

**DEC DATASYSTEM  
Installation Manual**

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# CHAPTER 1 INTRODUCTION

## 1.1 GENERAL

This document provides the information needed for installing the H9500 series cabinet, either stand-alone or multi-cabinet systems. It takes approximately 1 hour to unpack and assemble a 3-cabinet system.

## 1.2 HANDLING

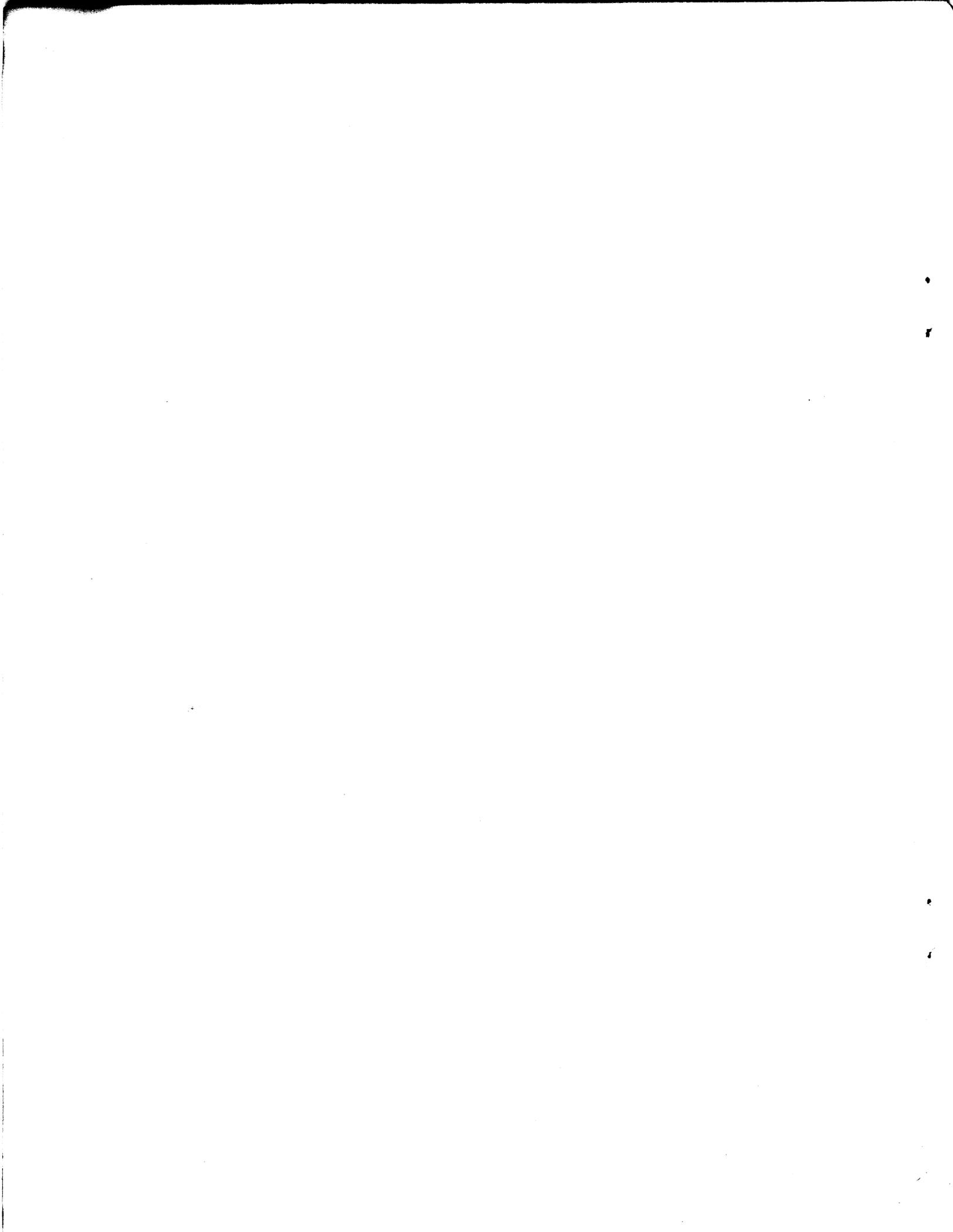
The cabinet has shock-isolating casters, and therefore will arrive without a shipping skid. Because the cabinet is top heavy, a forklift should *not* be used when moving it. However, if it is absolutely necessary to use a forklift, insert it from the front or back of a double-width cabinet, or from the side of a single-width cabinet. Only one tine of a forklift will fit under a single-width cabinet; therefore, take care to support and balance the cabinet before moving it.

### CAUTION

**The cabinet's high center of gravity must be kept in mind whenever moving it. It may become unstable when tilted more than 10 degrees.**

## 1.3 INSPECTION

Visually inspect the cabinet carefully for possible shipping damage. Check the packing list enclosed with the cabinet for lost or missing items. Report any damaged items to the Field Service branch supervisor and to the local carrier. Report missing items to Field Service Logistics.



## CHAPTER 2 INSTALLATION

### 2.1 REQUIRED TOOLS

Tools required for installation are listed below.

