



HARDWARE SUPPORT MANUAL

HP 7575 / HP 7576 DRAFTING PLOTTER

SERIAL NUMBERS

This manual applies directly to plotters with serial numbers prefixed 3103A.

Product History for plotters with serial number prefixes below 3103A is provided in Chapter 11.

For additional important information about serial numbers, see SERIAL NUMBER INFORMATION in Chapter 1.

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General Definitions of Safety Symbols Used On Equipment



International caution symbol (refer to manual): the product will be marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect against damage to the instrument.



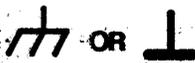
Indicates dangerous voltage (terminals fed from the interior by voltage exceeding 1000 volts must also be marked).



Protective conductor terminal. For protection against electrical shock in case of a fault. Used with field wiring terminals to indicate the terminal which must be connected to ground before operating equipment.



Low-noise or noiseless, clean ground (earth) terminal. Used for a signal common, as well as providing protection against electrical shock in case of a fault. A terminal marked with this symbol must be connected to ground in the manner described in the installation (operating) manual, and before operating the equipment.



Frame or chassis terminal. A connection to the frame (chassis) of the equipment which normally includes all exposed metal structures.



Alternating current



Direct current



Alternating or direct current



The **WARNING** sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury.



The **CAUTION** sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product.

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CHAPTER 1

PRODUCT INFORMATION

1-1. INTRODUCTION

1-2. This hardware support manual contains information necessary to test and service the Hewlett-Packard Models 7575 and 7576 Drafting Plotters. The manual is divided into twelve chapters as follows:

Chapter	1	Product Information
Chapter	2	Site Planning and Requirements
Chapter	3	Installation and Configuration
Chapter	4	Preventive Maintenance
Chapter	5	Functional Description
Chapter	6	Removal and Replacement
Chapter	7	Adjustments
Chapter	8	Troubleshooting and Diagnostics
Chapter	9	Replaceable Parts
Chapter	10	Reference
Chapter	11	Product History
Chapter	12	Diagrams

1-3. This Product Information chapter includes a description of the plotter and information on options and accessories available, accessories supplied, specifications, serial numbers, test equipment and special tools necessary to test and repair the plotter.

1-4. DESCRIPTION

1-5. The HP 7575/6 Drafting Plotter, shown in Figure 1-1, is a dual microprocessor controlled plotter providing graphic displays of computer program output data. The HP 7575/6 operates with a number of HP computer systems, graphics terminals, and desk-top computer systems to produce printed and/or graphic copy.

1-6. The HP 7575/6 is equipped with such capabilities as point digitizing, labeling, axes generation and automatic pen selection. Multicolor plots of high resolution and quality for reports, reproduction, or graphic presentations are generated by the HP 7575/6.

1-7. The HP 7575 plots on media sizes ranging from International Standards Organization (ISO) sizes A1 through A4, American National Standards (ANSI) sizes A through D, and both architectural media sizes C and D. The HP 7576 plots on media sizes ranging from International Standards Organization (ISO) sizes

A0 through A4, American National Standards (ANSI) sizes A through E, and architectural media sizes C through E. Media type can be paper, vellum, transparency sheets, glossy plotter paper or polyester film.

1-8. The HP 7575/6 incorporates low inertia DC servo motor drive systems for pen positioning and media transport. Internal diagnostic capabilities are provided as aids for troubleshooting.

1-9. Two styles of rotating pen carousels for fiber-tip and capillary drafting pens are available. Each carousel holds up to eight pens, including different colors and/or line widths. The carousel, from which pens may be selected by program control or operator selected by using front panel buttons, is located at the left end of the plotter. An automatic pen return and capping feature is used in the plotter to increase pen life.

1-10. Media size is electronically sensed to establish plot limits. Default conditions are automatically established for all other plotting parameters. The default parameters can be overridden using front panel controls or HP-GL programming instructions.

1-11. A 22-button front panel on the right side of the plotter is used to manually enter position data and pen control and selection. Five front-panel light-emitting diodes (LED's) indicate the status of various plotter functions.

1-12. The RS-232-C/CCITT V.24 standard interface allows the plotter to receive and transmit instructions and data in serial form and is capable of either direct (Standalone) or Y (Eavesdrop) configuration. The HP-IB (IEEE-488) interface allows the plotter to receive and transmit instructions and data in bit-parallel, byte-serial form. The HP-IB interface is available as a plug-in unit, with or without the KANJI character set installed. 1 Megabyte and 2 Megabyte memory expansion plug-in units are also available.

1-13. OPTIONS

1-14. The HP 7575/6 has no order options. Power cord options are listed in Chapter 3 of this manual. The power cord shipped with the plotter is dependent upon the country of destination for the plotter.

1-15. ACCESSORIES

1-16. Two plug-in interface modules and two memory expansion modules are available as accessories for use with the HP 7575/6.

1-17. One plug-in interface module contains the HP-IB interface without the KANJI character set installed and the other interface module contains the HP-IB interface with the KANJI character set installed. See Figure 1-2 .

1-18. The memory expansion modules are available in 1 Megabyte and 2 Megabyte buffer sizes. See Figure 1-3.

1-19. Accessories supplied with the HP 7575/6 are listed in Table 1-1. Accessories available for use with the HP 7575/6 are listed in the HP Computer Users Catalog, HP Part Number 5953-2450D.

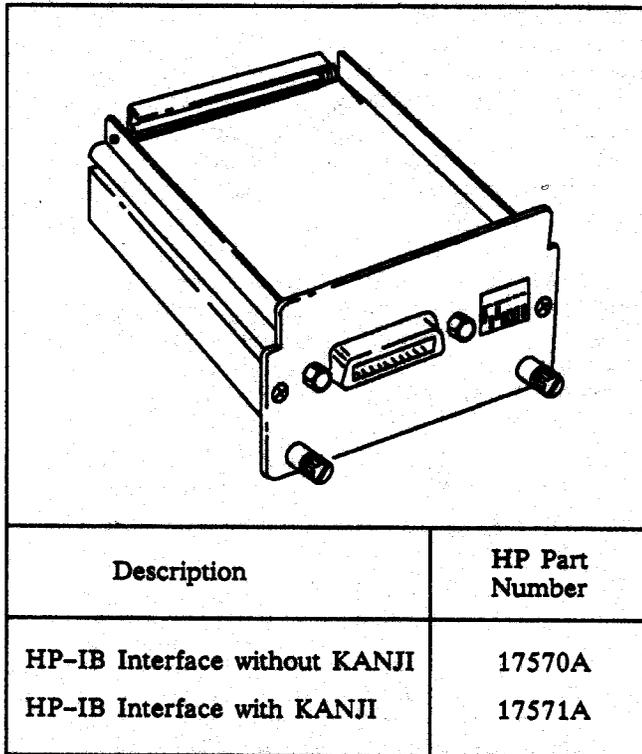


Figure 1-2. HP-IB Interface Cartridge

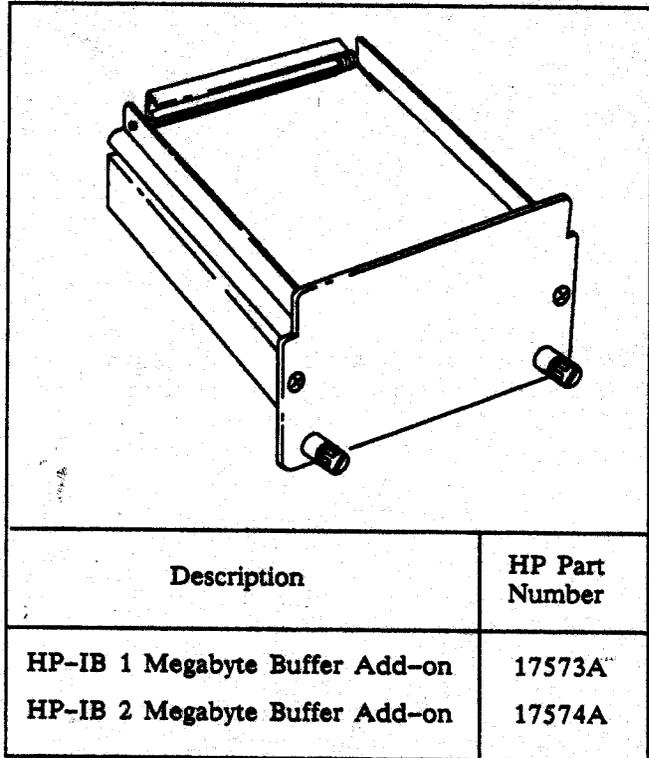


Figure 1-3. Memory Expansion Module

Table 1-1. Accessories Supplied

<p>User's Guide</p> <p>Media Sampler Kit containing assorted media and pens</p> <p>2 Pen Carousels:</p> <p>1 for fiber tip pens</p> <p>1 for drafting pens</p> <p>Power Cord (See Chapter 3)</p> <p>Grit Wheel Brush</p>
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1-20. PERFORMANCE SPECIFICATIONS

1-21. Table 1-2 lists the specifications for the HP 7575/6. These specifications include the performance standards against which the plotter is tested. Table 1-3 lists the general characteristics of the plotter which are included as additional information for the user. Physical and Environmental specifications are given in Chapter 2 of this manual.

1-22. SERIAL NUMBER INFORMATION

1-23. The plotter serial number is located on the rear of the plotter. Hewlett-Packard uses a two-part serial number consisting of a four-digit prefix and a five-digit suffix separated by a letter (0000A00000). The prefix is the same for all identical plotters and changes only when a modification is made that affects parts compatibility. The suffix is assigned sequentially and is different for each plotter. This manual applies directly to plotters with the serial prefix shown on the title page.

1-24. If the serial number prefix of your plotter is higher than the one shown, one or more update packages of revised pages are supplied with the manual. Use these new pages to replace the original pages, and discard the old pages. If two or more update packages are supplied, insert them in order by revision letter; that is, Revision A first, then Revision B, etc. The title

Table 1-2. Plotter Specifications

Repeatability:	
With the same pen:	+/-100 micrometres (0.004 in.)
Pen to Pen:	+/-200 micrometres (0.008 in.)
Accuracy:	+/- 0.5 mm (0.02 in.) or +/- 0.2% of the move, which ever is greater.
With 0.075 mm (0.003 in.) double-matte polyester film from 10 to 30 °C.	
NOTE: Specifications apply only when using Hewlett-Packard authorized supplies.	

page will then show the latest serial number prefix and the manual will apply directly to plotters with that serial number prefix.

1-25. If the plotter at hand has a lower serial number prefix than the one shown on the title page, information in the Product History chapter, Chapter 11, will adapt this manual to that plotter.

1-26. In addition to plotter changes, revised pages may correct errors in the manual or include improved procedures.

1-27. TOOLS AND TEST EQUIPMENT

1-28. The tools required to maintain the HP 7575/6 are listed in Table 1-4 and are contained in the HP Tool Kit, HP Part Number JTK-536. Test Equipment recommended to maintain the plotter is listed in Table 1-5.

1-29. SUPPORT STRATEGY

1-30. Basic support strategy for the HP 7575/6 is on-site repair with assembly level replacement. HP 7575/6 plotters are equipped with built-in diagnostics which should be used to troubleshoot problems with the plotter. Component level repair will not be supported on the HP 7575/6. The Main PCA (A1) is on a factory exchange program.

1-31. PRODUCT SAFETY NOTICES

1-32. The HP Model 7575/6 is provided with a terminal for protective earthing and has been manufactured and tested according to international safety standards.

1-33. Safety Symbols used with Hewlett-Packard instruments are illustrated in the front matter of this manual. The safety considerations, symbols, and instructions should be reviewed before service work is performed. These warnings and cautions must be followed for your protection and to avoid damage to the plotter. Servicing should be performed only by qualified service personnel.

1-34. BEFORE APPLYING POWER verify that the line voltage selector block is set to match the available line voltage and the correct rated fuse is installed. Information on line voltage and fuse selection for the HP Model 7575/6 is given in Chapter 3 of this manual.

