## SECTION II
## INSTALLATION AND INITIAL CHECKOUT

### 2.1 INTRODUCTION

This section contains a summary of interface lines, information for uncrating and mounting the unit, as well as the procedure for electronically connecting and initially checking out the disk drive.

### 2.2 UNCRATING THE DISK DRIVE

The D3000 Disk Drive is shipped in a heavy duty container consisting of an inner and outer carton. Use of the dual carton minimizes the possibility of damage during shipment. To uncrate the disk drive:

(1) Place the shipping carton in the position indicated by the arrows on the outer carton.

(2) Open the outer carton and remove the packing material.

(3) Lift the drive and its shipping frame and set it on a clean work surface. Ensure access to the top of the unit.

*CAUTION*

*THE D3000 DISK DRIVE WEIGHS 59 KG [130 POUNDS] IN ITS SHIPPING CONFIGURATION. DO NOT ATTEMPT TO LIFT THE DRIVE WITHOUT SUFFICIENT PERSONNEL.*

(4) Check the contents of the shipping container against the packing slip and investigate for possible damage. Notify the carrier if damage is noted.

*CAUTION*

*TO AVOID DAMAGE TO EQUIPMENT, DO NOT ATTEMPT TO APPLY POWER TO THE DISK DRIVE UNTIL ALL POSITIONER AND MECHANISM SHIPPING RESTRAINTS HAVE BEEN REMOVED.*

(5) Remove the polyethylene bag that surrounds the unit; remove the dust cover as follows.

- ☐ Top Load Models
  - (i) Remove the 4 screws around the top of the adapter bowl.
  - (ii) Remove the 5 screws along the sides of the unit.
  - (iii) Lift the rear of the dust cover approximately 30°, then carefully move the cover toward the rear of the unit until the front edge of the cover clears the bezel; remove the dust cover.
  - (iv) Remove the circular metal protective plate from the adapter bowl.
- ☐ Front Load Models.
  - (i) Remove the 2 screws on top of the dust cover.
  - (ii) Remove the 5 screws along the sides of the unit.
  - (iii) Slide the dust cover toward the rear of the unit until the front edge clears the bezel.
  - (iv) Remove the dust cover.
  - (v) Remove the two tie-down straps used to secure the front door and cartridge receiver during shipment. Figure 2-1 shows the relationship of these restraints to the shipping frame and disk drive.

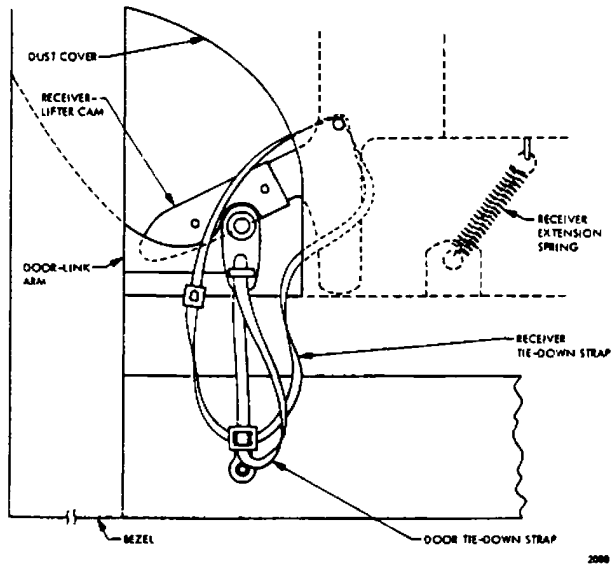


Figure 2-1. Cartridge Receiver and Front Door Shipping Restraint

(6) Locate and loosen the two retaining screws (shown in Figure 2-2) on top of the Logic PCBA; rotate the hinged card structure up and to the rear. The spring-loaded PCBA pivot-lock automatically locks the Logic PCBA into the vertical position as shown in Figure 2-3.

*NOTE*

*Illustrations used in this manual to depict parts and locations which are common to front and top loading versions will normally be of front loading models.*

(7) Loosen the two retaining screws which secure the Servo PCBA to the Logic PCBA (see Figure 2-3).

(8) Swing the Servo PCBA into its extended position; engage the locking pin and the PCBA support bracket (see Figure 2-4).

(9) Locate and identify the carriage retainer counterweight at the rear of the head carriage assembly. Figure 2-5 shows the counterweight in its shipping position.

(10) Locate and remove the Allen head screw stored in the top of the head carriage assembly adjacent to the counterweight.

(11) Remove the recessed Allen head screw from the counterweight which secures the head carriage assembly to the magnet assembly during shipment. The head carriage assembly can now be moved backward and forward freely.

(12) Align the two round holes in the counterweight to the two mating holes on top of the head carriage assembly and insert the Allen head screws removed in Steps (10) and (11). Figure 2-6 shows the counterweight in its operating position. Tighten each Allen head screw so that the counterweight remains secure during operation of the positioner.