1. 1.43 cm (9/16 in.) wrench or adjustable wrench
2. Phillips screwdriver
3. Thin-bladed tool, such as a metal ruler
4. Spirit level (optional)
5. Spanner wrench, i.e., rear door opening tool supplied with CPU cabinet (Figure 2-1) (DEC 12-13091)

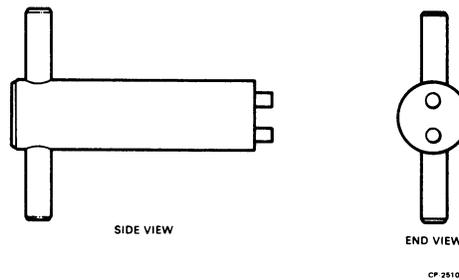


Figure 2-1 Rear Door Opening Tool  
(DEC 12-13091)

### 2.2 CABINET DISASSEMBLY

The following steps explain removing the cabinet's outer panels and how to install the interlock system. Steps one and two are necessary for all cabinets. Steps three through five, describing removal of the remainder of the cabinet's outer panels, are necessary when two (or more) cabinets are bolted together.

#### NOTE

Ground straps (10 gauge stranded wire) connect the front panel, end panels, and rear door to the frame of the cabinet. To remove a panel, separate the panel from the frame (see following procedure), disconnect the ground strap, then completely remove the panel.

1. **Remove Front Panel.**

There are two variations of the front panel. One is 85 cm (28 in) high and has an array of vertical slots across its front. Approximately 2.54 cm (1 in) behind the last slot at each end of the array is a quick release latch. Release the panel by inserting a thin-bladed tool, such as a thin ruler into one of the end slots, while pulling the corner of the panel away from the cabinet. Release the other top corner in the same manner and lift the front panel up and off the two tabs on the front of the cabinet.

The second variation is 30 cm (12 in) high and, instead of an array of slots, has two 1/4 inch diameter holes. In the same manner as above, insert a tool into each hole and lift the front panel off the two tabs on the front of the cabinet.

2. **Stabilizer Arm and Mechanical Interlock.**

Each cabinet has two mechanical interlock rods, one located in the middle of each front vertical upright, positioned over a stabilizer arm channel (Figure 2-2). To remove the stabilizer arm, untape it and, reaching into the cabinet, lift the interlock rod while sliding the arm completely out of its channel. Screw a leveler foot (shipped loose piece) into the end of each arm (Figure 2-3).

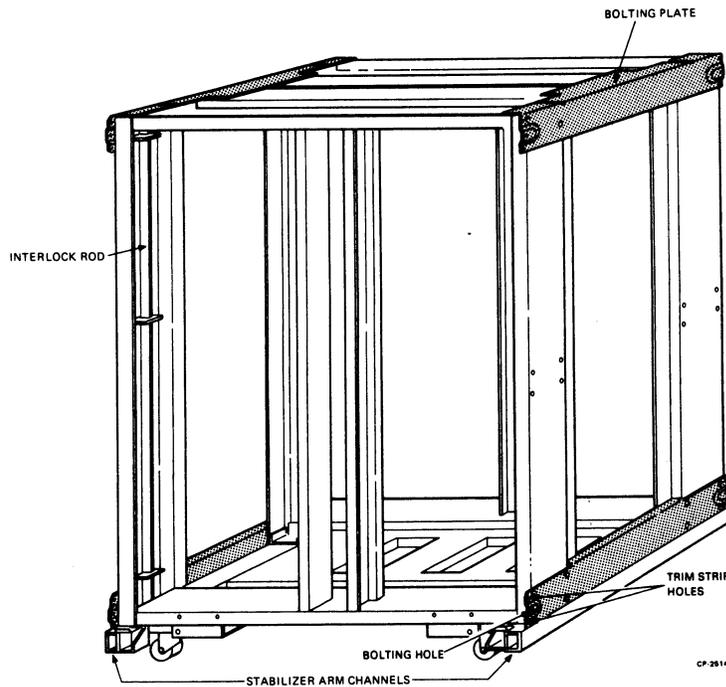


Figure 2-2 Cabinet Frame, Front View

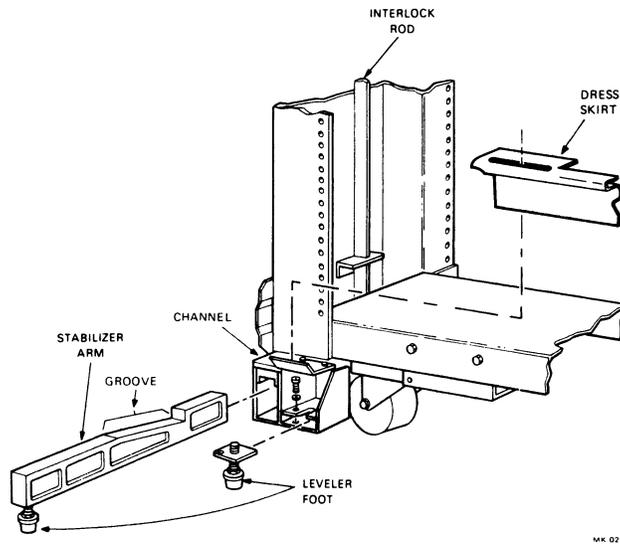


Figure 2-3 Leveler Foot and Stabilizer Arm

Install the stabilizer arm by lifting the interlock rod while sliding the arm into its channel until the rod is able to rest in the groove at the top of the arm. Now lower the leveler foot on each arm until it touches the floor, but still slides easily along the floor.

Before extending a sliding device from the cabinet, pull the stabilizer arm forward until the interlock rod falls into the groove, thereby holding the stabilizer arm in the extended position.