Table 1-3. General Characteristics

RESOLUTION				
Smallest Addressable Move: 0.025 mm (0.001 in.)				
Mechanical Resolution: 0.013 mm (0.0005 in.)				
MEDIA SIZES				
	ANSI	ISO	Architectural	
A	8.5 x 11 in.	A4	210 x 297 mm	
B	11 x 17 in.	A3	297 x 420 mm	
C	17 x 22 in.	A2	420 x 594 mm	18 x 24 in.
D	22 x 34 in.	A1	594 x 841 mm	24 x 36 in.
E	34 x 44 in. (7576 only)	A0	841 x 1189 mm	36 x 48 in.
PLOTTING AREA				
Maximum Plotting Area: Dependent on media size less established margins.				
MARGINS				
Expanded Mode: 5 mm (0.2 in.) on three edges, 31 mm (1.2 in.) on the fourth.				
Normal Mode: 15 mm (0.59 in.) on three edges, 39 mm (1.5 in.) on the fourth.				
VELOCITY				
Pen down: 80 cm/s (31.4 in./s) max				
Pen up: 80 cm/s (31.4 in./s) max				
Programmable to speeds of 5, 10, 15, 20, 30, 40, 60, and 80 cm/s.				
POWER REQUIREMENTS				
Source: 100, 120, 220, 240 V- +/- 10%				
Frequency: 47.5-66 Hz				
Consumption: 85 W maximum				
ENVIRONMENTAL RANGE (limited by media)				
Operating temperature: 0 °C to 55 °C				
Nonoperating temperature: -40 °C to 75 °C				
Relative humidity: 5% to 95% (0 °C to 40 °C)				
SIZE				
	HP 7575	HP 7576		
	Height: 1074 mm (42.3 in.)	Height: 1185 mm (46.7 in.)		
	Width: 1106 mm (43.5 in.)	Width: 1389 mm (54.7 in.)		
	Depth: 559 mm (22 in.)	Depth: 610 mm (24 in.)		
WEIGHT				
	HP 7575	HP 7576		
	Plotter: 34.5 kg (76 lbs.)	Plotter: 41.3 kg (91 lbs.)		
	Shipping: 52.2 kg (115 lbs.)	Shipping: 61.3 kg (135 lbs.)		
PENS				
Number of Pens: 8/carousel				
Pen Types: Fiber tip and capillary drafting.				
MEDIA				
Most standard paper, vellum, double matte polyester film, glossy presentation paper, and overhead transparency material from 0.05 mm (0.002 in.) to 0.1 mm (0.004 in.) thick.				
BUFFER SIZE				
31 900 bytes standard, 1 Megabyte and 2 Megabyte Buffer Add-ons are available				

Table 1-4. Tools Required

Pliers, needle nose Screwdrivers, Pozidriv #1 & #2 Screwdriver, common Torx drivers T 15W & T 20W Nut drivers, 1/4 in. & 5/16 in. 10 mm wrench Spring Tool, combination

Table 1-5. Recommended Test Equipment

TYPE	RECOMMENDED MODEL
Computer/Controller	HP Portable Plus Computer Model 45711E or 45711F
HP-IL/HP-IB Interface Converter	HP 82169A
HP-IB Cable	HP 10833B
HP-IL Cable	HP 82167B
RS-232-C Cable	HP 92221P
I/O Loopback Connector	HP 07440-60302
GW BASIC Programming Language	Microsoft 82862K opt 400 or GW Basic 45450D
Digital Multimeter	HP 3465A
Oscilloscope	HP 1741A 100 MHz or greater
Optical Comparator	Bausch & Lomb 81-34-35
Metric Scale 0-1000 mm	

CHAPTER 2

SITE PLANNING AND REQUIREMENTS

2-1. INTRODUCTION

2-2. This chapter contains information concerning the physical and electrical requirements of the operating site for the proper installation of the HP 7575/6.

2-3. ELECTRICAL SPECIFICATIONS

WARNING

The ac power outlet (mains) must have a protective earth (ground) terminal. A serious shock hazard leading to death or injury may result if the plotter is not properly grounded.

2-4. POWER REQUIREMENTS

2-5. The power requirements for the HP 7575/6 are listed in Table 2-1. When shipped from the factory, the line voltage selector block is set for the operating voltage of the country of destination.

2-6. LINE CORD SET

2-7. The configuration of the ac line cord connector required for use with the plotter is determined by the destination of the plotter. Refer to Chapter 3 for the available ac line cord configurations.

Table 2-1. Power Requirements

SOURCE:	100, 120, 220, 240 Vac (+/-10%)
FREQUENCY:	47.5 to 66 Hz (Single Phase)
CONSUMPTION:	85 W maximum

2-8. ENVIRONMENTAL SPECIFICATIONS

2-9. The HP 7575/6 is designed to meet the HP class B environmental specifications for a normal office environment. The environmental requirements for operating the HP 7575/6 are listed in Table 2-2.

2-10. PHYSICAL SPECIFICATIONS

2-11. The physical dimensions and weight for the plotter are listed in Table 2-3. The physical dimensions are illustrated in Figure 2-1.

Table 2-2. Environmental Operating Range

Temperature:	0 °C to 55 °C
Humidity:	5 to 95% RH (0 °C to 40 °C)
Altitude:	to 4575 m (15 000 ft) at 47 °C

Table 2-3. Physical Dimensions

HP 7575:	
Height:	1074 mm (42.3 in.)
Width:	1106 mm (43.5 in.)
Depth:	559 mm (22.0 in.)
Weight:	34.5 kg (76 lbs.)
HP 7576:	
Height:	1185 mm (46.7 in.)
Width:	1389 mm (54.7 in.)
Depth:	610 mm (24.0 in.)
Weight:	41.3 kg (91 lbs.)

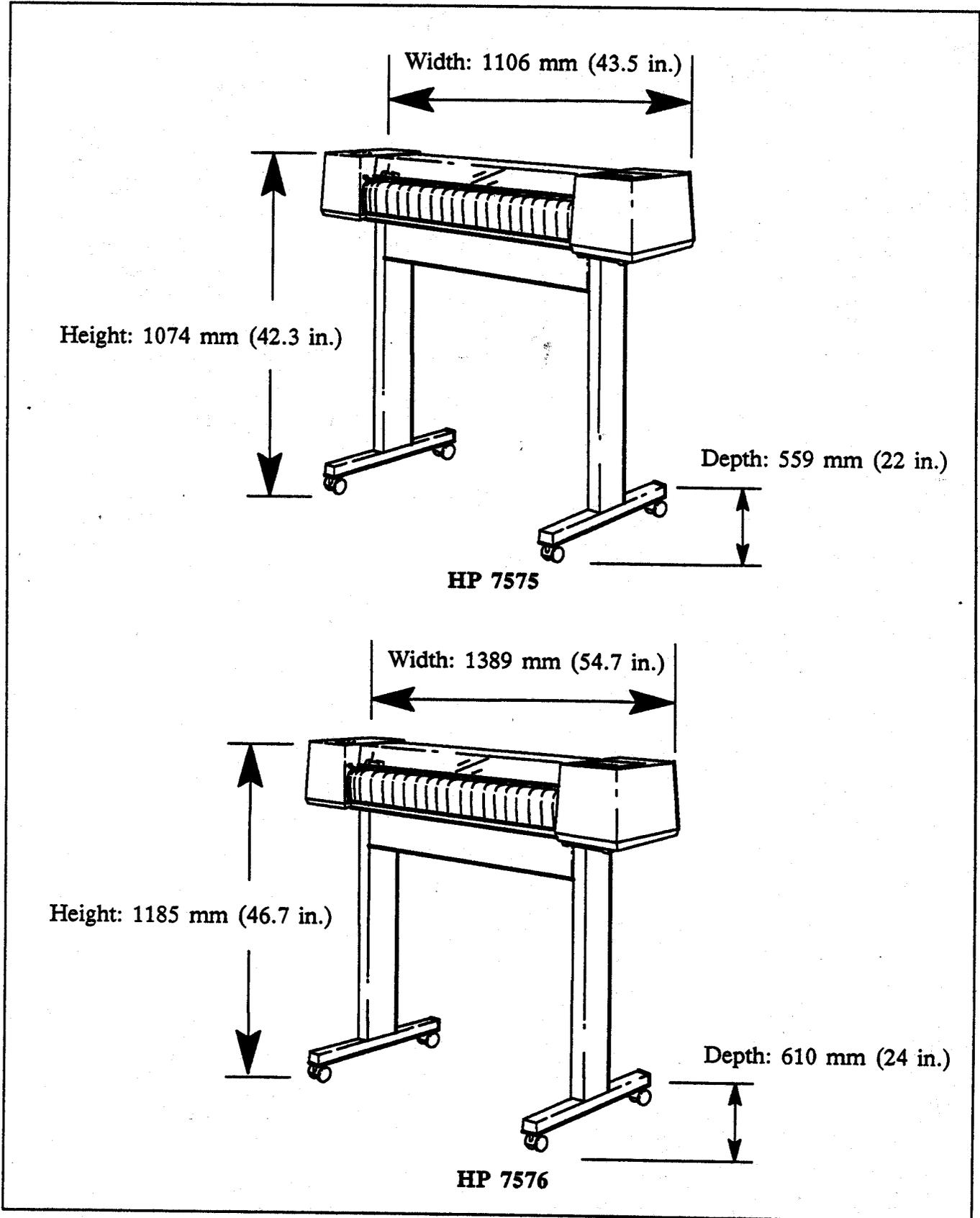


Figure 2-1. HP 7575/6 Physical Dimensions

2-12. CABLE RESTRICTIONS

2-13. Cable restrictions for the plotter are determined by the type of interface being used. Recommendations for each interface are supplied in the following paragraphs.

2-14. RS-232-C INTERFACE

2-15. The use of short cables (each less than 15 metres or 50 feet) is recommended for the RS-232-C

Interface. Longer cables are permissible, provided the load capacitance does not exceed 2500 picofarads.

2-16. HP-IB INTERFACE

2-17. The HP-IB (Hewlett-Packard Interface Bus) allows up to 15 devices to be connected. However, the maximum cable length is restricted to 2 metres (6.6 ft.) per device up to a total of 20 metres (65.8 ft.). The devices may be connected in a star or linear bus network.

CHAPTER 3

INSTALLATION AND CONFIGURATION

3-1. INTRODUCTION

3-2. This chapter provides pre-installation, installation and configuration, and system verification procedures for the HP 7575/6. Included is information on unpacking the HP 7575/6 and preparing it for use, plotter power requirements, storage, and shipping.

3-3. UNPACKING AND INSPECTION

3-4. Inspect the shipping container for damage. If the shipping container shows signs of damage, it should be retained until the contents of the shipment have been checked and the performance of the plotter is verified. Procedures for checking the mechanical and electrical performance of the plotter are given later in this chapter. If the plotter is damaged in transit, notify the carrier as well as the nearest Hewlett-Packard Sales and Support Office. Retain the shipping material for the carrier's inspection.

3-5. UNPACKING

3-6. To unpack and set up the plotter, follow the unpacking and set up instruction sheet on the shipping container, or refer to Figure 3-1 and perform the following steps:

WARNING

Do not attempt to set up the HP 7575/6 plotter alone. This procedure requires two persons. Attempting the procedure alone can lead to serious personal injury or damage to the plotter.

- a. Cut the shipping container strapping material and remove the straps.
- b. Remove the outer carton.

- c. Remove the packing material, the package of cables and documentation, media sampler, legs, pens and hardware kit.
- d. Remove the foam packing material, open the plastic covering around the plotter and remove the two pen carousels.
- e. To assemble the stand, place the two legs on the base and attach each leg with four hex screws from the hardware kit. After all hex screws are aligned in the leg slots, tighten the hex screws.
- f. Invert the stand and center the four slots over the four lugs on the bottom of the plotter.
- g. Mount the stand assembly to the plotter with the 10 mm hex nuts with washers on each of the four lugs.
- h. Carefully set the plotter with stand upright on all four of its casters (requires two persons).
- i. Remove the foam packing material and plastic covering.
- j. Remove the foam packing material under the plotter window.
- k. To stabilize the plotter, loosen all the hex bolts that attach the legs to the base of the plotter one turn, then retighten the hex bolts.
- l. Install the end caps over the screw openings.
- m. Inspect the plotter and remove any remaining packing material.

3-7. INSPECTION

3-8. Visually inspect the plotter for damage. Look for scratches, dents, or other visible defects. Check the contents of the shipment. The contents should match the accessories supplied list given in Chapter 1. If the contents are incomplete or damaged, notify the nearest Hewlett-Packard Sales and Support Office as well as the carrier. Plotter performance will be checked by performing the Self-Test procedure described later in this chapter.