*CAUTION*

*IF THE UNIT IS SHIPPED, THE COUNTERWEIGHT MUST BE USED TO SECURE THE CARRIAGE ASSEMBLY. PERFORM THE FOLLOWING STEPS TO ENSURE THAT THE COUNTERWEIGHT IS SECURED IN ITS SHIPPING POSITION. FIGURE 2-5 SHOWS THE COUNTERWEIGHT IN ITS SHIPPING POSITION.*

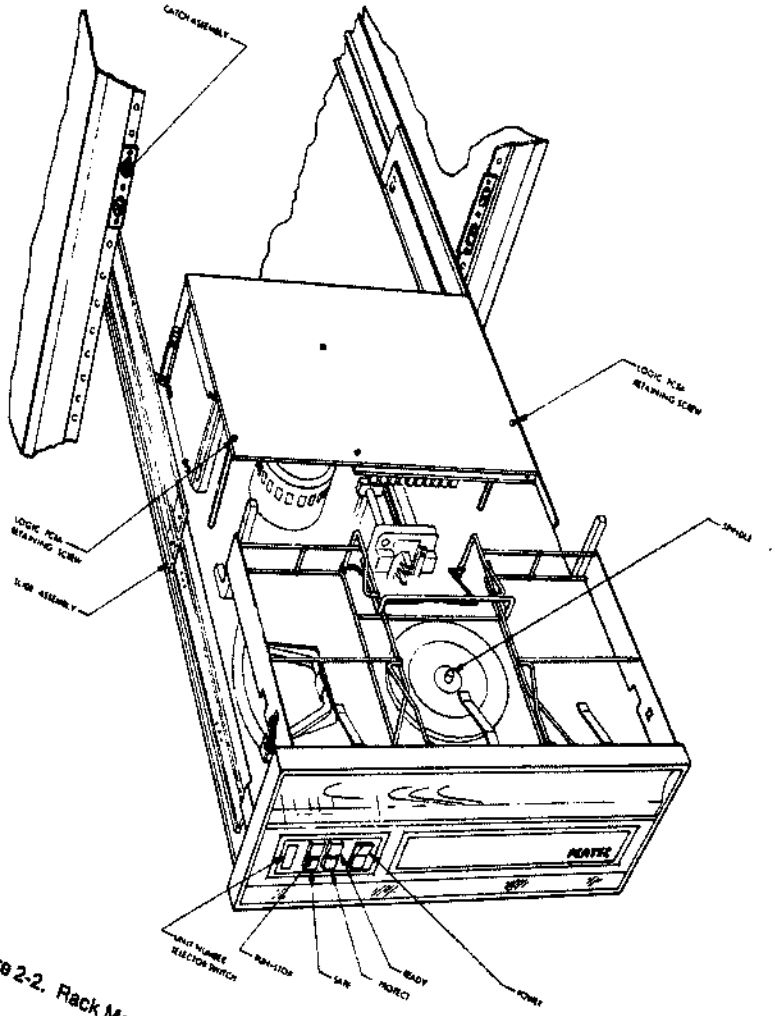

Figure 2-2. Rack Mounting the D3000 Disk Drive

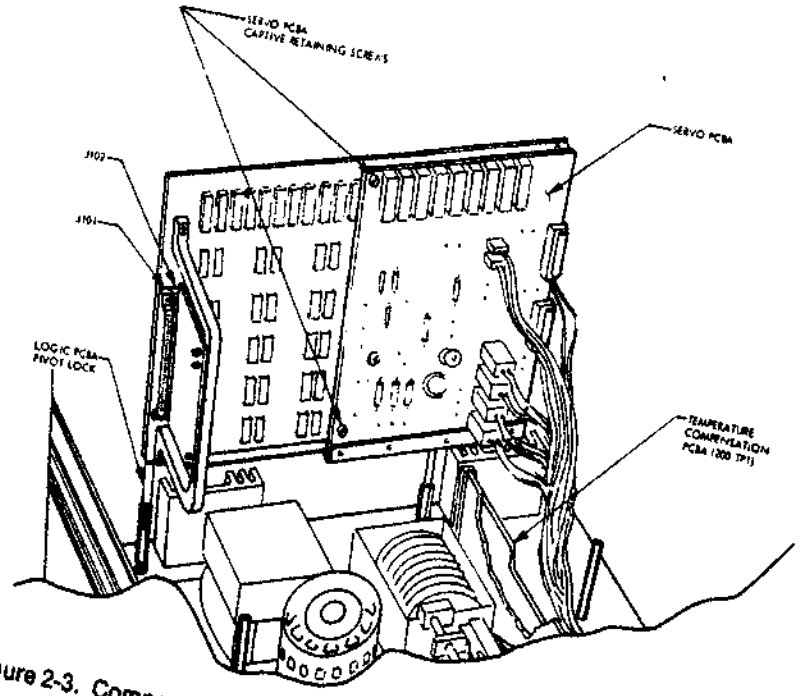


