area.
Examples of these hazards are moist floors, nongrounded power
extension cables, power surges, and missing safety grounds.

Do not touch live electrical circuits with the reflective surface of a
plastic dental mirror. The surface is conductive and such can cause
personal injury and machine damage.

Unless the maintenance information specifically tells you, do not
service the following parts *with power to them* when they are removed
from their normal operating places in a machine:

-   Power supply units

- Pumps
- Blowers and fans
- Motor generators

and similar units. (This practice ensures correct grounding of the
units.)

If an electrical accident occurs:

- **Use caution; do not become a victim yourself.**
- **Switch off power.**
- **Send another person to get medical aid.**

4.0 Diskette Drives and Diskettes

There are two types of 3.5-inch diskette drives: 1.44MB (MB equals
1,048,576 bytes) and 720KB (KB equals 1,024 bytes). There also are two
types of 3.5-inch diskettes (1.0MB and 2.0MB).

The 1MB diskettes can be used in both 720KB and 1.44MB diskette drives;
however, 2MB diskettes can be used in 1.44MB diskette drives only. If you
intend to transfer diskettes between computers that have diskette drives
with different capacities, use only 1MB diskettes formatted to 720KB.

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4.1 Identifying Diskette Drives
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4.3 Formatting Diskettes

4.1 Identifying Diskette Drives

A 1.44MB diskette drive has "1.44" printed on the diskette eject button.
A 720KB diskette drive has no identification mark.

4.2 Identifying Diskettes

A 1MB diskette looks like this: It is usually labeled "1.0 MB
capacity" or "2HC" 1, and has a
square cutout 2.

PICTURE 2

A 2MB diskette looks like this: It has the letters "HD" 1, is
usually labeled "2.0 MB capacity" 2,
and has two square cutouts 3.

PICTURE 3

4.2 Identifying Diskettes

A 1MB diskette looks like this: It is usually labeled "1.0 MB
capacity" or "2HC" 1, and has a
square cutout 2.

PICTURE 2

PICTURE 3

4.3 Formatting Diskettes

A diskette must be formatted to prepare it for use. Your operating system
manual describes the commands for formatting diskettes. When using
commands that format a diskette before writing (for example, the DOS
command DISKCOPY), be sure the target diskette has the appropriate storage
capacity.

1MB Diskettes must be formatted to 720KB. You can do this with either a
720KB or a 1.44MB diskette drive. When you use a 1.44MB diskette drive,
be sure to specify a format of 720KB; otherwise the diskette will be
formatted to 1.44MB with unpredictable results.

2MB Diskettes must be formatted to 1.44MB. To do this, you must use a
1.44MB diskette drive.

4.4 Write Protecting Diskettes

It is possible to format a diskette or write (record) information onto a
diskette unintentionally. Important information could be lost. For this
reason, you should write protect important diskettes.

Some diskettes, such as the Reference Diskette, are permanently write
protected (write-protect switch is removed). When diskettes are write
protected, you can read from the diskettes, but you cannot write onto
them.

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

    To prevent writing onto a diskette, slide the switch down.
    To allow writing onto a diskette, slide the switch up.

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