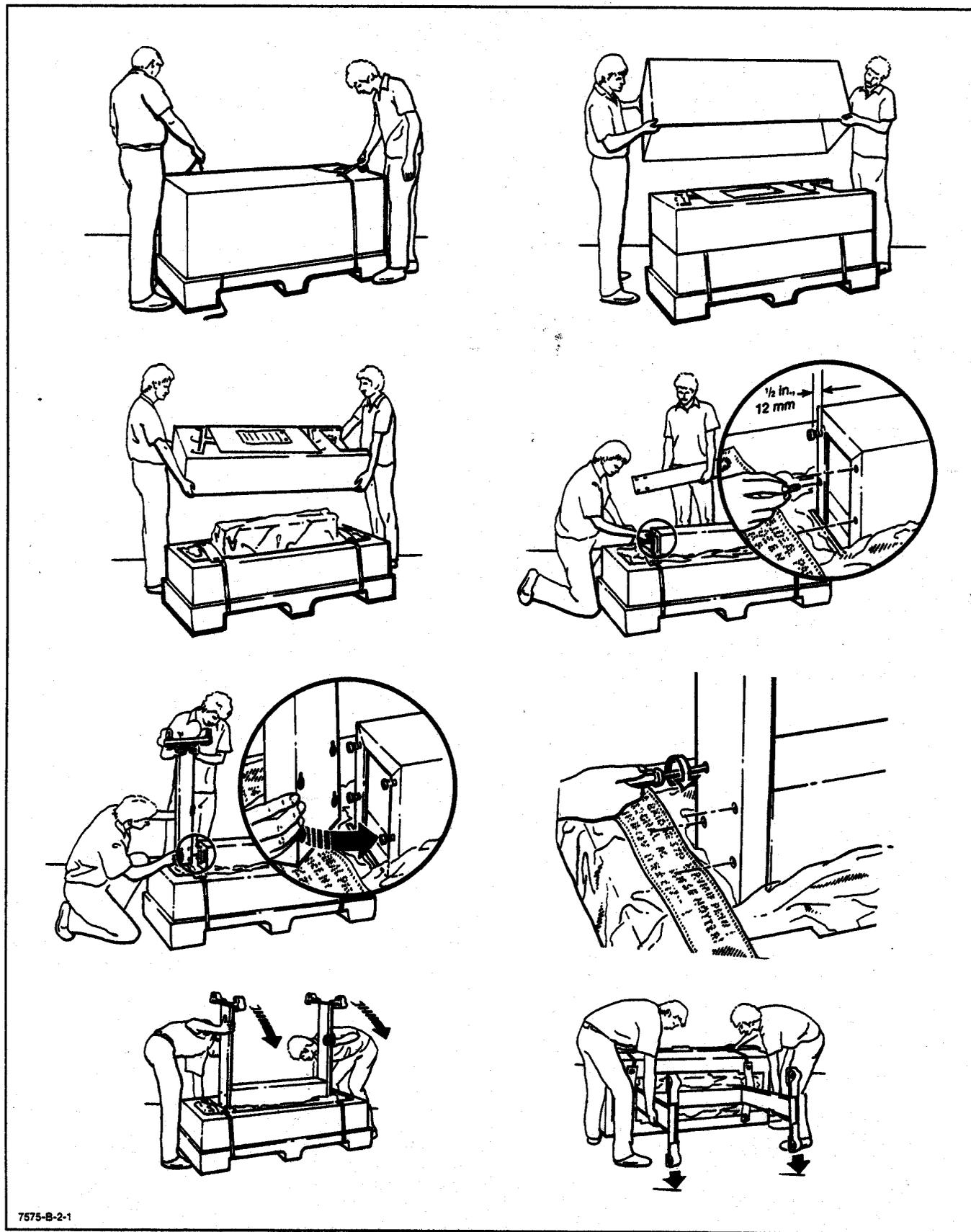
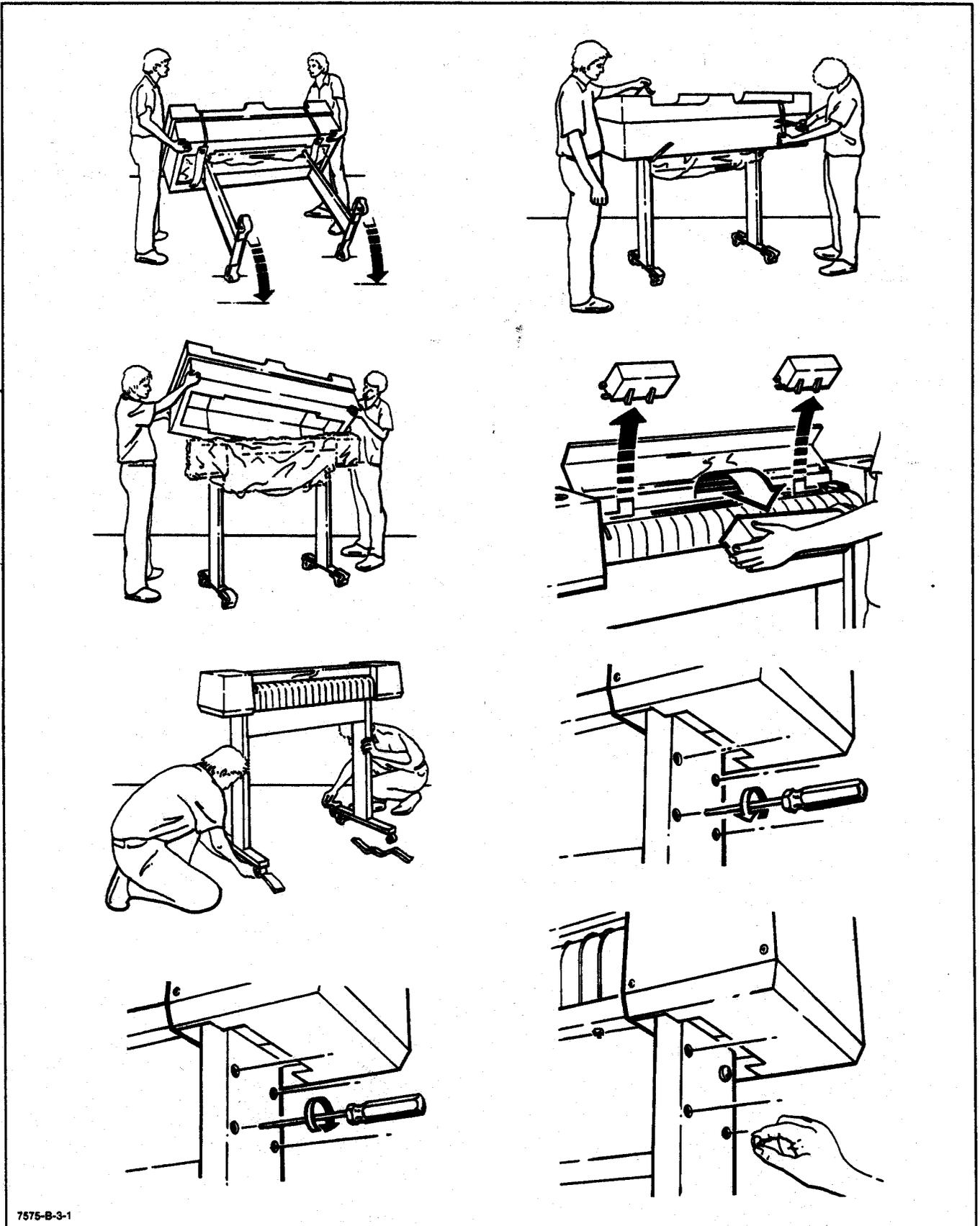


Figure 3-1. Unpacking the HP 7575/6. (Sheet 1 of 2)



7575-B-3-1

Figure 3-1. Unpacking the HP 7575/6. (Sheet 2 of 2)

3-9. REPACKING, STORAGE, AND SHIPPING

3-10. The following paragraphs contain information on repacking, storage, and shipping of the plotter. Review the repacking and shipping information prior to packing the plotter for shipment.

3-11. REPACKING

3-12. If the original packaging material has been retained, pack the plotter in the same manner as it was received. Refer to the unpacking instructions given earlier in this chapter if necessary.

3-13. Original packaging material for the plotter may be ordered from Hewlett-Packard using the appropriate HP part number as follows:

<u>Plotter Model</u>	<u>Packaging Kit</u>
HP 7575	07575-60131
HP 7576	07576-60141

3-14. Use the following instructions for packing with commercially available materials.

- a. Use a strong shipping container with a layer of shock-absorbing material at least 70 to 100 mm (3 to 4 in.) thick around all sides of the plotter.
- b. Seal the container securely and mark the container FRAGILE to ensure careful handling.

3-15. STORAGE

3-16. If the plotter is to be stored for an extended period of time, the following general procedures should be followed.

- a. Switch OFF the plotter.
- b. Disconnect the power and interface cables from the plotter.
- c. Remove all pens from the carousel.
- d. Clean any ink residue or stains from the plotter and carousel.
- e. Cover the plotter to protect it from dust.
- f. Store the plotter on a flat, level surface. Ensure that the storage area meets the non-operating environmental range characteristics specified in Chapter 1 of this manual.

3-17. SHIPPING

3-18. Do NOT return the plotter to Hewlett-Packard for service unless instructed to do so by Hewlett-Packard. Repairs or other servicing should be referred to the closest Hewlett-Packard Sales and Support Office. If the plotter is being returned to Hewlett-Packard for service, attach a tag indicating the type of service required, model number, full serial number, and your return address. Include the same information in any correspondence regarding the plotter repair.

NOTE

If returning the plotter for service, DO NOT return the interface cables, pen carousels, power cord, or any other accessories with the plotter.

3-19. INSTALLATION INSTRUCTIONS

3-20. *Before applying power*, ensure that the plotter is configured for the line voltage being used and the rear panel switches are properly set. Review the following paragraphs to verify proper installation and configuration of the plotter.

3-21. LINE VOLTAGE AND FUSING

3-22. The Model 7575/6 will operate from a power source of 100, 120, 220, or 240 Vac +/-10%, 48 to 66 Hz, single phase. Power consumption is 85 W maximum. When shipped from the factory, the plotter voltage selector is set and an appropriate fuse installed for operating in the country of destination.

CAUTION



Applying line voltage of 220 or 240 volts to the plotter while the plotter is configured for 100 or 120 volt operation may damage the plotter circuits.

3-23. The plotter line voltage configuration is determined by the orientation of the voltage selector block which is visible through the small opening in the ac power receptacle cover. Check that the desired voltage rating is visible in the cover.

3-24. To change the plotter line voltage configuration, see Figure 3-2 and perform the following steps:

- a. Set the plotter LINE switch to OFF (0) and disconnect the line cord from the plotter.
- b. Using a small common screwdriver, pry open the lid of the power receptacle housing.