Figure 2-3. Component Identification, Logic and Servo PCBAs Extended

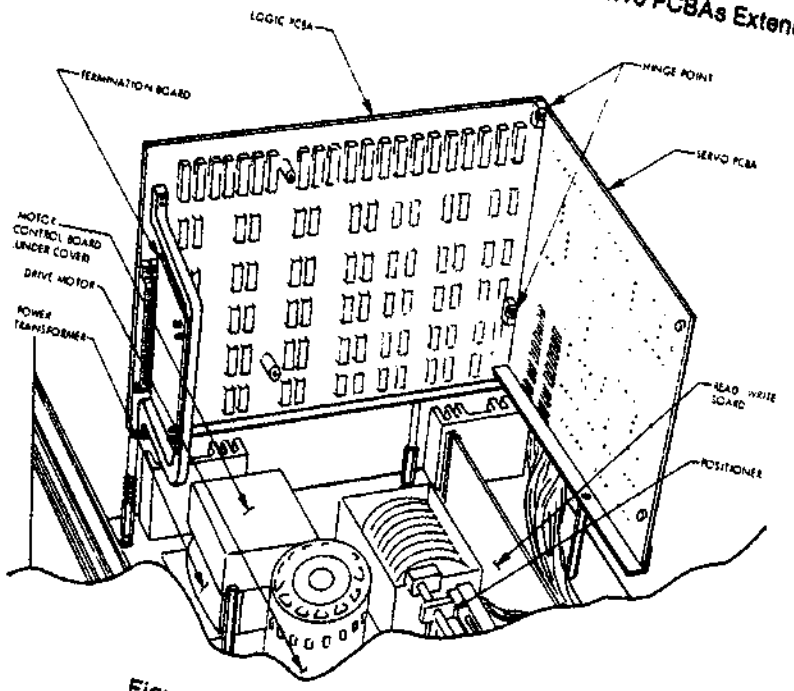


Figure 2-4. Component Identification

6300

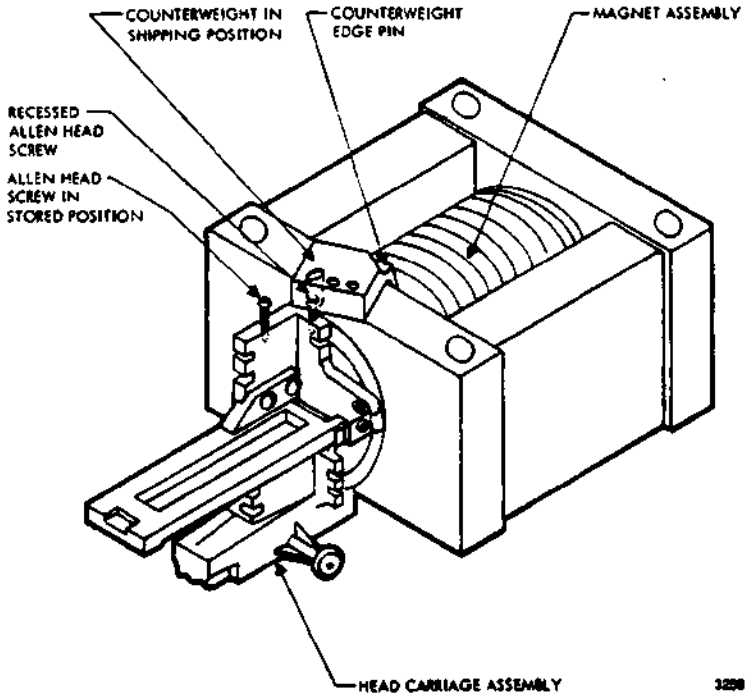


**Figure 2-5. Counterweight in Shipping Position**

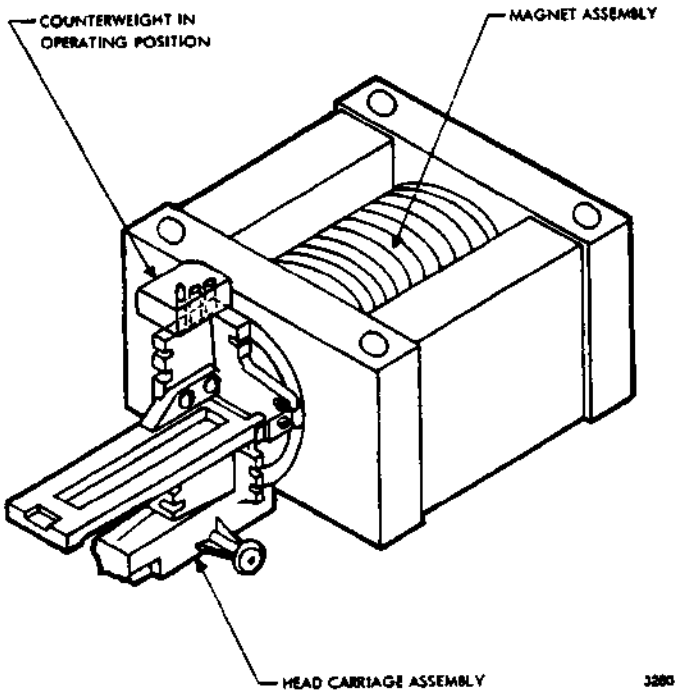


**Figure 2-6. Counterweight in Operating Position**

Perform the following steps whenever the disk drive is to be shipped.

