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80-100 GENERAL INFORMATION

The error information section of this manual describes how to decode sense bytes and other information that is recorded when an error occurs. For information on how to run ERAP, see paragraph 99-068.

Because each section, 81-000 through 89-000, is assigned to a different device, each section is given a different section number. The number and name of the sections are as follows:

Section	Name
81-000	Main Storage Processor
82-000	Control Processor
83-000	Disk
84-000	Diskette
85-000	Line Printers
86-000	Work Station Controller (local and remote)
87-000	Display Stations
88-000	Matrix Printers
89-000	Data Communications

Note: ERAP information for the 1255 Magnetic Character Reader can be found in the *IBM System/34 1255 Attachment Feature Theory/Maintenance*, SY31-0521.

80-111 ERROR RECORDING ANALYSIS PROCEDURE (ERAP)

The primary function of ERAP (error recording analysis procedure) is to display on the display station or on the printer (either line printer or serial printer) the error data that has been recorded for each device on the system.

The data is divided into three classes; I/O counter table, error counter table, and error history table.

I/O Counter Tables: I/O counter tables are used to collect statistics by function and device. These statistics show the number of actions by that device. For example, the number of verifies, writes, read or scan reads, and non-zero seeks for disk drive A.

Note: The I/O counter tables are updated once in each 6 minutes of SSP operation. No error recording is done if errors occur while diagnostic supervisors are running.

Error Counter Tables: An error counter table includes a series of counters with each counter assigned to collect a specific type of error on a device.

Error History Table: An error history table includes a series of fixed length entries with each entry representing an error on that device. The entries are made in the table so that the latest error is first in the table.

The secondary function of error recording analysis procedure is to supply the ability to reset I/O counter and error counter tables. (I/O and error counter tables are reset to zeros when the disk initialize program is run.) The error history table does not reset. When the table is full and another error occurs, the oldest error is removed from the table to make room for the new error.

80-200 ELECTROSTATIC DISCHARGE (ESD) PROBLEMS

Under some local conditions, such as high temperature and low humidity, a machine may receive an ESD (electrostatic discharge) from personnel or from office equipment making contact with the machine covers. Various levels of discharge intensity may cause intermittent system failures that might be displayed in one of the following ways:

- The ERAP may contain several temporary disk errors such as: sector checks, sector sync checks, PLO (phase lock oscillator) checks, CRC (cyclic redundancy checks), off track checks, and disk seek errors.
- Intermittent processor checks may occur that are not associated with specific programs. There will possibly be some hardware checks but normally a software check will be displayed as hexadecimal 1111 in the 08 register of the LSR (local storage register). The checks usually will be hexadecimal 0CXX or hexadecimal 1DXX in the 02 register of the LSR.
- There may be messages to the operator that there is not valid data on the disk. This must be cleared by running the BUILD procedure (see *SSP Procedures* chapter in the *IBM System/34 System Support Reference Manual*, SC21-5155).

If the conditions of the environment are severe and the ESD level is high, even a correctly assembled and adjusted machine may have failures. If the adjustments are correct, possibly the only way to decrease the effect on machine performance is to decrease or remove the source of the static (use antistatic solutions on floor coverings; keep office equipment from rubbing or hitting the system covers, etc).

The following check and adjustment procedures identifies methods of correcting those areas of the machine that are affected by an electrostatic discharge.

80-210 Power Distribution for ESD

Check all of the screws in the power compartment for tightness. If any screw hole is damaged, the suitable changes must be made to correct the damage (swap parts, use nut inserts, or larger size screws). The following screws are of specific importance:

- The screws in the AC and DC terminal blocks and ground plates (see *Section 05* and the *Parts Catalog*).
- The mounting screws that mount the line filter box (see reference drawing in paragraph 05-220).

DANGER

Disconnect the line cord before checking the screws holding the line cord.

- The screws holding the line cord wires to the line filters and the filter assembly (see reference drawing in paragraph 05-220).

Ensure that the system frame is correctly grounded to a service ground. This must not be conduit ground at the outlet. Ensure that the AC input voltage is inside the tolerance given. See *IBM System/34 Installation Manual – Physical Planning*, GA21-9242 for correct grounding and voltage information.

Keep power cables in the power supply assemblies and those distributing power to the gates away from covers or external frame parts.

Note: The cables between A-A1 and A-A2 must not touch the disk frame.

Cables to a thermal must follow a path separate from other cables where possible.

80-220 Covers and Frame for ESD

Check all of the mechanical mounting screws in the system for tightness. If any screw holes are damaged, use a larger size screw or a nut insert.

Tighten the screws that fasten the internal shields in place behind the customer access cover. The shields cover the diskette area, the power supply assemblies, and the cable tower connection area. See *Mechanical Assembly* in the *Parts Catalog*.

Tighten the screws that hold the ground straps. Place the large washer between the screw head and the strap to force the largest surface area of the ground strap against the frame, cover, or unit. Ground straps are located in the following places:

- From the A and B-gates to the frame at each hinge point.
- From each of the external covers to the frame.
- From each disk assembly casting to the frame.
- From each external I/O device cable to the I/O tower (see paragraph 45-450).