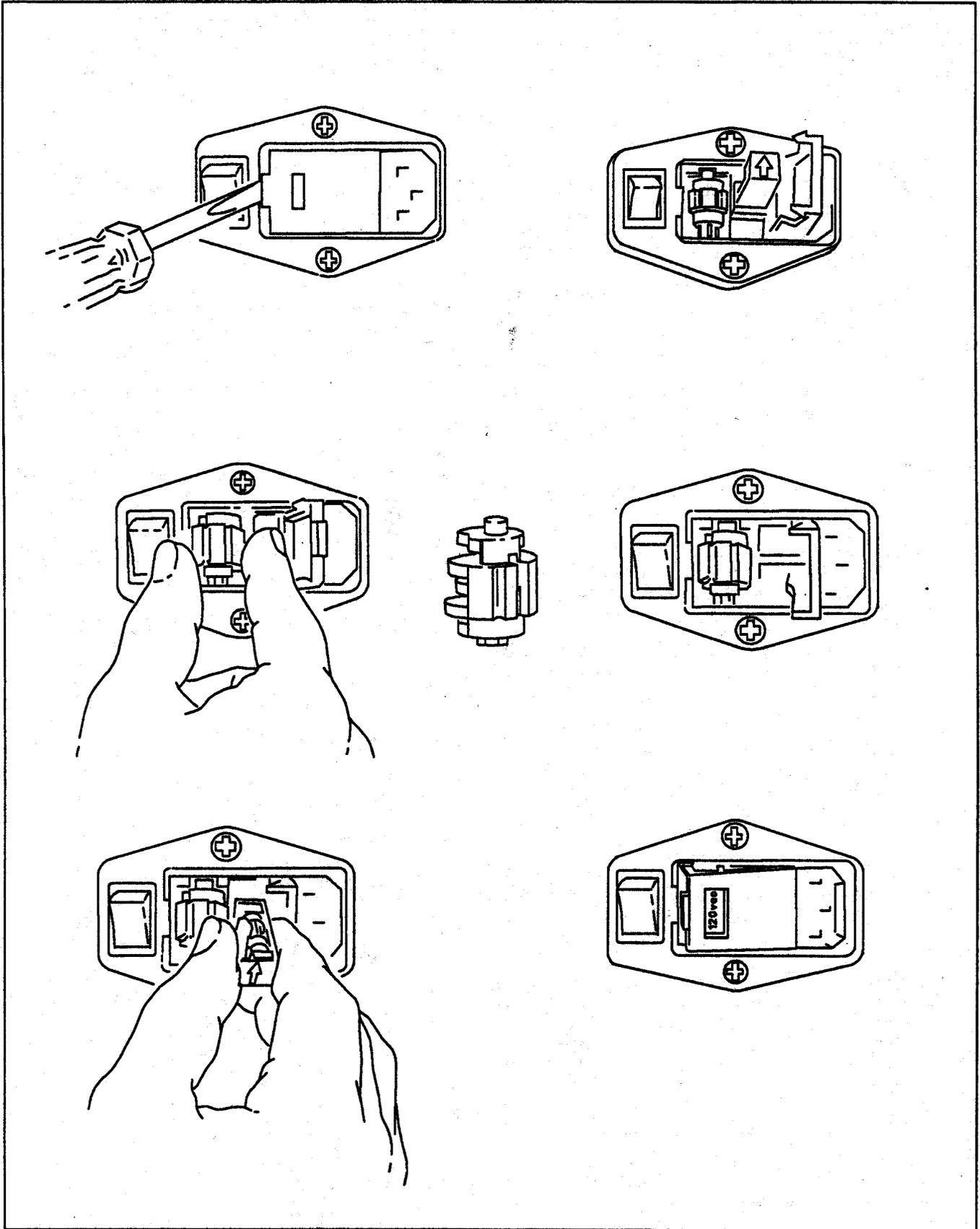


Figure 3-2. Plotter Line Voltage Configuration

- c. Note the orientation of the line fuse holder. Remove the line fuse holder from the power receptacle housing.
- d. Remove the voltage selector block from the power receptacle housing.
- e. Note the orientation of the alignment pins on the ends of the block. One end is circular and the other end is a slightly larger hexagonal pin.
- f. Rotate the block until the desired voltage range is facing directly outward from the power receptacle housing.
- g. Insert the block into the power receptacle housing, ensuring that the block does not rotate during insertion.
- h. Remove the ac line fuse from the fuse holder.
- i. Install a fuse with the correct amperage and voltage rating into the fuse holder. Refer to Table 3-1 for fuse ratings and part numbers.
- j. Insert the fuse holder into the upper opening of the power receptacle with the arrow on the fuse holder pointing up.
- k. Partially close the receptacle cover. Check that the desired voltage rating is visible through the small opening in the cover. If correct, snap the cover tightly closed.
- l. Install the correct power cord for the selected voltage range. Review the paragraph on power cord configurations in this chapter.

Table 3-1. AC Line Fuse Selection

LINE VOLTAGE	FUSE RATING	HP PART NUMBER
100 Vac 120 Vac	1.0 AT @ 250 V	2110-0457
220 Vac 240 Vac	0.5 AT @ 250 V	2110-0458

3-25. Operating voltage and amperage requirements for the plotter are listed in Table 3-2.

Table 3-2. Plotter Voltage/Amperage Requirements

VOLTAGE	AMPERAGE
100 Vac +/-10%	0.85 A
120 Vac +/-10%	0.70 A
220 Vac +/-10%	0.40 A
240 Vac +/-10%	0.35 A

3-26. POWER CORD CONFIGURATIONS

3-27. To protect operating personnel, the plotter must be properly grounded. The plotter is supplied with a three-conductor power cable which, when connected to an appropriate power outlet, grounds the plotter. The power cord supplied with the plotter is dependent upon the country of destination for the plotter. Be sure to connect the plotter power cord to a properly grounded ac outlet to avoid electrical shock. The line power cord and power outlet must have a protective earthing (ground) terminal. To preserve this protection feature, do not operate the plotter from a power outlet which does not have a grounded connection. Figure 3-3 illustrates the available line cord configurations for the plotter.

3-28. REAR PANEL SWITCH SETTINGS

3-29. For the HP 7575/6 to properly communicate with the controller, rear panel switches must be set according to the interface being used.

NOTE

Before operating the plotter, ensure that rear panel switches 9, 10, and 11 are all set to the OFF (0) position. See Figure 3-4.

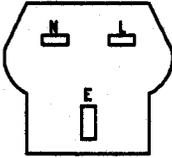
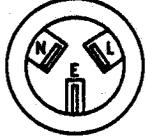
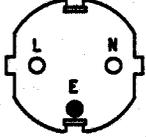
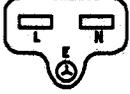
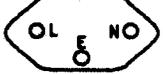
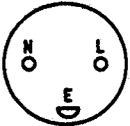
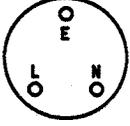
These switches are for test purposes only. If not set to OFF (0), the plotter will not respond to input and the front panel LEDs will continuously flash ON and OFF.

Rear panel switches are read only at power-up. If switch settings are changed while the plotter is ON, power must be cycled OFF (O) and then ON (I).

3-30. Refer to the appropriate interface information given in the following paragraphs.

3-31. RS-232-C INTERFACE SWITCHES

3-32. The RS-232-C Interface switches, illustrated in Figure 3-4, are used to configure the plotter to respond to serial (RS-232-C/CCITT V.24) data.

		<u>Option No.</u>
<p>BS 1363A</p> 	<p>HP Part Number 8120-1351; 250V, 5 A, 1 ϕ plug rating. For use in United Kingdom, Cypress, Nigeria, Zimbabwe, Singapore.</p>	900
<p>AS C112</p> 	<p>HP Part Number 8120-1369; 250V, 7.5 A, 1 ϕ plug rating. For use in Australia, New Zealand.</p>	901
<p>CEE 7-VII</p> 	<p>HP Part Number 8120-1689; 250V, 10 A 1 ϕ plug rating. For use in East and West Europe, Egypt.</p>	902
<p>NEMA 5-15P</p> 	<p>HP Part Number 8120-1378; 125V, 10 A, 1 ϕ plug rating. For use in Canada, Mexico, Philippines, Taiwan, Saudi Arabia, UL approved in the United States.</p>	903
<p>NEMA 6-15P</p> 	<p>HP Part Number 8120-0698; 250V, 6 A, 1 ϕ plug rating. For use in Canada, UL approved in United States.</p>	904
<p>SEV 1011</p> 	<p>HP Part Number 8120-2104; 250V, 6 A, 1 ϕ plug rating. For use in Switzerland.</p>	906
<p>DHCK-107</p> 	<p>HP Part Number 8120-2956; 250V, 6 A, 1 ϕ plug rating. For use in Denmark.</p>	912
<p>SABS-164</p> 	<p>HP Part Number 8120-4211; 250V, 10 A, 1 ϕ plug rating. For use in India, Republic of South Africa.</p>	917
<p>MITI</p> 	<p>HP Part Number 8120-4753; 125 V, 12 A, 1 ϕ plug rating. For use in Japan.</p>	918

NOTE: All plugs are viewed from connector end.

- L = Line or Active Conductor (also called "live" or "hot")
- N = Neutral or Identified Conductor
- E = Earth or Safety Ground

Figure 3-3. Plotter Power Cord Configurations

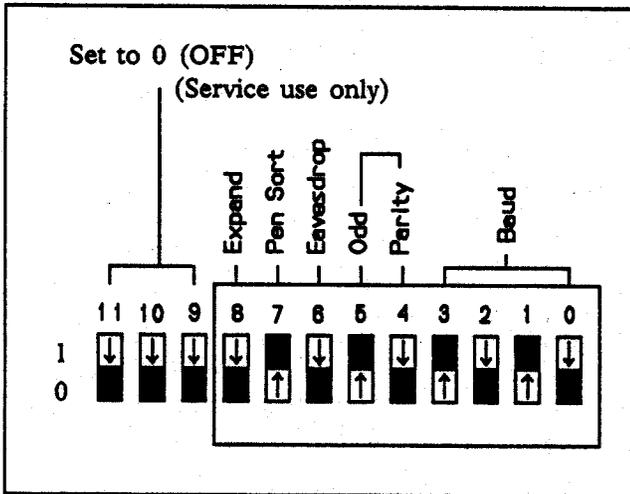


Figure 3-4. RS-232-C Interface Switches

3-33. Switches 0 through 3 (Baud) must be set to match the data transmission rate (Baud Rate) of the plotter to that of the controller. Table 3-3 lists the available plotter Baud Rates with associated stop bits.

3-34. Parity is selected using the switches labeled PARITY (switch 4) and ODD (switch 5). With the PARITY switch ON (1), the plotter sets the parity bit (bit 7) according to the position of the ODD switch. In the ODD (1), position, bit 7 is set as a 1 and in the OFF (0) position as a 0. The ODD OFF (0) position is used for Even parity bits. Thus, when parity is ON, the data is interpreted with the chosen parity and the par-

Table 3-3. Baud Rate Switch Settings

Baud Rate	Switch Settings 1=ON/0=OFF				Number of Stop Bits
	3	2	1	0	
150	0	0	0	0	2
75	0	0	0	1	2
110	0	0	1	0	2
150	0	0	1	1	1
200	0	1	0	0	1
300	0	1	0	1	1
600	0	1	1	0	1
1200	0	1	1	1	1
2400	1	0	0	0	1
4800	1	0	0	1	1
9600	1	0	1	0	1

ity is applied to all output data. With parity OFF, bit 7 is interpreted as data instead of parity. See Figure 3-5.

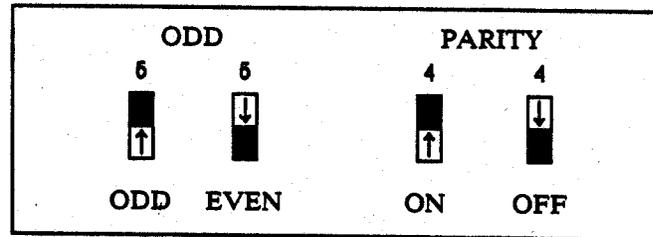


Figure 3-5. Parity Switch Settings

3-35. The EAVESDROP switch (switch 6), when ON (1), enables the plotter function in an EAVESDROP configuration whereby the plotter will pass data between the terminal and computer without taking any action, unless a plotter-on instruction is received. When the switch is OFF (0), the plotter will operate in the Standalone configuration, where the plotter is programmed on at power-up and is directly connected to the computer in an end-of-line configuration.

3-36. The PEN SORT switch (switch 7), when ON (1), enables the plotter to sort vectors stored in the input buffer according to the chosen pen number for the vectors. The plotter then draws all the stored vectors which use the same pen before beginning the vectors associated with another pen, regardless of the order in which the vectors were received. When the PEN SORT switch is OFF (0), the pen sort algorithm can be enabled and disabled programmatically.

3-37. The EXPAND switch (switch 8) allows expanding the plotting area beyond the normal default margins. The plotter has three narrow and one wide margin along the media edges. The wide margin allows for holding the media between the pinch wheels and the grit wheel. The default margins are 15 mm for the narrow margins and 39 mm for the wide margin. In the EXPAND (1) position the narrow margins are reduced to 5 mm and the wide margin to 31 mm.

3-38. Three switches on the rear panel labeled for service use only (switches 9, 10, and 11) are used to invoke various internal diagnostic routines described in Chapter 8 of this manual. The switches must be in the OFF (0) positions when not in a test routine, otherwise the plotter will not respond to input and the front panel LEDs will continuously flash ON and OFF.

3-39. HP-IB INTERFACE SWITCHES

3-40. The IEEE-488 (HP-IB) interface is available as a plug-in accessory for response to 8-bit parallel data with or without the KANJI character set installed. The HP-IB interface switches, illustrated in Figure 3-6 are used to configure the plotter address for response to the 8-bit parallel data.

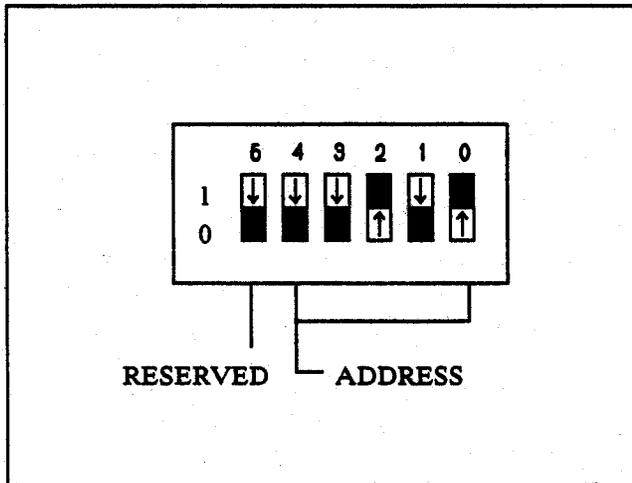


Figure 3-6. HP-IB Interface Switches

3-41. Five switches, labeled ADDRESS 0 through 4, are used to set the address that the plotter will respond to. The plotter can be set to respond to any one of 32 different addresses. The available addresses are (00 through 31) in binary format using the 5 address switches 0, 1, 2, 3, and 4. Address 31 is used to set the plotter into a listen-only mode whereby the plotter will not respond back to the controller. Refer to Table 3-4 for the available address switch settings.