(1) Ensure that the head carriage assembly is fully retracted.

(2) Remove the two Allen head screws holding the counterweight to the head carriage assembly. This will free the counterweight.

(3) Place the counterweight on the magnet assembly as shown in Figure 2-5 so that the counterweight edge pin is positioned behind the front plate of the magnet assembly.

(4) With the counterweight edge pin placed as in Step (3), position the eliptical hole of the counterweight so that it is in line with the Allen head screw hole closest to the magnet assembly on the carriage assembly.

(5) Tighten the recessed Allen head screw in the counterweight so that it does not loosen during shipment. This secures the head carriage assembly to the magnet assembly.

(6) Place the remaining Allen head screw removed in Step (2) into the storage hole provided on the head carriage assembly. Tighten the Allen head screw so that it will not loosen during shipment.

Check that the identification label on the rear of the unit bears the correct model number, line voltage, and line frequency. If the actual line voltage or frequency at the installation differs from that on the identification label, refer to Section IV of this manual.

*CAUTION*

*OPERATOR MUST EXERCISE CAUTION WHEN EXTENDING OR LOWERING THE LOGIC AND SERVO PCBAS TO AVOID CRIMPING CABLING AND/OR DISENGAGING MOLEX CONNECTORS.*

## 2.3 POWER CONNECTIONS

A fixed power cord is supplied for use in a polarized 115v outlet. For other power sockets, the supplied plug must be removed and the correct plug installed. Table 2-1 lists (in several languages) the color code scheme used to identify the supplied power cord.

## 2.4 INITIAL CHECKOUT PROCEDURE

A description of the controls and indicators used for operation of the D3000 Disk Drive is contained in Section III. To check the proper operation of the disk drive before placing it in a system, the following procedure should be performed.

(1) With the protective dust cover removed and with the Servo PCBA in the raised position (as shown in Figure 2-4), inspect the PCBAs, connectgors, and cables. Verify that shipping damage has not occurred. Check the connectors and plug-in relay for proper installation.

(2) Verify that the positioner is in the fully retracted position.

(3) Verify that the cartridge area is free of dirt, contaminants, and shipping material.

(4) Verify that the ON/OFF switch is set to OFF.

*CAUTION*

*CONNECTING THE DISK DRIVE TO A LINE VOLTAGE OTHER THAN THE VOLTAGE SELECTED VIA THE TRANSFORMER TAPS CAN RESULT IN DAMAGE TO THE UNIT.*

Table 2-1

Power Cord Color Code

| | | | |
|---|---|---|---|
| **Black**<br>AC 'Hot'<br>(Live) | **Noir**<br>Phase | **Nero**<br>Vivo | **Schwarz**<br>Heiss |
| **White**<br>AC Ret.<br>(Neutral) | **Blanc**<br>Neutre | **Bianco**<br>Neutro | **Weiss**<br>Neutral |
| **Green**<br>Chassis GND<br>(Earth) | **Vert**<br>Chassis<br>(Terre) | **Verde**<br>Terra | **Grun**<br>Grund |

(5) Verify that connections to the power transformer are compatible with the local power source to which the disk drive is to be connected (see Paragraph 4.9); connect the power cord to the correct line voltage.

(6) Place the power ON/OFF switch to the ON position; the ON indicator and the SAFE indicator should illuminate within 2 seconds.

*CAUTION*

*ON TOP LOAD MODELS, IF THE CARTRIDGE-LOCK ARM IS PIVOTED OUT OVER THE BOWL, DO NOT ATTEMPT TO ROTATE THE LOCK ARM TO THE STORED POSITION UNTIL POWER IS APPLIED AND THE ON/OFF SWITCH IS IN THE ON POSITION.*

(7) Load the cartridge as described in Paragraph 3.4.1 or 3.4.3.

*CAUTION*

*LOADING AND OPERATING WITH DIRTY, DAMAGED, OR DEFECTIVE CARTRIDGES WILL CAUSE DAMAGE TO THE DISK DRIVE.*

(8) Depress and release the RUN/STOP switch/indicator; verify that, during the Start sequence:

- The RUN/STOP indicator becomes illuminated immediately.
- The SAFE indicator is extinguished.
- The disk comes up to speed.
- The cleaning brush sweeps the disk(s) (top load versions only).
- The positioner loads the heads over the disk(s).
- The READY indicator becomes illuminated within 60 seconds after actuation of the RUN/STOP switch/indicator.

(9) Depress and release the RUN/STOP switch/indicator; verify that, during the Stop sequence:

- The READY and RUN/STOP indicators are extinguished.
- The heads are slowly unloaded from over the disk(s).
- The disk(s) comes to a stop.
- The SAFE indicator becomes illuminated within 25 seconds after RUN/STOP is actuated.

(10) Repeat Step (8) to return the disk drive to the Ready condition.

(11) Place the power ON/OFF switch to the OFF position; verify that:

- The positioner immediately retracts the heads from over the disk(s) at a high rate of speed (emergency unload).
- The cartridge access door is locked (front load models); the cartridge lock arm is locked (top load models).