3. **Remove Rear Door.**

Unlock the rear door by inserting the door opening tool (Figure 2-1) and turning it 1/4 turn in a counterclockwise direction (tool is a loose piece shipped with the cabinet). Remove the door by swinging it open 90 degrees and lifting it off at the hinges (Figure 2-4).

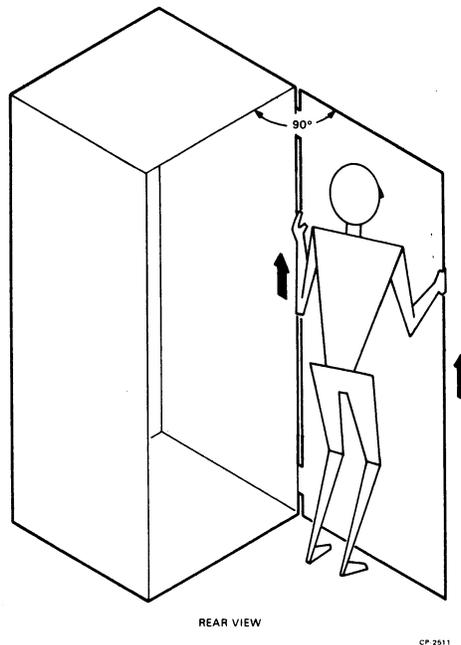


Figure 2-4 Removing Back Door

4. **Remove Top Cover.**

Reach into the cabinet and find the fastener on the underside of the top cover. It is located as shown in Figure 2-5. If hard-mounted equipment is blocking access to the fastener, the fastener was not installed. If slide-mounted equipment is blocking access, pull the stabilizer arms out into the lock position, remove shipping brackets, and slide out the equipment.

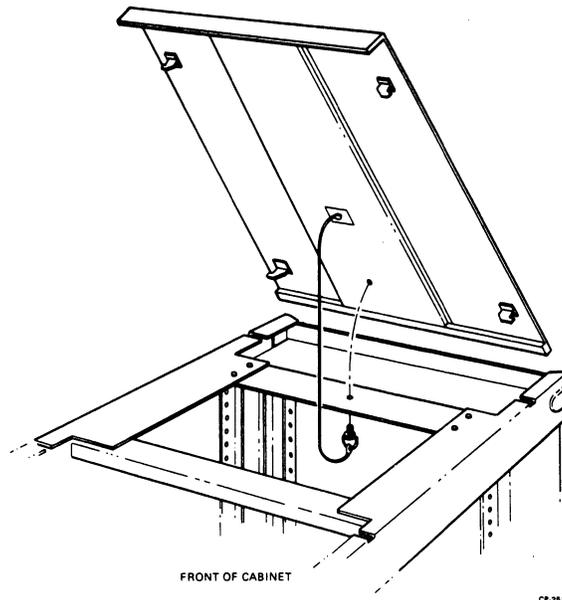


Figure 2-5 Top Cover Fastener

Release the top cover by turning the fastener 1/4 turn in a counterclockwise direction. When released, the fastener will hang from the cover support by a wire. Push the top cover forward about 1.27 cm (1/2 in). Walk to the front of the cabinet and lift off the cover.

5. **Remove End Panels.**

Remove each end panel by grasping it on both sides and lifting.

### **2.3 CABINET LEVELING**

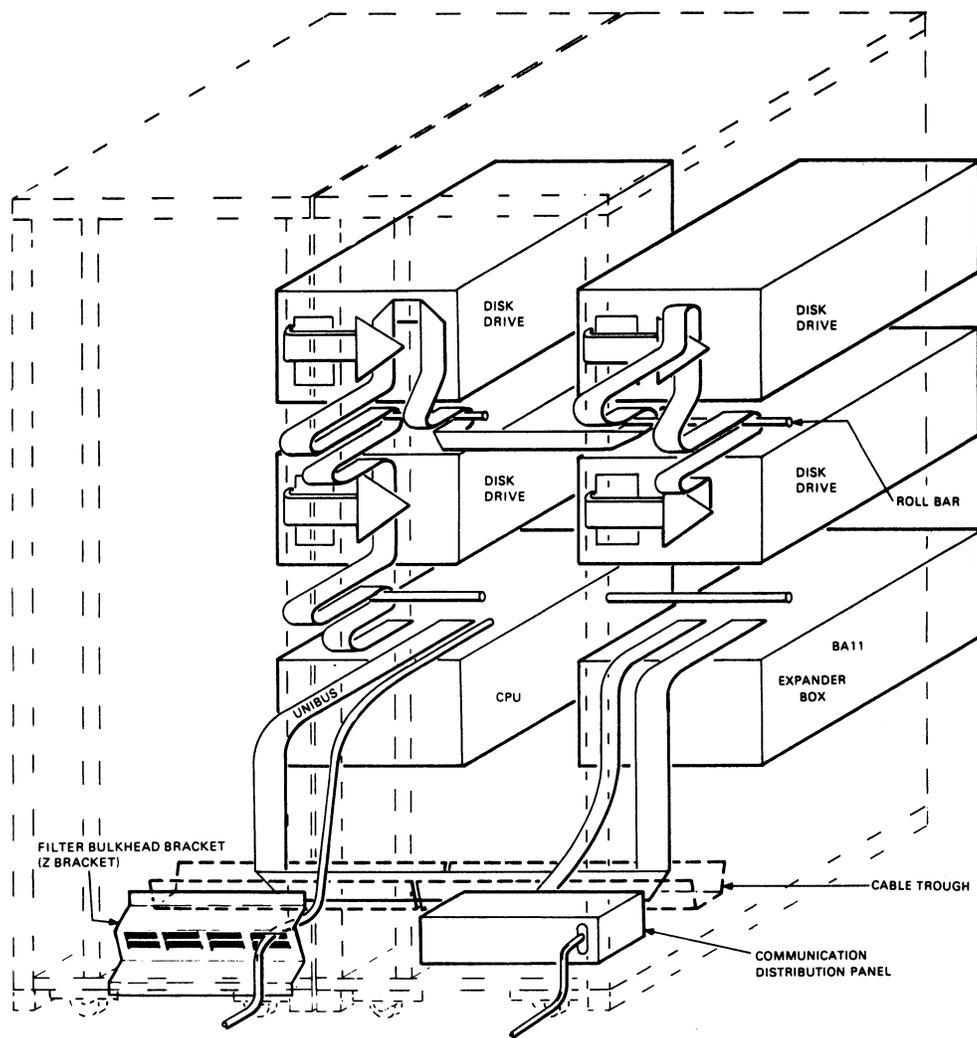
Due to weight differentials and a self-contained shock mount, the cabinets must be leveled at the time of installation. Proceed as follows to level them. (In a multi-cabinet system, push the cabinets into adjacent positions before leveling.)