3-42. The switch labeled RESERVED (switch 5) is not presently used and is reserved for future use. Switches 7 through 11 on the RS-232-C interface switch panel are still active when using the HP-IB interface. Therefore, switches 9, 10, and 11 must be in the OFF (0) positions when not in a test routine, otherwise the plotter will not respond to input and the front panel LEDs will continuously flash ON and OFF. The PEN SORT and EXPAND switches perform their same functions regardless of the type of interface being used.

3-43. INTERCONNECTION

3-44. The interface cables and connectors required to connect the plotter to the controller are determined by the type of interface being used in the plotter and the type of controller being used. Refer to the HP Computer Users Catalog (HP P/N 5953-2450D) for available interface cables and connectors.

3-45. SELF TEST PROCEDURES

3-46. POWER-ON SELF-TEST

3-47. When the plotter is turned ON (I), a series of built-in tests are automatically performed to verify

Table 3-4. Address Switch Settings

Address	Switch Settings 1=ON/0=OFF				
	4	3	2	1	0
00	0	0	0	0	0
01	0	0	0	0	1
02	0	0	0	1	0
03	0	0	0	1	1
04	0	0	1	0	0
05	0	0	1	0	1
06	0	0	1	1	0
07	0	0	1	1	1
08	0	1	0	0	0
09	0	1	0	0	1
10	0	1	0	1	0
11	0	1	0	1	1
12	0	1	1	0	0
13	0	1	1	0	1
14	0	1	1	1	0
15	0	1	1	1	1
16	1	0	0	0	0
17	1	0	0	0	1
18	1	0	0	1	0
19	1	0	0	1	1
20	1	0	1	0	0
21	1	0	1	0	1
22	1	0	1	1	0
23	1	0	1	1	1
24	1	1	0	0	0
25	1	1	0	0	1
26	1	1	0	1	0
27	1	1	0	1	1
28	1	1	1	0	0
29	1	1	1	0	1
30	1	1	1	1	0
31	1	1	1	1	1

All switch settings are binary format

proper plotter operation. The test sequence will run either to completion, at which time normal plotter operation will begin, or to an error condition. An error will cause the test to stop, which prevents normal plotter operation. The front panel LEDs will display failure information. Diagnostic interpretations for the LED indications is listed in Chapter 8 of this manual. Front panel LEDs are shown in Figure 3-7.

3-48. DEMONSTRATION PLOT

3-49. The Demonstration Plot, which is internally programmed into the plotter's logic circuits, will produce a plot verifying proper operation of most of the logic circuits as well as the paper and pen drive mechanisms.

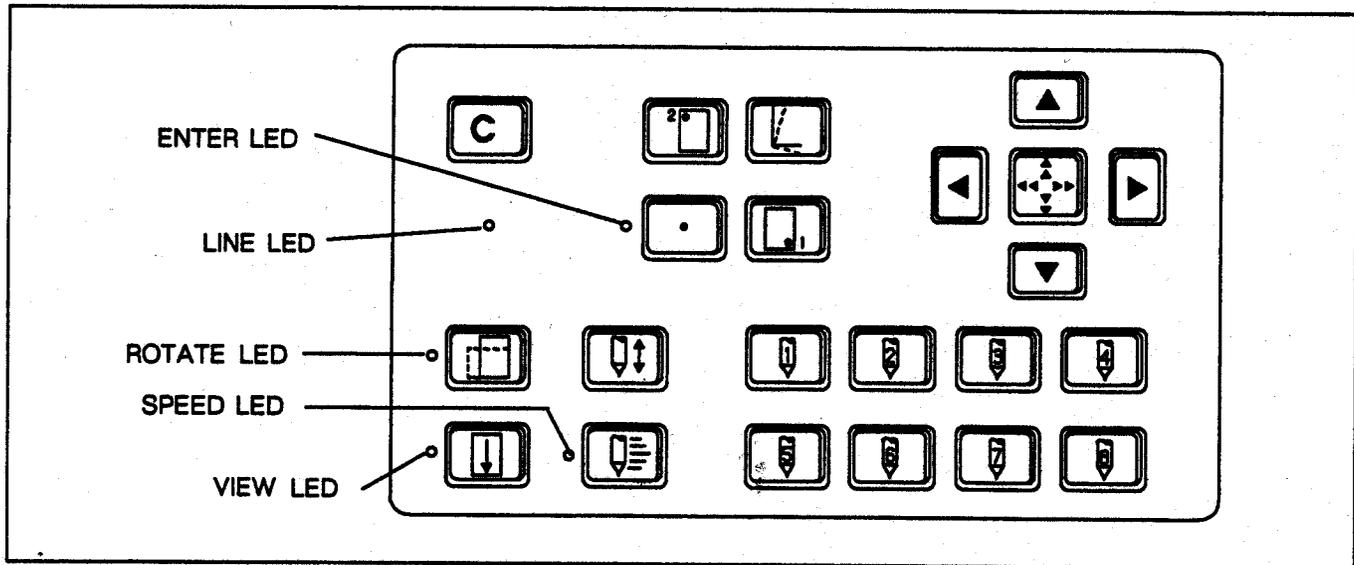


Figure 3-7. Front Panel LEDs

The Demonstration Plot, however, does not check the Input/Output (I/O) circuitry.

3-50. To run the Demonstration Plot, perform the following steps:

- a. Install a loaded pen carousel into the plotter.
- b. Connect the plotter to the ac line and turn the plotter ON (I).
- c. Load a sheet of either ISO A1 (ANSI D) or A2 (ANSI C) paper into the plotter.
- d. Press the P1 and P2 buttons on the plotter front panel simultaneously.
- e. The plotter will automatically enter the Demonstration Plot routine and generate the Demonstration Plot.
- f. When the plot is complete, the plotter will move the paper to the view position. The demonstration plot is illustrated in Figure 3-8.

3-51. USER INFORMATION AND OPERATION

3-52. LOADING PENS AND CAROUSEL

3-53. Each of the two types of pen carousels available for use in the HP 7575/6 is configured with a specific pen cap design for longer pen life. The two types are for fiber-tip pens and drafting pens and are identified by the label on the top of the carousel.

3-54. Pens are loaded into the carousel as follows:

- a. Select the proper carousel for the type of pens to be loaded, either fiber-tip or drafting pens. The pen type is indicated on the label at the top of the carousel.
- b. Select the pen to be loaded in position "1" of the carousel and remove the pen cap.
- c. Locate pen position "1" on the carousel.
- d. Press down on the pen capper arm and insert the pen. See Figure 3-9.
- e. Repeat this procedure for each desired pen position on the carousel.

3-55. The carousel is loaded into the plotter as follows:

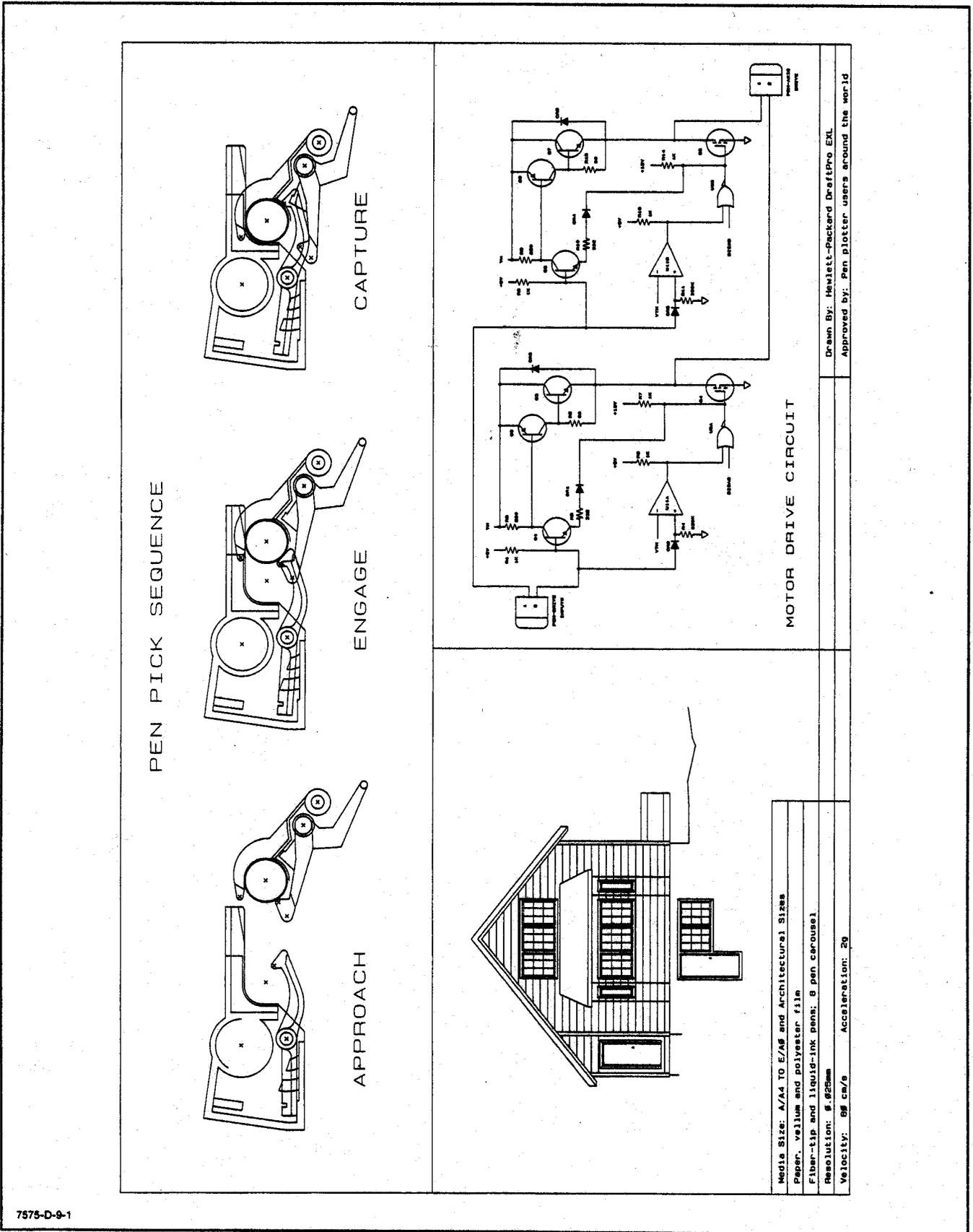
- a. Lower the carousel into the opening in the left cover.
- b. Manually rotate the carousel until it fully drops into position on the alignment pins on the carousel turntable.

3-56. LOADING MEDIA

3-57. The HP 7575/6 will draw on paper, double-matte polyester film, transparency film, glossy presentation paper, and vellum.

3-58. To load media into the plotter, proceed as follows:

- a. Set the plotter ac line switch to the ON (I) position.