(12) Before the disk has the opportunity to coast to a stop, place the power ON/OFF switch to the ON position; verify that the SAFE indicator does not become illuminated until after the disk(s) has coasted to a stop.

(13) Remove the cartridge as described in Paragraph 3.4.2 or 3.4.4.

(14) Place the power ON/OFF switch to the OFF position.

(15) Position the Servo PCBA in the closed position and secure it to the Logic PCBA with the two captive retaining screws (shown in Figure 2-3).

(16) Slide the spring-loaded sleeve of the Logic PCBA pivot lock downward to release the pivot lock (see Figure 2-3).

*CAUTION*

*OPERATOR MUST EXERCISE CAUTION WHEN EXTENDING OR LOWERING THE LOGIC PCBA AND SERVO PCBA TO AVOID CRIMPING CABLE AND/OR DISENGAGING MOLEX CONNECTORS.*

(17) Lower the Logic PCBA and secure it to the PCBA support brackets using the two retaining screws (shown in Figure 2-2).

## 2.5 INTERFACE CONNECTIONS

The D3000 interface is configured to provide flexibility in the design of new controllers and remain compatible with existing controllers designed for the D1000 and D5000 Disk Drives. The D3000 will also operate in conjunction with the F3000 Disk Formatter.

The 3M flat cable used in the fabrication of the D3000 Input/Output (I/O) cables has the following specifications.

(1) Number of conductors: 36

(2) Conductor size: 24

(3) Impedance: 100 ohm

The maximum length of conductor between the D3000 and the Controller/Formatter in a multiple disk drive installation is 6.1 m (20 feet). The maximum length of conductor between adjacent disk drives in a daisy-chain configuration is 3.0 m (10 feet).

D3000 Disk Drives are normally supplied with a mating input/output cable board and a termination board. These boards must be installed as shown in Figure 2-7. Interface signals are routed to and from the disk unit via the input/output cable board. Table 2-2 shows the input/output lines required. Details of the interface are contained in Section III.

## Table 2-2
## Interface Input/Output Lines

| Signal Name | Term | Signal Pin | Return Pin | Remarks |
|---|---|---|---|---|
| Inputs | | | | |
| UNIT SELECT NO. 1 | IUS1R | B42 | B41 | |
| UNIT SELECT NO. 2 | IUS2R | A42 | A41 | |
| UNIT SELECT NO. 3 | IUS3R | B43 | B44 | |
| UNIT SELECT NO. 4 | IUS4R | A43 | A44 | |
| PLATTER SELECT | IPSXR | B27 | B26 | |
| HEAD SELECT | IHSXR | A27 | A26 | |
| CYLINDER ADDRESS STROBE | ICASR | B33 | B32 | |
| CYLINDER DEMAND ADDRESS 0 | ICD0R | A39 | A38 | LSB |
| CYLINDER DEMAND ADDRESS 1 | ICD1R | B39 | B38 | |
| CYLINDER DEMAND ADDRESS 2 | ICD2R | A37 | A38 | |
| CYLINDER DEMAND ADDRESS 3 | ICD3R | B37 | B38 | |
| CYLINDER DEMAND ADDRESS 4 | ICD4R | A36 | A35 | |
| CYLINDER DEMAND ADDRESS 5 | ICD5R | B36 | B35 | |
| CYLINDER DEMAND ADDRESS 6 | ICD6R | A34 | A35 | |
| CYLINDER DEMAND ADDRESS 7 | ICD7R | B34 | B35 | MSB 100 tpi |
| CYLINDER DEMAND ADDRESS EXTENSION | ICDER | A33 | A32 | MSB 200 tpi |
| RESTORE INITIAL CYLINDER | IRtCR | A31 | A32 | |
| WRITE ENABLE | IWEXR | B22 | B23 | |
| ERASE ENABLE | IEEXR | A22 | A23 | |
| WRITE DATA SIGNAL | IWDSR | A28 | A29 | |
| READ ENABLE | IREXR | B24 | B23 | |
| TRACK OFFSET PLUS | ITOPR | B25 | B26 | |
| TRACK OFFSET MINUS | ITOMR | A25 | A26 | |
| ACTIVATE EMERGENCY UNLOAD | IAEUR | B31 | B32 | |
| START/STOP DISK DRIVE | ISSDR | B30 | B29 | |
| Total Input Lines = 25 | | | | |
| Outputs | | | | |
| READY | IRXXD | B1 | B2 | |
| BUSY SEEKING NO. 1 | IBS1D | B19 | B20 | |
| BUSY SEEKING NO. 2 | IBS2D | A19 | A20 | |
| BUSY SEEKING NO. 3 | IBS3D | B21 | B20 | |
| BUSY SEEKING NO. 4 | IBS4D | A21 | A20 | |
| SECTOR PULSE | ISPXD | A4 | A5 | |
| SECTOR COUNT 0 | ISC0D | A15 | A14 | LSB |
| SECTOR COUNT 1 | ISC1D | B15 | B14 | |
| SECTOR COUNT 2 | ISC2D | A13 | A14 | |
| SECTOR COUNT 3 | ISC3D | B13 | B14 | |
| SECTOR COUNT 4 | ISC4D | A12 | A11 | |
| SECTOR COUNT 5 | ISC5D | B12 | B11 | |
| SECTOR COUNT 6 | ISC6D | A10 | A11 | MSB |
| INDEX PULSE | IIPXD | B4 | B5 | |
| READ CLOCK | IRCXD | B16 | B17 | |
| READ DATA | IRDXD | A16 | A17 | |
| ILLEGAL CYLINDER ADDRESS | IICAD | B3 | B2 | |
| FILE PROTECTED | IFPXD | A1 | A2 | |
| MALFUNCTION DETECTED | IMDXD | B6 | B5 | |
| DUAL PLATTER DRIVE | IDPDD | B7 | B8 | |
| DOUBLE TRACK DRIVE | IDTDD | A7 | A8 | |
| (Special Interface Signal) | | A3 | A2 | |
| Termination Voltage | | A45<br>B45 | | |
| Total Output Lines = 23 | | | | |