1. Install the leveler feet (shipped loose piece) into the cabinet frame (Figure 2-3).
2. Using a 1.43 cm (9/16 in) wrench, lower the leveler feet until all four on each cabinet contact the floor.
3. Adjust the cabinet until most of its weight is shifted from the casters to the leveler feet. Due to the shock-isolating system, the casters will always touch the floor even when all of the cabinet's weight is transferred to the leveler feet. In a multi-cabinet system, adjust the highest cabinet first.
4. Using a spirit level, adjust the leveler feet until the cabinet is level (optional).
5. Adjust the adjacent cabinets to the level of the highest cabinet.

### **2.4 INTERCONNECT CABINETS**

Each cabinet has four bolting plates: one on each upper and lower side edge (Figure 2-2). To bolt the cabinets together, proceed as follows.

1. The bolting hole (the middle hole) at the end of each plate should align with the bolting hole on the plate of the adjacent cabinet.
2. Insert a 1/4-20 bolt into the lined-up bolting plate holes, add a kep nut, and tighten. (Bolts and nuts are provided.) This will provide a good horizontal alignment across the cabinet system.
3. After all the cabinets have been bolted together, extend the stabilizer arms and adjust the leveler feet until each touches, but still slides easily along the floor.



MK 0256

**Figure 2-6 Typical Data System Cabling Scheme**  
 (Rear view of cabinets with components pushed out halfway; roll bar is at front of cabinet.)

## 2.5 CABLING

Many features of the H9500 series cabinet were designed for the efficient use of cabling techniques aimed at reducing the possibility of cable damage and improving serviceability and appearance (Figure 2-6). At the center bottom of each cabinet is a cable trough that holds cables running horizontally within and between cabinets. Another aid in the arrangement of cables is the rod and tube assembly known as a "roll bar." Cables running vertically between devices within the same cabinet should be draped around the roll bar. This ensures that the cable will be long enough when the device is extended for servicing. Signal cables exiting a cabinet containing a central processing unit (CPU) pass through a filter bulkhead bracket. If the system includes a communications multiplexer, cables to the terminals exit the cabinet through the communications distribution panel. All cables should exit the cabinet in the space between the frame and the back door, not through the bottom of the cabinet (Figure 2-7). (The connection of cables between components requires no special tools.)

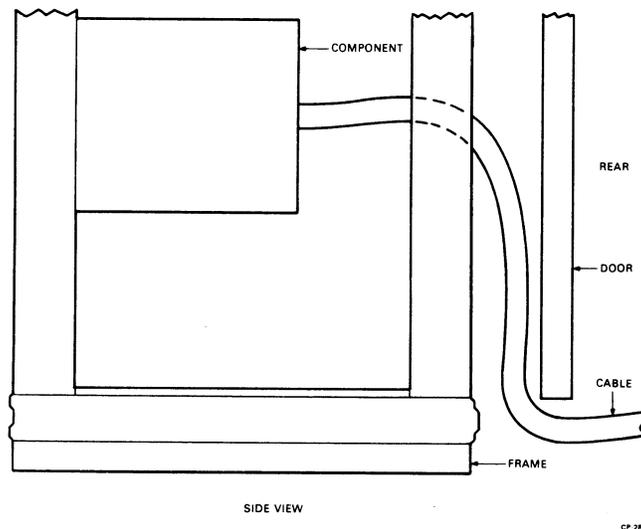


Figure 2-7 Cable Exit from Cabinet

### 2.5.1 Internal Signal Cables

Internal signal cables, such as the RK05 disk drive bus, wrap around a roll bar as they run vertically between components. Figure 2-6 shows the position of the roll bars in a pair of single cabinets. This drawing also shows a cable trough containing internal signal cables that run horizontally across the bottom of the cabinets.

### 2.5.2 AC Power Cables

Three types of cables relating to ac power are used in these systems: external ac line cords, internal ac power cords, and power control signal cables. Each cabinet has an ac line cord that connects the power control to an outside ac power source. This cable exits the single and double cabinet from a specific location (Figure 2-8) and drops between the cabinet frame and the back door.