7575-D-9-1

Figure 3-8. Demonstration Plot

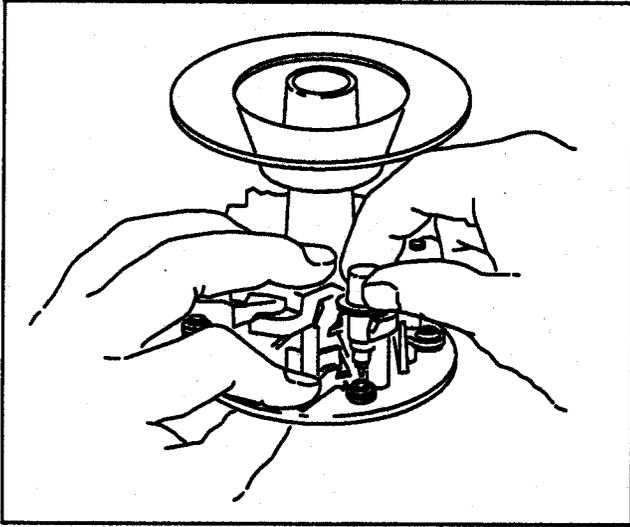


Figure 3-9. Loading Pens

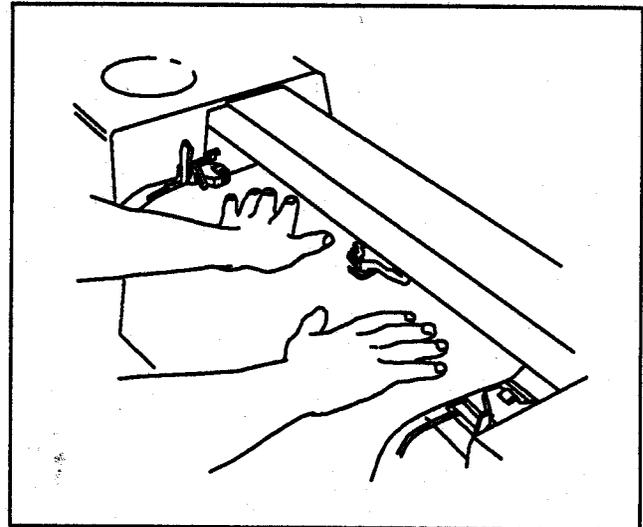


Figure 3-11. Inserting The Paper

b. Push the paper load lever, located at the left end of the platen, toward the back of the plotter to raise the pinch wheels. See Figure 3-10.

d. Position the right-hand movable pinch wheel arm so that the guide arrow on the arm is directly above the right-hand edge of the media. See Figure 3-12.

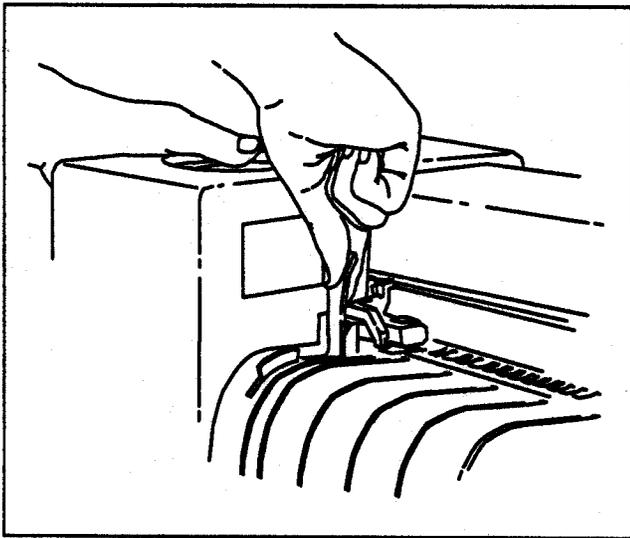


Figure 3-10. Raising The Pinch Wheels

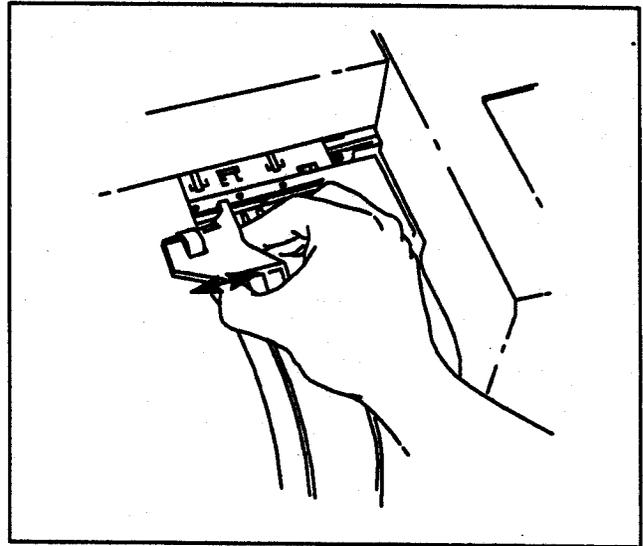


Figure 3-12. Positioning Movable Pinch Wheel

c. Insert the media under the pinch wheels and flush against the front and rear paper guides. See Figure 3-11.

e. Pull the paper load lever forward to lower the pinch wheels. The media will now be gripped between the grit wheel and the pinch wheels.

f. The plotter will automatically begin an initialization sequence to sense the media dimensions and set plotting limits.

3-59. FRONT PANEL CONTROLS

3-60. The HP 7575/6 front panel consists of 22 buttons and 5 light emitting diodes. The front panel is illustrated in Figure 3-13. The controls and their corresponding functions are as follows:

C

Clear—Pressing the CLEAR button clears the HP-GL buffer, cancels any pending output from the plotter and resets the parser. When pressed with the ENTER button a "RESET" function is performed. The plotter is set to a "power on" condition. This is equivalent to the HP-GL "IN" command.



P2—Pressing P2 causes the pen to be raised and moved to the current coordinates of the P2 point. At power-up the default location of P2 is as shown at the left. Pressing P2 simultaneously with ENTER establishes the current pen location as the new location for that point.



Axis Align—This function allows the user to set the physical axis of the plotter to a preprinted grid line on the plotting media. The axis align point is along the X-axis from the P1 coordinate points. The maximum allowable axis change is 6 degrees. When pressed with ENTER, the current location of the pen becomes the new alignment point.

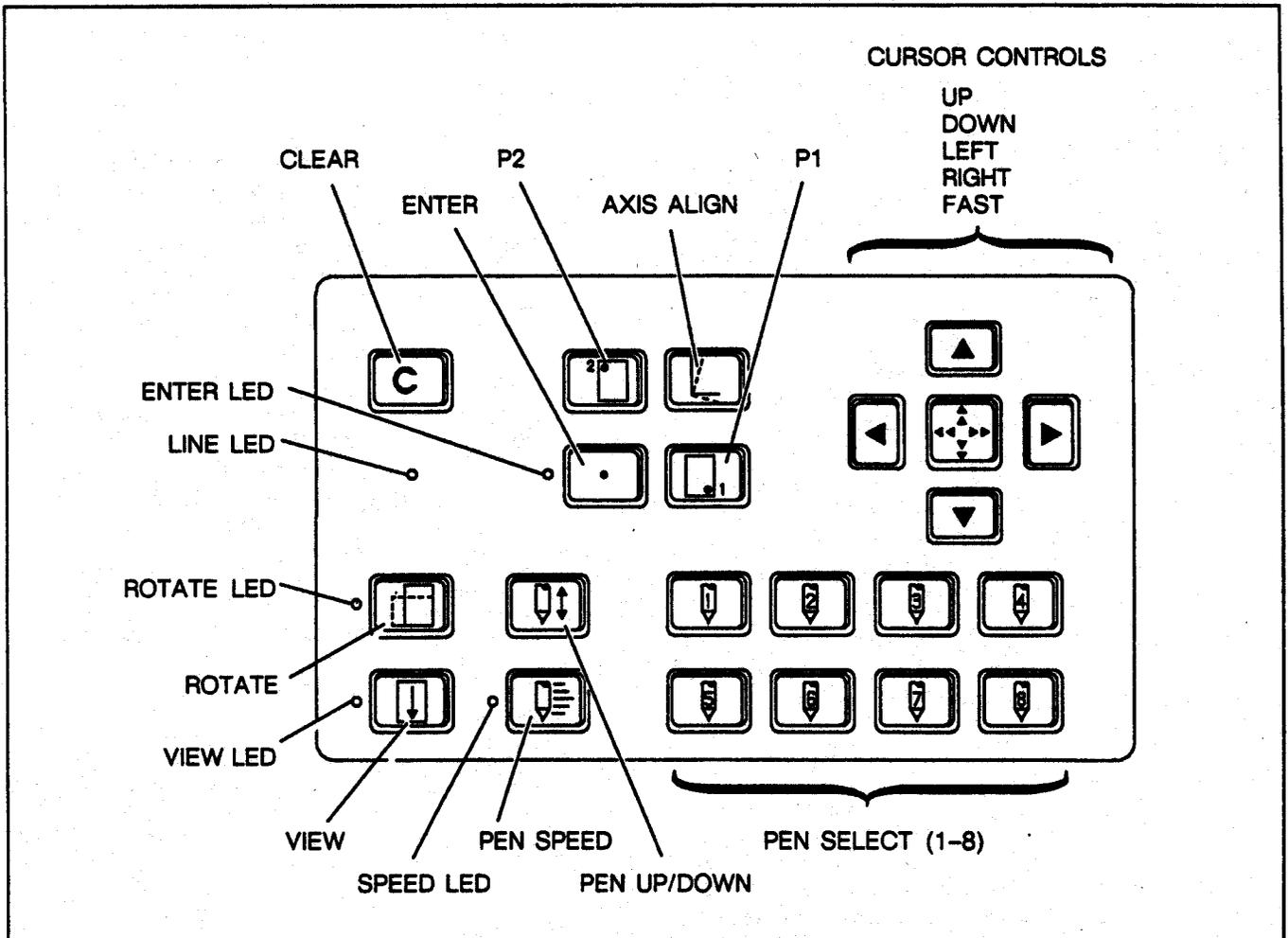


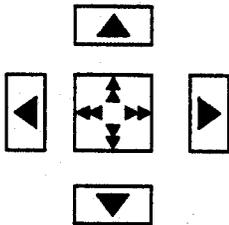
Figure 3-13. Front Panel Controls



Enter—This multi-purpose button is used for resetting the plotter to power-up default condition, digitizing, changing paper size and the location of the P1 and P2 scaling points, rotating the coordinate system, and storing the pen. To initiate the desired action the Enter button must be pressed before the appropriate function button is pressed.



P1—Pressing P1 causes the pen to be raised and moved to the current coordinates of the P1 point. At power-up the default location of P1 is as shown at the left. Pressing P1 simultaneously with ENTER establishes the current pen location as the new location for that point.



Cursors and Fast—These 5 buttons (4 direction and 1 fast) are used to move the pen within the plotting area as follows:

1. Pressing any cursor button moves the pen in the indicated direction.
2. Pressing adjacent buttons moves the pen at a 45 degree diagonal between the two directions.
3. When Fast (center button) is pressed in conjunction with any of the cursor buttons, the pen moves approximately four times faster.
4. Pressing Fast by itself suspends plotting as long as the button is held down.

NOTE

Pressing any cursor button during plotting will cause the plot to stop, the pen will make the appropriate move and plotting will resume at the new location.



Rotate—The Rotate button toggles the 90 degree rotate function ON or OFF. This function may also be controlled by the "RO" command. When the rotate function is activated, the Rotate LED will be ON and the actual pen position becomes the new graphics position.



Pen Up/Down—This button toggles the current position of the pen holder. This button will override program control of the pen holder.



View—When the VIEW button is pressed, the current vector is completed, plotting is suspended, and the plotting media is moved forward to allow the operator to view the plot. When pressed again, plotting will be resumed.



Pen Speed—This button is used with the Pen Select buttons to set the plotting speed. To set the speed, press the Pen Speed button. This will cause the LED to flash. Press one of the eight Pen Select buttons. The plotting speed, in cm/s, will be 5, 10, 15, 20, 30, 40, 60, or 80 in sequence with the pen select buttons.



Pen Select (1-8)—Pressing any Pen Select button causes the plotter to pick the corresponding numbered pen from the carousel, if that pen is loaded.



Enter + Clear—Resets the plotter. This is equivalent to an "IN" command.



Enter + P1/P2 or Axis Align—Defines the current pen location as the new P1, P2 or Axis Align scaling point. Changing the position of P1 also changes the positions of P2 and AA so that the vector from P1 to P2 and to AA remain the same.

CHAPTER 4

PREVENTIVE MAINTENANCE

4-1. INTRODUCTION

4-2. This chapter contains information on keeping the HP 7575/6 in the best operating condition. Included are instructions for preventive maintenance (PM) procedures to be performed by the operator. Operator maintenance is limited to cleaning.

4-3. EFFECT ON PRODUCT RELIABILITY

4-4. To keep the plotter in the best operating condition and to obtain top quality plots, it is essential that proper preventive maintenance be performed. Thorough cleaning should be performed periodically. A build-up of lint or paper fibers on the grit wheels will allow media slippage that will degrade plot accuracy. Proper maintenance will prolong plotter reliability.

4-5. PREVENTIVE MAINTENANCE PROCEDURES

WARNING

Disconnect the plotter from the power source prior to performing any maintenance. Do NOT allow water to run onto electrical components and circuits or through openings in the enclosure as this may create a shock hazard.

4-6. The following cleaning procedures can be performed by the plotter user. Follow normal safety precautions, and prevent water or other cleaning materials from entering the plotter electronics enclosure.