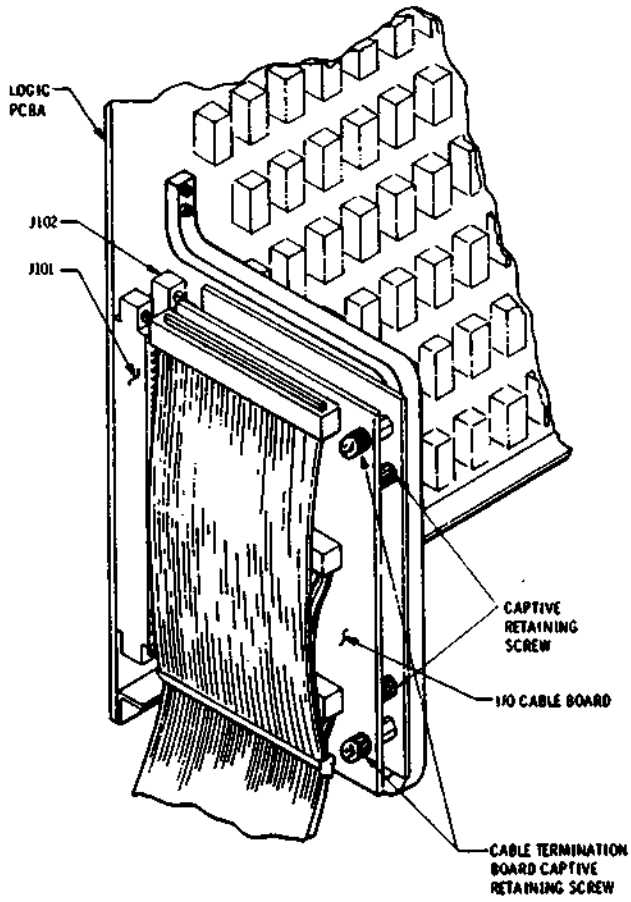


Figure 2-7. Interface Connector Board Installation

There are three cable types available for use with the D3000 Disk Drives.

(1) Controller to Disk Drive cable for a non-specified controller. This cable is 3M flat cable with an input/output cable board on one end to mate with the D3000; the other end is free to accommodate connection to a controller input/output board. This cable is available from PERTEC in lengths of 1.5, 3.0 and 6.1 m (5, 10, and 20 feet); refer to the Spare Parts List, Table 7-8, for specific part numbers.

(2) I/O Link cable (daisy-chain). This cable is 3M flat cable with an input/output cable board on each end to join two D3000 drives. This cable is available from PERTEC in lengths of 1.5, 3.0, and 6.1 m (5, 10, and 20 feet); refer to Spare Parts List, Table 7-8, for specific part numbers.

(3) F3000 Formatter cable. This cable is 3M flat cable with an input/output cable board on one end to mate with a D3000 drive and an input/output cable board on the other end to mate with an F3000 Formatter. This cable is available from PERTEC in lengths of 1.5, 3.0, and 6.1 m (5, 10, and 20 feet); refer to Spare Parts List, Table 7-8 for specific part numbers.

## 2.6 RACK MOUNTING THE DISK DRIVE

The disk drive is entirely self-contained (including the power supply). The unit is 203.2 mm (8.75 inches) high, requires 660.4 mm (26 inches) of rack depth, and extends 82.6 mm (3.25 inches) from the front mounting surface. The unit is designed to be mounted in any equipment rack or desk having standrd EIA mounting rails at the front and rear. Mounting for two slide configurations is described.

All models are supplied with heavy duty chassis slides, carefully selected to give the optimum in unit serviceability. When mounted in the rack the chassis may be extended fully forward for servicing; where servicing from the front is not practical the unit may be extended from the rear.