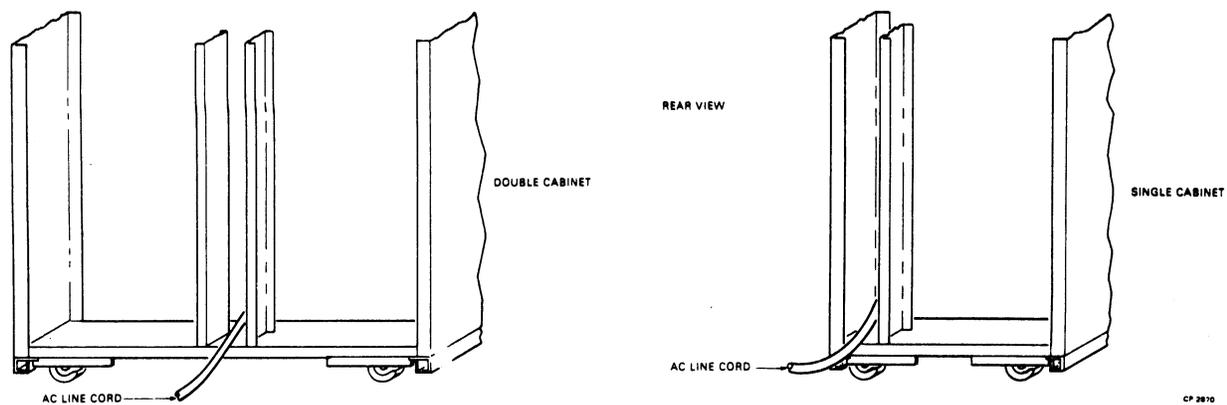


Figure 2-8 Exit of AC Line Cord

Each device in the cabinet that requires ac power plugs into an outlet on the power control box at the lower front of the cabinet. Low power consumption, free-standing devices (i.e., terminals, small line printers, and card readers) located near the CPU should plug into a switched convenience outlet in the closest power control box. (It is important not to exceed the current-carrying capacity of the power controller.) The power control signal cable starts at the power on/off switch on the initializer panel of the CPU cabinet and connects each power control box in the system in series. Therefore, when the system is powered up, all the components start at the same time. These round, thin, gray cables are tie-wrapped to the front uprights whenever possible in order to keep them out of the way of slide-mounted equipment.

### 2.5.3 External Signal Cables

External signal cables connect the central processing unit to its peripheral devices (i.e., line printers, teleprinters, video terminals). These cables exit the CPU cabinet by means of a filter bulkhead bracket and then drop between the cabinet and back door. If a signal cable includes a static suppression filter, the filter is attached to the filter bulkhead bracket (Paragraph 2.5.3.1).

The Massbus connects the CPU to large disk drives. Because of the large diameter of the Massbus, a mounting panel and zero insertion force connector were designed to hold it at a right angle as it exits the cabinet (Figure 2-9). The Massbus connector mounting panel is in the lower portion of the rear uprights of the CPU cabinet (on the right side when in a double-width cabinet).

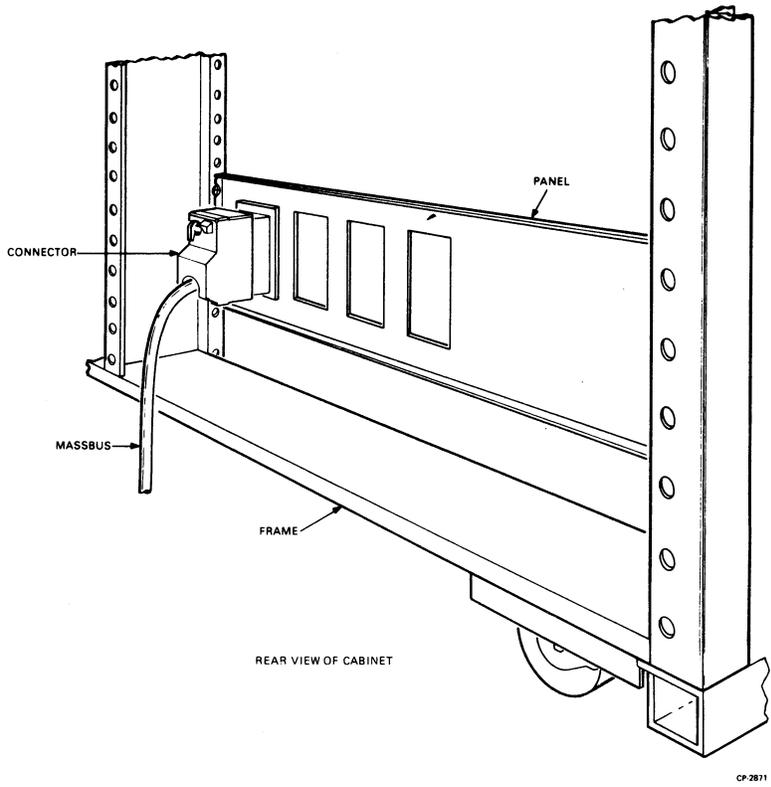


Figure 2-9 Massbus Connector and Mounting Panel

**2.5.3.1 Static Suppression Filters** - Static suppression filters are attached to some external signal cables to divert and dissipate energy wavefronts originating in peripheral devices before they can disrupt the CPU or main memory. When using in-line filters, it is necessary to have a properly grounded system providing a path for the static energy to dissipate. The system receives its ground through the power cord, which is connected to a properly grounded receptacle. A good RF connection must be made between the power control and the cabinetry.