4-7. GENERAL CLEANING

4-8. Cleaning intervals are determined by the type of operation, local air contamination, and climatic conditions. Cleaning should include the following:

- a. Blow away dust accumulation with compressed air if available.

- b. Clean the outer surface of the plotter with a damp sponge or cloth. Use a mild soap and water solution if necessary. Wipe dry after cleaning the outer surface.
- c. Wipe accumulated paper dust from the rubber pinch wheels. Do *not* use the grit wheel brush to clean the pinch wheels.

NOTE

Do not use abrasive cleansers on the carriage cover. The cover should be cleaned with a mild solution of soap and water and wiped dry with a soft lint-free cloth to prevent scratching.

4-9. GRIT WHEEL CLEANING

4-10. Use only the brush provided with your plotter to clean the grit wheels. Cleaning the micro-grip drive grit wheel is limited to the removal of dust from between the particles of grit to ensure that media engagement is not impaired. Dust is removed as follows:

- a. Disconnect power from the plotter.
- b. Raise the plotter carriage cover.

CAUTION

Using any brush other than the one supplied with the plotter may damage the grit on the grit wheels.

- c. Manually rotate the grit wheels and brush dust from grit surface using the brush supplied with the plotter.

4-11. PEN CAROUSEL CLEANING

4-12. The pen cappers in the carousel may be cleaned of ink by using a cotton swab dampened with warm water and mild soap. Isopropyl alcohol may be used to remove heavier contamination. Do not tear the soft rubber pen cappers. Cleaning the capping mechanism will prevent ink colors from transferring when pens are changed.

CHAPTER 5

FUNCTIONAL DESCRIPTION

5-1. INTRODUCTION

5-2. This chapter contains a two-level functional description of the circuits used in the HP 7575/6. The first level is a simplified theory of operation supported by a simplified block diagram. This is followed by a more detailed functional description of the circuitry and references the HP 7575/6 Functional Block Diagram. The simplified and functional block diagrams are located in Chapter 12.

5-3. SIMPLIFIED THEORY OF OPERATION

5-4. This simplified theory of operation is provided as an introduction to the plotter system at a simplified block diagram level. See Figure 12-1.

5-5. The front panel assembly provides a means of manually entering X- and Y-position data, pen control and selection, and media control data to the plotter circuitry for processing. Five light-emitting diodes (LED's) on the front panel are used to indicate plotter status information to the operator.

5-6. Two different types of interfaces are supported, RS-232-C/CCITT V.24 and the Hewlett-Packard Interface Bus (HP-IB or IEEE 488-1978). The RS-232-C interface circuitry permits either Eavesdrop or Standalone operation which can be initiated or terminated by a rear panel interface switch, or by Hewlett-Packard Graphic Language (HP-GL) instructions. The HP-IB eight-bit parallel interface is available as an accessory plug-in cartridge. The interface circuits performs data transfer, interfacing, and data conversion for use inside the plotter.

5-7. A Kanji character set is available for the HP 7575/6. This character set is stored in ROM which is available with the HP-IB module. The characters occupy three 64K ROMs on the module PCA.

5-8. Two memory expansion modules, containing 1 Megabyte of RAM and 2 Megabytes of RAM respectively, are available and plug in to the same rear panel access opening as the HP-IB interface module.

5-9. The HP 7575/6 uses a dual Microprocessor Electronic Architecture (master and slave) to convert digital instructions into a graphic plot. The master microprocessor controls the Input/Output (I/O) interface

and is responsible for graphics processing through the plotter's memory consisting of 64K Read-Only Memory (ROM) and 32K Random-Access Memory (RAM). The master microprocessor communicates with the slave microprocessor through a dedicated I/O port using two handshaking lines and four data lines. The master microprocessor also controls the eavesdrop multiplexer for use in the Eavesdrop Mode. The slave microprocessor has 4K of on-board ROM and 128 bytes of RAM dedicated to plotting vector set-up, processing the servo code, and for monitoring inputs from the front panel, pinch-wheel switch, and associated rear-panel interface switches.

5-10. The servo IC controls the pen and paper axis servo systems using pulse-width modulated signals. The paper-axis servo controls rotation of the grit shaft and positioning of the eight-pen carousel. The pen axis servo controls the positioning of the pen across the plotting surface (platen). Both servo systems use reversible dc motors for drive and optical encoder circuits to generate position feedback signals. The servo IC receives reference generation, velocity estimation, and servo gain information from the slave microprocessor. The slave microprocessor and servo IC communicate over a dedicated eight-bit address/data bus and together form a closed-loop system for plot generation.

5-11. The grit wheel motor is also shifted through a gear mechanism to rotate the pen carousel. The servo IC functions in response to data received from the slave microprocessor over the eight bit Servo Address/Data (SAD) bus.

5-12. A vacuum platen system holds the plotting media flat on the writing surface (platen) to prevent bubbles which can cause stray pen marks on the plotting media. The vacuum is created by a dc fan that is controlled by the slave microprocessor and fan drive circuit.

5-13. The power supply circuitry converts the ac line input voltage to the dc voltages required for plotter operation. The plotter's 85 watt hybrid power supply powers the digital electronic circuitry, the paper and pen-axis motors, the dc fan for platen vacuum, and the penlift solenoid. The power supply furnishes an unregulated +32 Vdc at 4.5 Amps, a +/-12 Vdc at 1.5 Amps, and a +5 Vdc switching-regulated supply at 1.5 Amps.

5-14. FUNCTIONAL THEORY OF OPERATION

5-15. The functional theory of operation is a block diagram description (see Service Sheet 1 in Chapter 12) which presents an overview of the Model 7575/6 Drafting Plotter operation. A detailed description of each of the major blocks is given in the paragraphs that follow. Simplified diagrams of major blocks are included to facilitate understanding of the detailed descriptions. A complete set of schematics for the circuits described in this chapter are given in chapter 12.

5-16. RS-232-C INTERFACE CIRCUITRY

5-17. The standard interface for the HP 7575/6 is the RS-232-C/CCITT V.24 interface. The RS-232-C I/O is an asynchronous, full-duplex, bit-serial interface for hardwired connection to a computer. The interface is fully compatible with both the EIA Standard RS-232-C and CCITT V.24. The interface signal lines and their respective connector pins are listed in Table 5-1. A simplified block diagram of the interface is shown in Figure 5-1.

5-18. Serial data from an external controller is received by the line receiver U3 which provides impedance matching and signal inversion. The flow of serial data RXD (Received Data) and RXD2 (Secondary Received Data) is managed by control signals DSR (Data Set Ready), CTS (Clear To Send), and Data Carrier Detect (DCD).

5-19. The serial port (Port 3) of the master microprocessor, U6, processes all incoming serial data, convert-

Table 5-1. RS-232-C Interface Lines

PIN	SIGNAL NAME	RS-232-C	CCITT V.24
1	Protective Ground	AA	101
2	Transmitted Data	BA	103
3	Received Data	BB	104
4	Request to Send	CA	105
5	Clear to Send	CB	106
6	Data Set Ready	CC	107
7	Signal Common	AB	102
8	Received Line Signal Detector	CF	109
14	Secondary Transmitted Data	SBA	118
16	Secondary Received Data	SBB	119
20	Data Terminal Ready	CD	108.2

ing it internally to the eight-bit parallel data used by the plotter circuitry, and converting all data from parallel to serial for transmission to the serial line.

5-20. Line driver U1 provides impedance matching and signal inversion for the serial data being transmitted to the external controller. The flow of serial data TXD (Transmitted Data) and TXD2 (Secondary Transmitted Data) is managed by the DTR (Data Terminal Ready) and RTS (Request To Send) control signals.

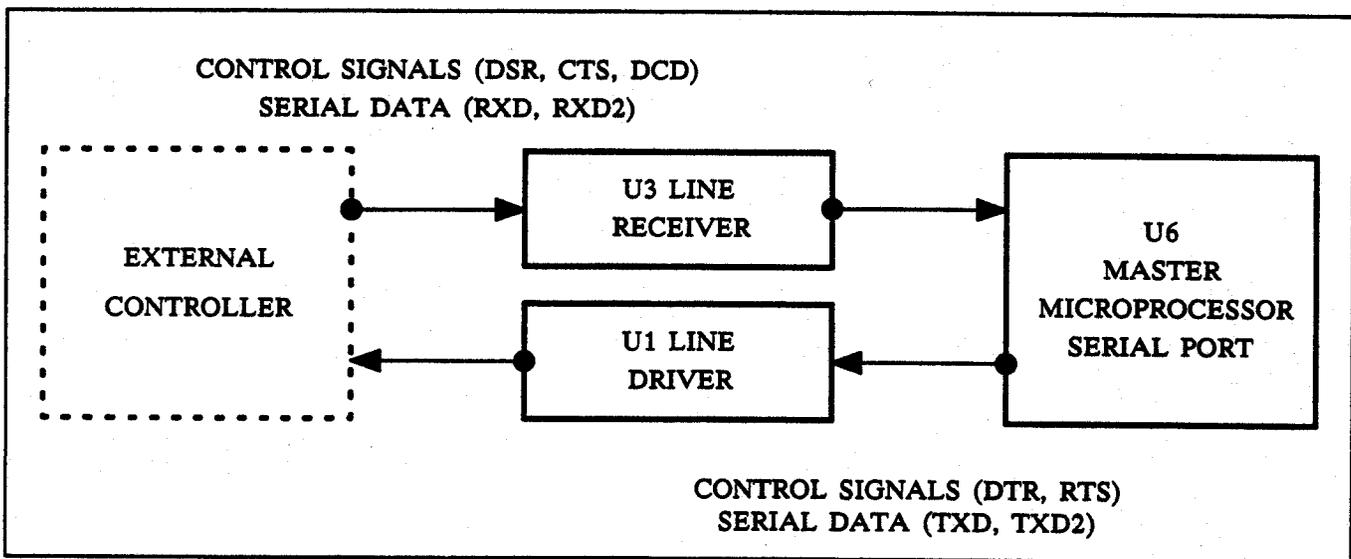


Figure 5-1. RS-232-C Simplified Block Diagram

5-21. Rear panel interface switches (S1E-S1L) are used to set up the serial communications. Baud rate switches select Baud rates from 75 to 9600 bits-per-second. The parity switch is set to detect errors in the received data by checking for an EVEN or ODD number of "1"s in the serial data. The Eavesdrop switch permits Eavesdrop operation. In the Eavesdrop Mode, the plotter is connected between a host computer and a terminal. When Eavesdrop Mode is selected, the master microprocessor uses the select (SEL) line and Multiplexer U2 to output serial data at TXD or TXD2. Eavesdrop may also be programmed ON or OFF using HP-GL instructions.

5-22. The rear panel interface switches (S1E-S1L0) are read at power-up by the servo I.C. U13. The switch status data is passed over the Servo Address/Data Bus (SAD0-7) to the slave microprocessor and then over the Nibble Bus (NB0-5) to the master microprocessor U6 for interpretation and processing for internal plotter use.

5-23. HP-IB INTERFACE

5-24. An 8-bit parallel interface is available as an accessory plug-in module for the HP 7575/6. The plug-in module provides the Hewlett-Packard implementation of the IEEE 488-1978 interface. The interface consists of an 8-bit parallel data bus with 3 handshake lines and 5 interface management lines. The handshake lines are identified as follows:

- a. DATA VALID (DAV) - Used to indicate that valid information is available on the data lines.
- b. NOT READY FOR DATA (NRFD) - Used to indicate the readiness of the Plotter to accept information.
- c. NOT DATA ACCEPTED (NDAC) - Used to indicate the acceptance of information by the Plotter.

5-25. The five interface management lines are used to provide an orderly flow of information across the interface bus. The lines are identified as follows:

- a. ATTENTION (ATN) - Used by the controller to specify how data on the DIO signal lines are to be interpreted, (command, data, or parallel poll response) and which devices on the bus must respond to the data.
- b. SERVICE REQUEST (SRQ) - Used to indicate that the plotter needs attention and to request an interruption of the current sequence of events.

- c. INTERFACE CLEAR (IFC) - Used by the controller to place the bus in a known quiescent condition.
- d. END OR IDENTIFY (EOI) - Used by a talker to indicate the end of a multiple byte transfer sequence or, in conjunction with ATN, to execute a polling sequence.
- e. REMOTE ENABLE (REN) - Used to enable a remote control mode.

5-26. Positive true logic is used within the plotter circuitry. Therefore a positive false NRFD on the HP-IB bus will be converted to a positive true RFD within the plotter. The HP-IB functions implemented to the standard are listed in Table 5-2. A simplified block diagram of the HP-IB interface is shown in Figure 5-2.