*CAUTION*

*DUE TO THE WIDE RANGE OF SLIDE TRAVEL, A CABINET OF SUFFICIENT STATURE MUST BE USED TO REDUCE THE POSSIBILITY OF UPSETTING THE CABINET WHEN THE UNIT IS FULLY EXTENDED TO THE FRONT OR REAR. REFER TO DRAWING NO. 103587 [SECTION VII] FOR CG LOCATIONS AT THESE EXTREMES BEFORE INSTALLING THE UNIT.*

### 2.6.1 SLIDES

Remove the slide set (Part No. 102731 or 103670) and the installation kit (Part No. 102723) from the shipping container. (Slide set Part No. 102731 extends the disk drive 762 mm (30 inches) to the front and 635 mm (25 inches) to the rear of the cabinet; slide set Part No. 103670-01 extends the disk drive 489 or 750 mm (19.25 or 29.5 inches) to the front or rear.)

### 2.6.2 INSTALLATION OF SLIDE SET PART NO. 102731

Refer to Figure 2-2 and Drawing No. 103587 in conjunction with the following mounting procedure. The front and rear slide brackets and the slides are marked 'LH' and 'RH' for correct assembly.

*CAUTION*

*TO EXTEND THE DISK CHASSIS FROM THE REAR OF THE CABINET, THE BEZEL MUST BE REMOVED: REFER TO PARAGRAPH 2.6.2, STEP [4].*

(1) Assemble the front and rear right-hand brackets to the right-hand slide assembly; assemble the front and rear left-hand brackets to the left-hand slide assembly. The bracket screw heads must be installed on the track side of the slide; the nuts will therefore appear on the bracket side, or outside, of the slide assembly. Use lock washers under the nuts.

(2) Install the right and left slide assemblies to the front and rear EIA rails. Adjust the distance between the slide brackets to 451.6 mm (17.78 inches). Ensure that the right front and rear slide brackets, as well as the left slide brackets, are installed at the same height on the front and rear rails. The screw heads must be on the outside of the EIA rails.

(3) Pull the smaller chassis slide member forward to expose the screw holes that will be used to attach the small slide member to the disk chassis.

(4) Remove the bezel assembly from the disk drive by loosening the three screws on each side of the bezel and sliding the bezel assembly forward until free of the chassis (refer to Figure 2-2 for location of these screws). For clearance, remove the three bezel mounting screws on each side of the chassis.

(5) Remove 8 screws which attach the shipping frame to the disk chassis and lift the unit free of the frame.

(6) With the right and left chassis slides extended fully forward, slide the disk drive chassis between the inner members until the front slide mounting hole pattern lines up with the tapped holes in the chassis. Thread three 8-32 X ¼-inch button-head screws through the slide and into the chassis. Perform this on each side of the chassis.

(7) Slide the unit through the cabinet to the rear and thread two additional 8-32 X ¼-inch button-head screws through the slide and into the chassis on each side.

(8) Locate the chassis in the closed position in the cabinet. Adjust each slide bracket height by loosening the slide bracket screws to obtain the 5.97 mm (0.235-inch) dimensions as shown in Drawing No. 103587.

(9) Reinstall the bezel.

(10) Install the slide restraining blocks (Part No. 102776) at the rear of the cabinet using the hardware provided. Adjust the restraining blocks to prevent the intermediate slide member from working to the rear during normal operation.

(11) For top load models only, install the brim (Part No. 102691) using the hardware provided.

(12) Install the catch assemblies as shown in Figure 2-2 using the hardware provided. Adjust the catch spring on the EIA rail so the ball stud assembly installed on the bezel strikes the catch spring on the EIA rail squarely. Apply a small amount of lubricant (PERTEC Part No. 665-0004, or equivalent) to each ball stud.

### 2.6.3 INSTALLATION OF SLIDE SET PART NO. 103670

Figure 2-8 and Drawing No. 103587 show the relationship of the rail mounting brackets to a standard EIA cabinet and should be referred to in conjunction with the following procedure.

Prior to installation of the disk mounting slides, determine the exact location in the cabinet in which the disk drive is to be mounted.

*NOTE*

*To ensure correct hole spacing positions for the slide mounting bracket, catch assemblies, and top load brim assembly, the location of the bottom surface of the bezel must lie between a pair of rail holes spaced ½-inch apart.*

(1) Thread and tighten three 10-32 X 3/8-inch button-head Phillips screws for each pair of front and rear brackets into the EIA rails; spacing must be as shown in Figure 2-8.

(2) Place a star lockwasher and 10-32 nut on each of the three screws. The nuts should be started onto the screw only far enough to hold. The mounting bracket will be secured between the back of the EIA mounting surface and the lockwasher.

*NOTE*

*If the cabinet rails have untapped mounting holes, the nut bars furnished in the hardware kit are to be used in place of the 10-32 nuts.*

(3) Install the right and left brackets to the rails and tighten the 10-32 nuts sufficiently to hold them in place.

(4) Determine that the bracket surface adjacent to the rail is parallel to the rail and to the side of the cabinet.