To install the filter bulkhead bracket properly, insert a screw through both surfaces and install the appropriate size kee nut (or lockwasher and regular nut) and tighten. Tinnerman nuts should not be used because they do not contain lockwashers and limit the mating conductive surface area to that of the nut itself. Use a Tinnerman nut, with a lockwasher under the head of the bolt, only if no other parts are available.

Good installation procedures are necessary in order to benefit from using in-line filters. Signal and power cables should be separated as much as possible. Cables connected to the in-bound side of a filter should be separated from cables connected to the out-bound side of the filter.

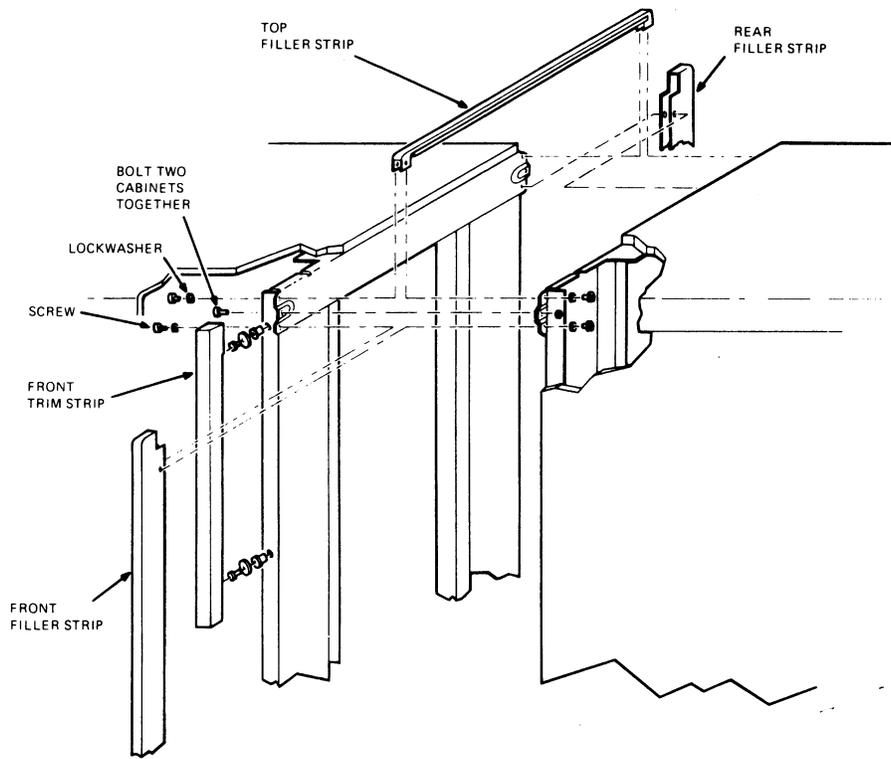
#### **2.5.4 Typical Cabling Configurations**

Figures 2-11 through 2-14 show typical system configurations and their cabling arrangements.

### **2.6 CABINET REASSEMBLY**

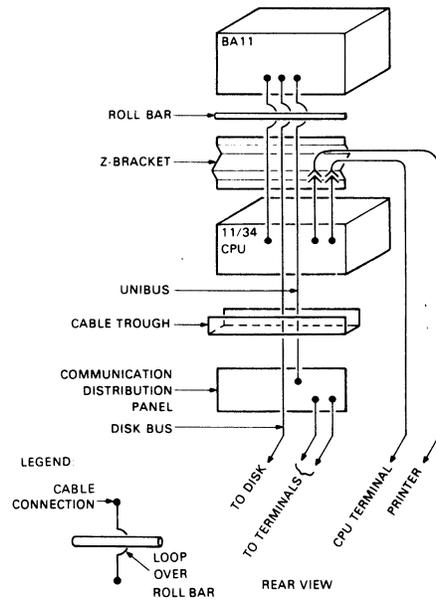
To reassemble each cabinet:

1. Front, top, and rear filler strips are shipped loose piece with multi-cabinet systems. Attach them as shown in Figure 2-10.
2. Add the front vertical trim strip.
3. Hook the dress skirt (shipped loose piece) over each tab at the lower front corners of the cabinet (Figure 2-3).
4. Remount the panels and doors in the same way as they were removed. Reconnect all ground straps. Proceed in this order.
  - a. End Panels
  - b. Top Cover
  - c. Rear Door
  - d. Front Panel



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Figure 2-10 Filler Strips - Intercabinet



MK-0261

Figure 2-11 Datasystem 530 Cabling Diagram  
Free-Standing Disk, Basic Configuration

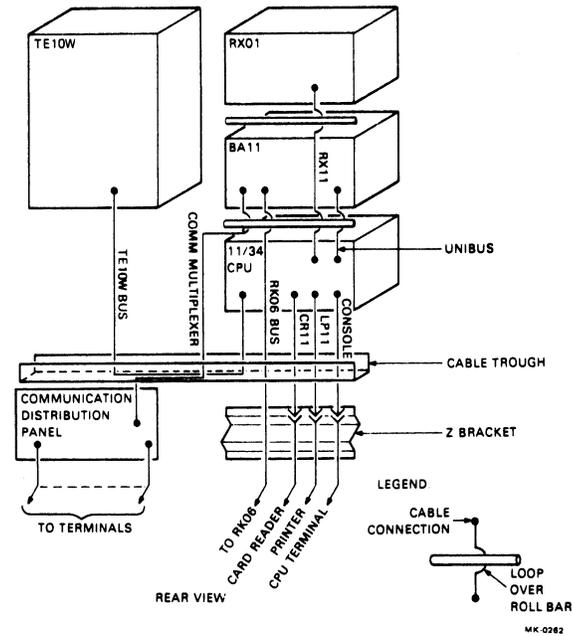


Figure 2-12 Datasystem 530 Cabling Diagram  
Free-Standing RK06 Disk with TE10W Configuration