Ensure that the gate latches on the A-gate are adjusted to prevent contact of the latch plates with the end cover.

Check the base of the A-gate assembly to ensure that no metal is rubbing against the frame. If rubbing does occur, adjust the gate assembly away from the frame.

Ensure that the A-gate hinge guards are in the inward position to prevent them from touching the cover. See *A-Gate Assembly* in the *Parts Catalog*.

Adjust the cover latches to hold the covers as close to the frame as possible. See *Covers, Mounting Hardware, and Frame Assembly* in the *Parts Catalog*.

The covers must be adjusted correctly for good pressure contact of the horizontal finger stock **C** and contact of the cover flange **B** to the base at as many points along the flange as possible. See Figure 80-1.

Adjust the vertical finger stock channels **D** on each cover to match with the knife edges **A** that are installed on the frame. Ensure that the back of the vertical finger stock channels makes good surface contact to the cover. See Figure 80-1.

80-230 I/O Devices and Cables for ESD

Ensure that the internal cables are in correct position in the channels and kept away from external covers and the frame parts.

Ensure that the cables between the A-A1 and A-A2 boards do not touch the cover or the vertical post at the hinge point.

You may have to reseal the cards to give better contact points. High resistance contacts can cause electrical noise.

Work Stations

Ensure that the shield on the internal work station cable is correctly grounded at each port position and at the end of the cable that goes into the A-A2 board.

Ensure that the twinaxial cables that connect the system I/O tower to the work stations are tight and in correct position (not made into a coil or hung on a wall, etc).

Ensure that the work stations are correctly grounded to a service ground.

Printers

Ensure that the cables in the line printer are correctly seated for correct system performance when the printer is printing. The extra length of the cable should not be made into a coil and placed inside the printer covers.

Ensure that the line printer is correctly grounded to a service ground.

Ensure that the internal printer cables are against the frame wall (as far across the machine as possible) before they drop down to the I/O cable tower.

Diskette

Correct diskette head alignment is important to the diskette performance.

Keep diskettes in their plastic envelopes except when in use.