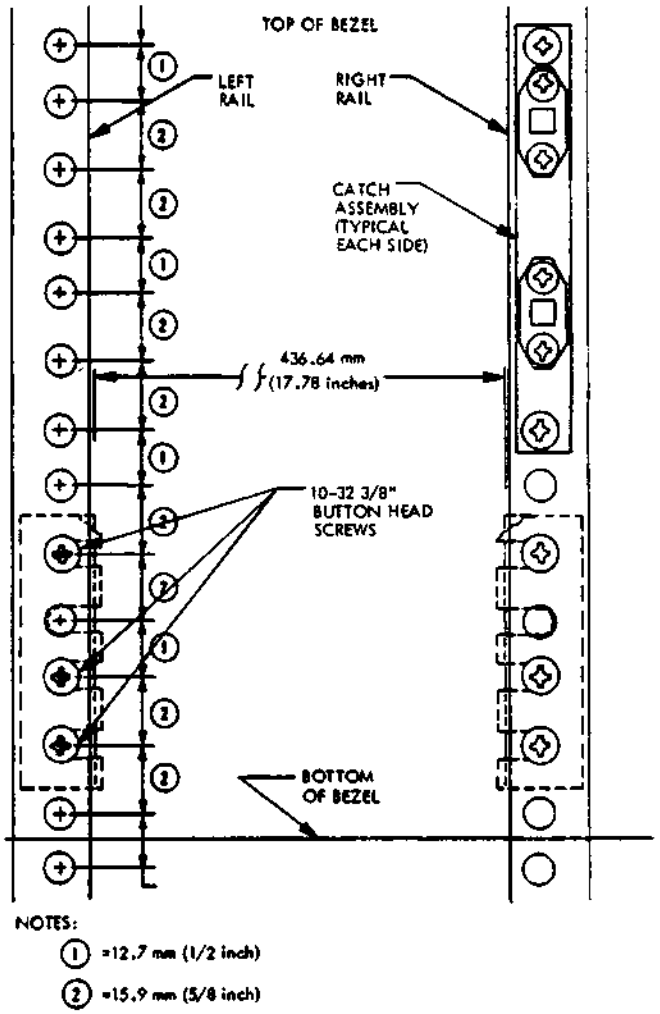


**Figure 2-8. Mounting Bracket to EIA Cabinet; Hardware Orientation for use with P/N 103670**

(5) Establish that the measurement between the brackets is 436.37 mm (17.78 inches) as shown in Figure 2-9. Tighten the 10-32 nuts on the right and left brackets. If this measurement is not held the bezel may not fit between the trim molding on the cabinet. Note that dimension 'A' must equal dimension 'B'.

*NOTE*

*Steps [1] through [5] must be repeated when the rear brackets are installed.*

(6) By inspection, determine which slide assembly and mounting holes will be used for the installation.

(7) Install the slide assemblies to the brackets using 8-32 X 3/8-inch Phillips screws; tighten hardware finger tight.

(8) Extend the small slide bar as far forward as possible to expose two Allen-head stop screws located in the body of the lower slide of the slide assembly.

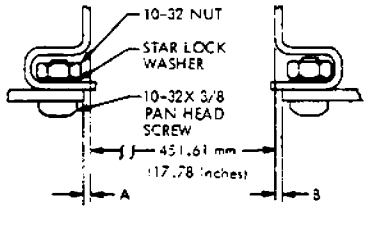


Figure 2-9. Inside Measurement Between Slide Brackets

(9) Loosen the two Allen-head stop screws so that 4 or 5 threads are showing. Move each small slide bar to the extreme rear position (all the way out the rear of the cabinet) to ensure that they do not become disengaged from the main slide assembly.

(10) Remove the small slide bar from the main slide assembly by moving the small slides all the way out the front of the cabinet.

*NOTE*

*The small slide bar will be attached to the disk drive.*

(11) Install restraining blocks to each of the rear rails with 10-32 X 3/8-inch Phillips button-head screws. Position each restraining block so that the slide member will be prevented from projecting beyond the rear of the cabinet.

(12) Install the small slides (removed in Step 10) to the right and left sides of the disk drive casting with 8-32 X 3/8-inch button-head Phillips screws.

*CAUTION*

*ENSURE THAT THE DIMPLE ON EACH SMALL SLIDE MEMBER APPEARS BELOW THE CENTERLINE OF THE SLIDE BAR; FAILURE TO DO SO WILL ALLOW THE DISK DRIVE TO BE PULLED FROM THE SLIDE ASSEMBLY.*

(13) Extend each cabinet mounted slide assembly fully forward until a mechanical stop is reached.

(14) Install the disk drive to the two main slide assemblies which project from the front of the cabinet by engaging the small slides on the disk drive with each of the extended slide assemblies.

(15) Slide the disk drive into the cabinet to the closed position, i.e., the point at which the bezel is seated against the cabinet rails.

(16) Carefully pull the disk drive forward about 6 inches until the first setscrew is exposed on the right and left slide assemblies.

(17) Tighten the left and right setscrews until they bottom out on their respective slide assemblies; at this point, back off each setscrew one full turn.

(18) Carefully pull the disk drive forward about 16 inches until the second setscrew is exposed on the right and left slide assemblies.

(19) Repeat Step (17).

(20) Carefully extend the disk drive forward about 30 inches, at which point the slides strike the second setscrews in each slide assembly.

(21) In the position indicated in Step (20), the PCBAs may be raised for servicing.