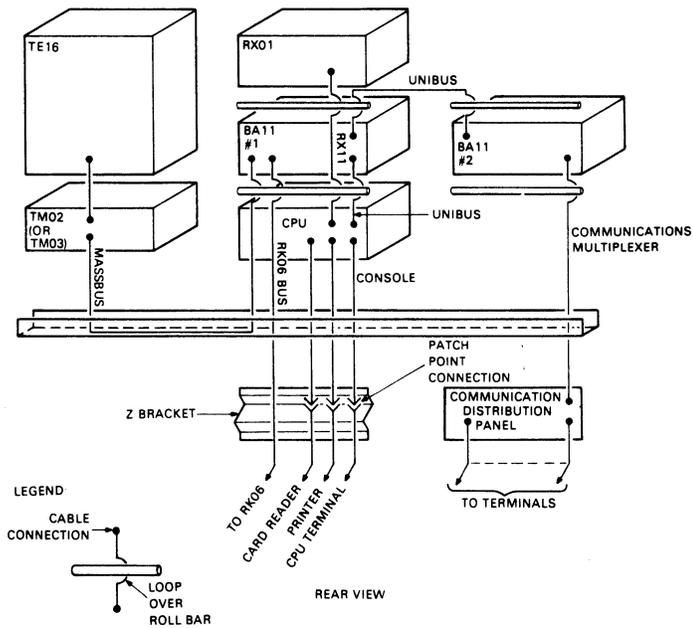


Figure 2-13 Datasystem 530 Cabling Diagram  
Free-Standing RK06 Disk with TE16 Configuration