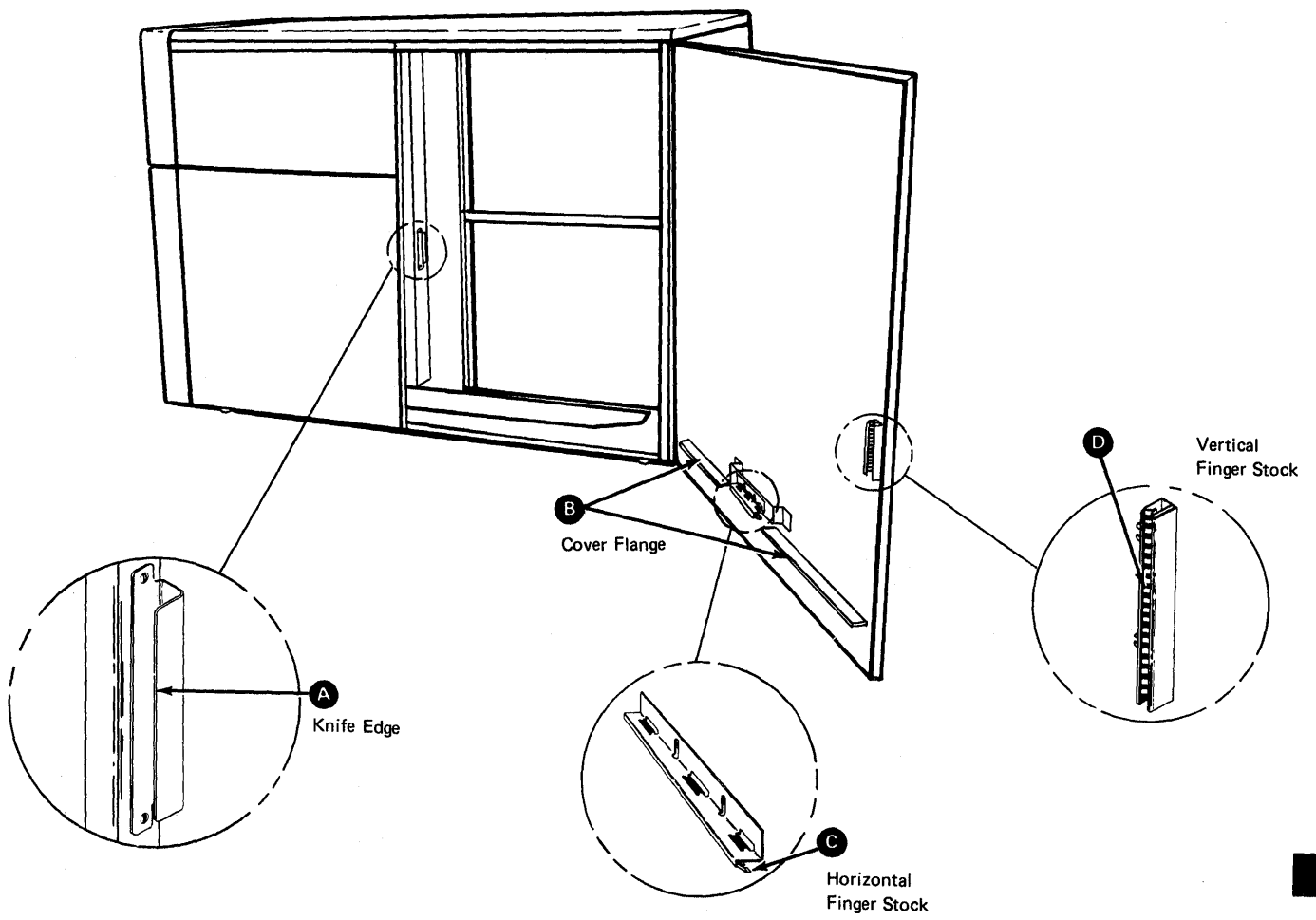


Figure 80-1. Covers and Frames

Communications

Ensure that external modems are connected to correctly grounded outlets.

62PC Disk

There are no special ESD needs for the 62PC disk drive.

62EH Disk

The position of disk cables **A** on the gate should be as shown in Figure 80-2. Feature cables should not be placed across disk cables. Each disk cable should not touch any other cable.

Check that the .01 μ f capacitors on the A-A2 and A-A3 board from frame ground to card/pin A4B05 (+24 V) and card/pin A5B13 (-24 V).

Ensure that the seek rate of the disk is correctly adjusted. (See paragraph 09-140 for adjustment procedure.)

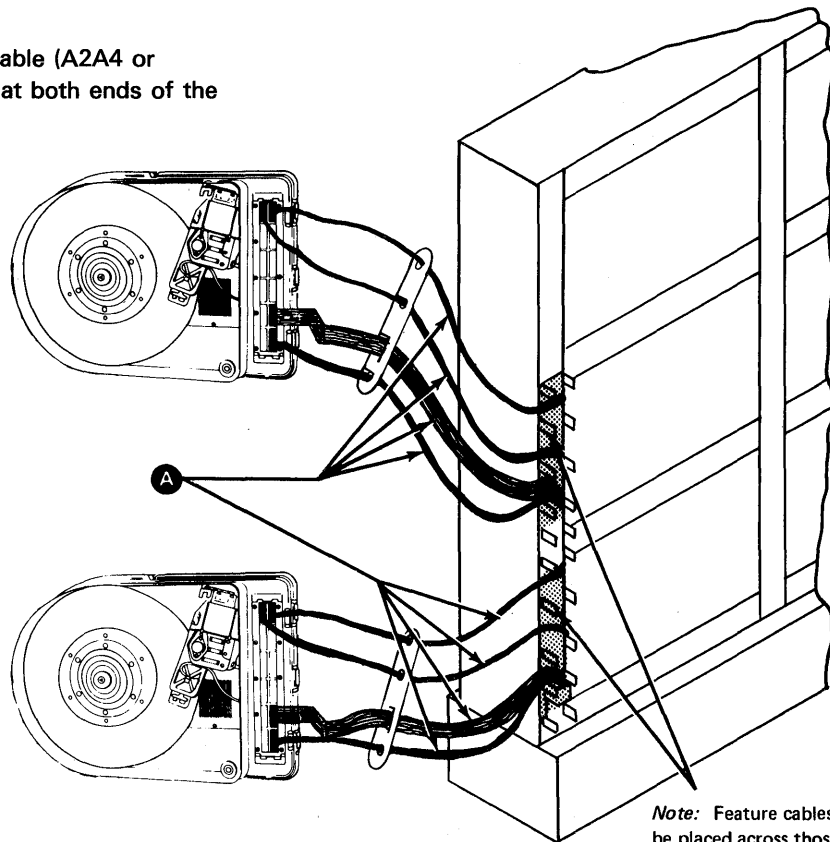
Ensure that the shield on the servo cable (A2A4 or A3A4 to D-W1B1) is tied to ground at both ends of the cable (see paragraph 09-120).

Check the disk shock mounts for high resistance to ground with the ground strap removed from the frame. (See paragraphs 09-100 and 09-110.)

Ensure that the disk spindle lock/antistatic arm is correctly centered on the disk spindle. (See paragraph 09-070.)

The disk motor antistatic brush must make correct contact and have correct tension. (See paragraph 09-060.)

Ensure that the black ground wire coming from the DC distribution point (see paragraph 05-360) is screwed tight at the disk and the connectors at the A-A2 and A-A3 board are correctly fastened to a D08 pin.



Note: Feature cables must not be placed across those for the disk in the shaded area shown. (The Channel feature cable is to pass under those of the disk.)

Figure 80-2. I/O Devices and Cables