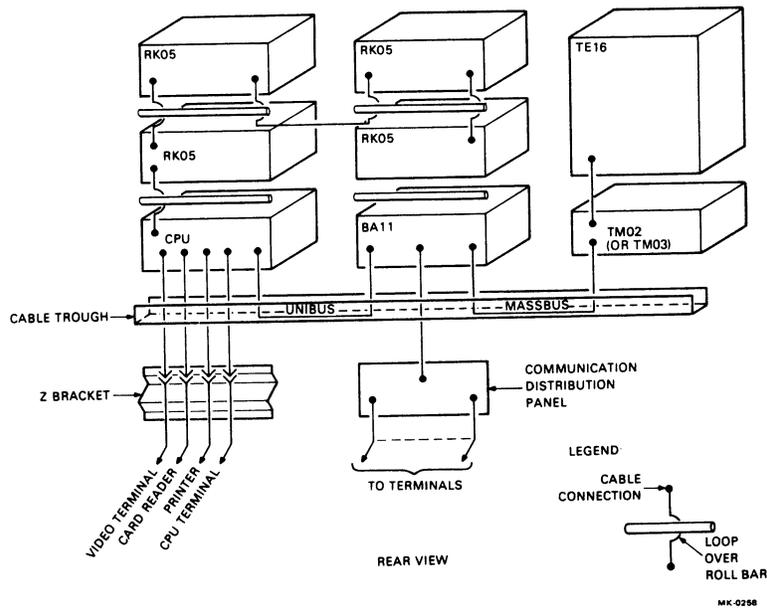


Figure 2-14 Datasystem 534 TE16 Configuration

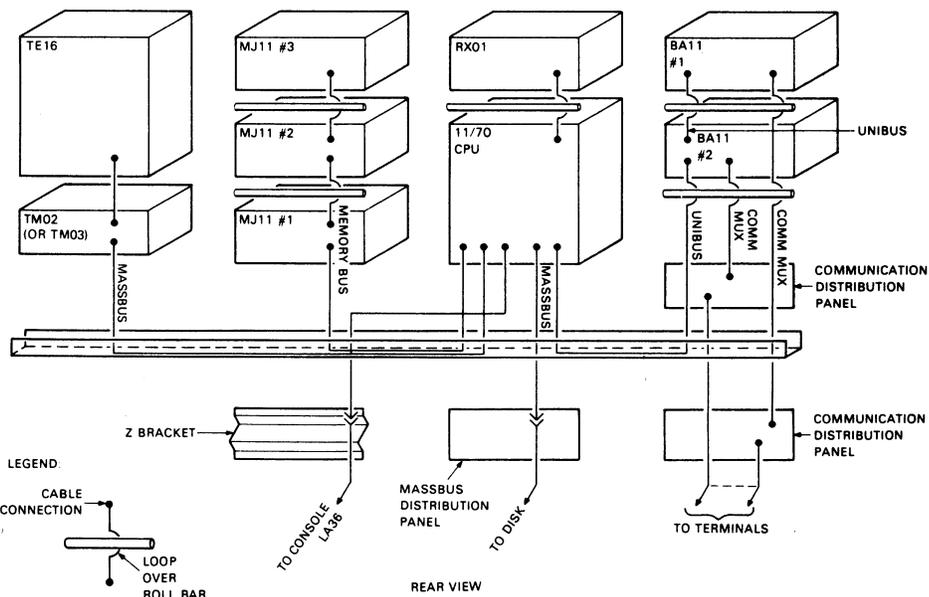
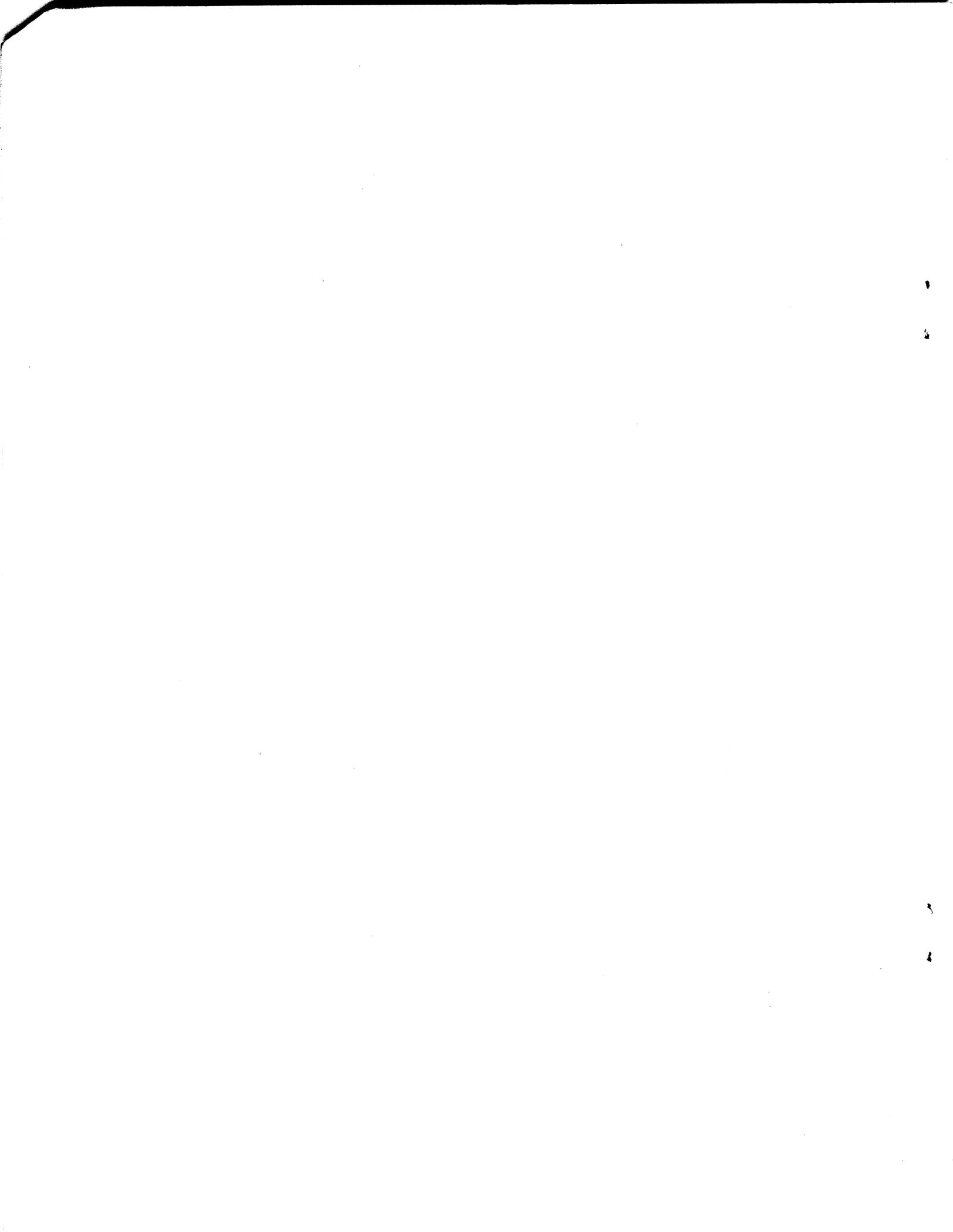


Figure 2-15 Datasystem 570 Cabling Diagram



## CHAPTER 3 ACCEPTANCE AND TEST PROCEDURES

It is the responsibility of DIGITAL's Field Service group to install the equipment at the customer's site and to see that it runs at an acceptable level (free from errors). Prior to installation, the salesman and the Field Service representative should call on the customer to ensure that the location, wiring, and air conditioning are adequate for the equipment to be installed.

After the system is installed, the Field Service representative will run diagnostics for each component of the machine. For an adequate test, each diagnostic should run a minimum of 10 minutes. Individual diagnostics must run longer if there are any errors. Diagnostics are available for each of the following devices.

- Processors
- Memory
- Bootstrap loaders
- Card readers
- Communication devices
- Processor options
- Line printers
- Paper tape readers
- Disks
- DECTape
- Video devices

DECX11 is currently the exerciser that checks maximum system hardware throughput in a worst-case situation. However, it has been found that one of the best exercises for any given machine is to run the customer's operating system. These operating systems should be run substantially longer than the individual diagnostics; the minimum run time should be 2 to 3 hours.

### NOTE

**These are recommendations only and usage will vary depending on system, type, size, etc.**

There is a continuing effort by DIGITAL to improve diagnostics and increase the reliability of our customer's machines. As new diagnostics are developed, the Field Service group will distribute them to the field organization.

Once the field engineer and the customer are satisfied that the machine is working correctly, the customer is required to sign an acceptance form. It is recommended that some of the customer's software be run on the equipment before it is considered in good running condition.



## Reader's Comments

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