Table 5-2. HP-IB Functions

Name	Mnemonic
Acceptor Handshake	AH1
Source Handshake	SH1
Talker	T6
Listener	L3
Service Request	SR1
Device Clear	DC1
PARALLEL POLL	
Listen Only	PP0
Address 0-7	PP2
Address 8-30	PP1
NOT IMPLEMENTED	
Remote Local	RLO
Device Trigger	DT0
Controller	C0

5-27. The rear panel of the HP-IB interface module contains a 24 pin interface connector and six segment slide switch S1. The master microprocessor reads the slide switch settings at power up. The first five segments of the switch set the interface address for the plotter. The normal addresses range from 0 through 30 and the Listen Only mode is set at address 31. The sixth segment enables the Secondary Command Protocol. The normal HP-IB mode and the Secondary Command Protocol mode are mutually exclusive.

5-28. At power up, the plotter interface is determined by the first communication path opened with the master microprocessor. All communication with the plug-

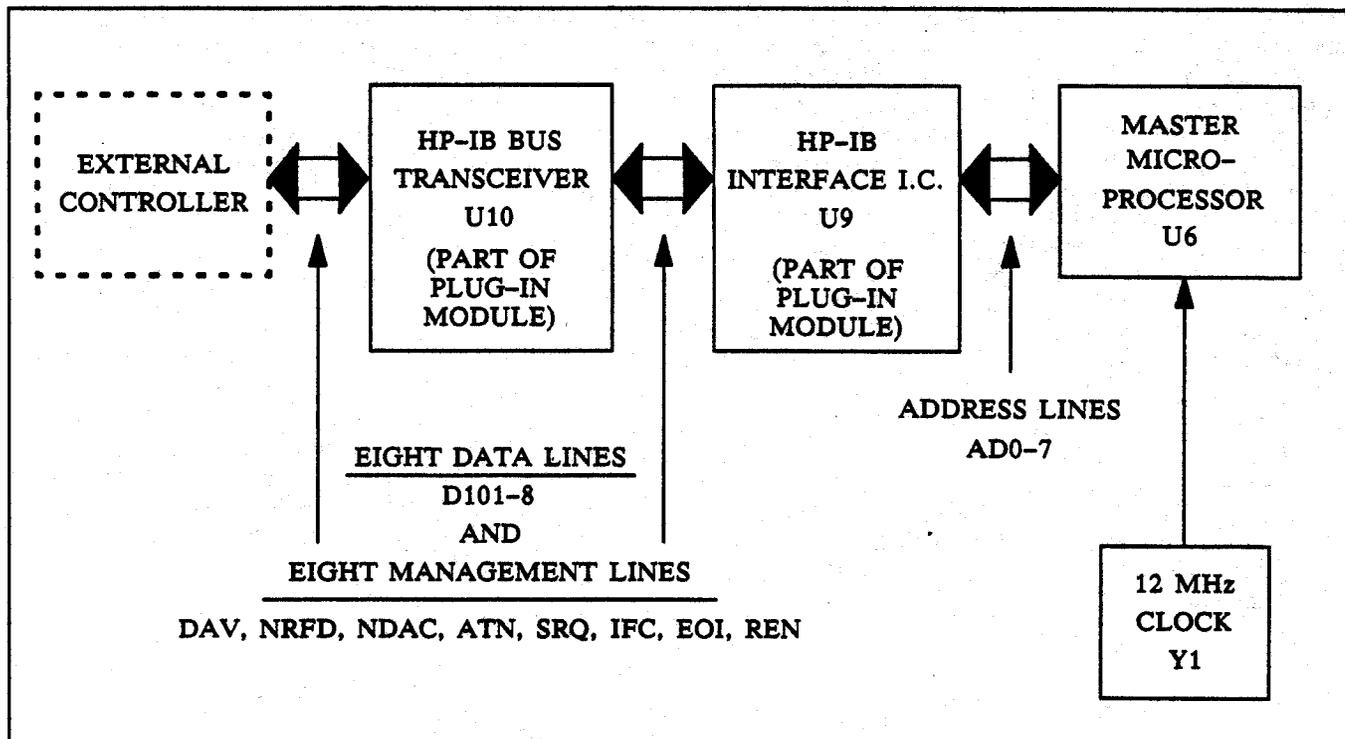


Figure 5-2. HP-IB Simplified Block Diagram

in module is dependent upon the address line (A15) from the master microprocessor. The line must be high to communicate with the module.

5-29. The address switch S1 is read via the bus driver U4 at power up, when U4 is enabled by the low active SWITCH and read RD lines. The address is stored for comparison with external bus addresses.

5-30. The HP-IB bus transceiver U10 is designed to handle all bus interface requirements in response to commands from the interface controller U3. When the HP-IB is not enabled, or the plotter is switched OFF, the bus lines will be at high impedance to prevent loading the bus lines.

5-31. MASTER MICROPROCESSOR

5-32. The master microprocessor U6 contains 256 bytes of internal RAM and is used to control communication with the I/O ports, interpret interface and switch commands, handle character sets, clipping, windowing, scaling, pen sort, and the polygon buffer.

5-33. Master timing signals are generated from the 12 MHz crystal at pins 18 and 19. The master microprocessor also generates control signals READ (RD), Write (WR), Address Latch Enable (ALE), and Program Store Enable (PSEN).

5-34. Communication with the slave microprocessor is handled over the six-bit nibble bus NB0-NB5 at Port

1 using four data bits and two handshake bits. Port 1 also has two serial communication lines, RXD2 to support the Eavesdrop mode and CTS to support the RS-232-C Interface.

5-35. The master microprocessor has an internal serial communication port to directly handle the RS-232-C interface.

5-36. The master microprocessor controls the 32K byte ROM (U14) and the 8K byte RAM (U10). Port 0 of the master microprocessor is multiplexed so that it may be used for the lower 8 bits of the address and for data. The address is latched by U7. All data transfers between ROM, RAM, and the HP-IB bus transceiver are performed at this port.

5-37. Port 2 of the master microprocessor is the high eight bits of the address bus (A8-A15) and where the master microprocessor addresses RAM and ROM. RAM is addressed by latching a memory address at the output of U7 with the Master Address Latch Enable (MALE) signal. After the address is latched, lines AD0-AD7 may then be used for data transmission to and from RAM. ROM is accessed by a low A15 to select the memory, while the output is enabled by the Program Store Enable (PSEN) signal.

5-38. Port 3 of the master microprocessor includes Received Data (RXD) used to accept serial data coming in. Transmitted Data (TXD) is an output for serial data and is also used to support the Eavesdrop mode. Data Set Ready (DSR) is an RS-232-C interface control line. SELECT (SEL) is connected to the Eaves-

drop multiplexer U2 and is used to select the Eavesdrop Mode. Data Terminal Ready (DTR) is a serial handshake line. WRITE (WR) is the control signal used to enable the input to RAM. READ (RD) is the control signal used to enable the output from RAM.

5-39. SLAVE MICROPROCESSOR

5-40. The slave microprocessor (U9) contains 4 Kbytes of internal ROM and 128 bytes of internal RAM. Port 0 of the slave microprocessor is the servo address/data bus (SAD0-SAD7) over which the slave microprocessor and servo IC communicate. The slave microprocessor functions as the servo controller, handling reference generation over the SAD0-SAD7 bus. The slave microprocessor also handles front panel switch data, the front panel identity "OI" jumpers, and some of the rear panel switches.

5-41. Port 1 is the nibble bus over which the slave microprocessor communicates with the master microprocessor. Motor control instructions are transmitted by the master microprocessor over the nibble bus to the slave processor. The slave microprocessor compares the new information with the data received over the SAD bus from the servo IC. The servo output data consists of position information derived from the up/down counters indicating the present paper and pen position. The slave microprocessor computes the required vectors and acceleration in response to these computations and transmits this data to the servo IC over the SAD bus. This data to the servo IC is updated every 500 microseconds.

5-42. Port 2 of the slave microprocessor reads the status of the pinch wheel switch at PRS and scans the front panel at FP1-FP7 to detect if a button was pressed. Slave Address Latch Enable (SALE) is the control signal used for latching a servo IC memory address onto the eight-bit SAD bus. After the address is latched, lines SAD0-SAD7 may be used for data transmission.

5-43. Port 3 includes the S1A, S1B, and S1C switches used in troubleshooting the plotter. S1D is the EXPAND rear panel switch used for expanding the usable margins on a plot.

5-44. The NOT SAFE (NSAFE) signal is an output from the slave in response to an error condition being detected in the servo output signals. The slave microprocessor stores data coming from the servo up/down counter and compares new incoming data with the stored data. If a discrepancy occurs between the expected data and the actual incoming data, the slave will assume that a problem exists and assert the NSAFE signal.

5-45. The disable (DISAB) signal, derived from NSAFE at U8C, is used to shut down the motor drivers, U5, and the Eavesdrop multiplexer U2.

5-46. The TM1 signal is a timing signal from the +5V supply. This pulse width modulated signal allows the slave microprocessor to monitor the duty cycle of the +5V and to correct the PWM output for variations in the +32 volt (VM) supply. The Servo Read (SRD) and Servo Write (SWR) signals control data flow on the SAD0-SAD7 bus.

5-47. MEMORY CIRCUITS

5-48. The memory on the Main PCA A1 consists of 64K bytes of ROM (U14), which contains the executable program instructions and data constants, and 32K bytes of RAM (U10) which serves as a temporary storage buffer. ROM occupies address locations 0000 to 7FFF, and RAM occupies 0000 through 1FFF.

5-49. Access to the Main PCA memory is controlled by the address line (A15) which serves as a low active select line for the Main PCA. When high, A15 selects the HP-IB interface PCA, if installed.

5-50. The address bits are latched at the output of U7 by a low Address Latch Enable (ALE) so that the lines AD0-AD7 may be used for data transmission to and from the memory. ROM is accessed by a low A15 and the output is enabled by a low Program Store Enable (PSEN). RAM access is by a low A15 to enable the IC while a low Read (RD) enables the output, or a low write WR enables the input.

5-51. The RAM contains three dynamic buffers whose sizes may be user defined. Maximum size of the three buffers combined is 31 900 bytes. If the HP-IB interface module with the Kanji character set is installed, an additional 192 Kilobytes of ROM are included. The 1 Megabyte and 2 Megabyte memory modules provide additional RAM buffer space as indicated.

5-52. Access to the module memory is enabled by the high address line (A15) to the cartridge. Access to the 16 pages of memory is accomplished by latching the lower 4 address lines AD0-AD3 into U8 using SWITCH and WR to create the KRA0-KRA3 addresses. These form the high order address lines to the ROMs to select 1 of the 16 pages. The individual ROM is then selected by decoding the address lines A12-A14 at U9 from the ROM enable lines KR0-KR2. After the address is valid, the master microprocessor on the Main PCA will pull RD low, putting the selected character set data on the AD0-AD7 bus. When RD goes high, the master microprocessor will read the data from the bus.

5-53. SERVO IC CIRCUITRY

5-54. The slave microprocessor acts as a servo controller by supplying vector set-up, reference generation, velocity estimation and servo control value information to the servo IC. The servo IC U13 serves as an

the worm gear to rotate the carousel. The worm gear is disabled when the clutch is disengaged.

5-65. The pen solenoid driver U2 amplifies the PWM control information from the servo IC to control the raising and lowering of the pen. The penlift solenoid is connected to Vm (+32 Vdc) and the duty cycle of the PWM signal determines the average dc voltage applied to the solenoid. The longer the duty cycle, the higher the dc average applied to the penlift solenoid and the faster the penlift solenoid will act to lower the pen onto the plotting media.

5-66. VACUUM PLATEN SYSTEM

5-67. A vacuum platen system draws the media flat to the platen to prevent stray pen marks on any bubbles that may occur in the plotting media. Vacuum is created by a large dc fan mounted within the platter. Fan speed, and consequently the vacuum, are controlled by the slave microprocessor, U9. A simplified block diagram of the vacuum platen system is shown in Figure 5-4.

5-68. To control the fan speed, the slave microprocessor issues a pulse-width modulated (PWM) signal with a varying duty cycle which is applied to the Field-Effect Transistor (FET) Q22. As the FET is switched ON, current flows from the +32Vdc unregulated power source through the dc fan and Q22 to digital common. The longer the duty cycle of the PWM signal, the longer Q22 is switched ON allowing a higher dc average to be applied to the fan resulting in higher vacuum at the platen.

5-69. A shorter duty cycle of the PWM signals results in a lower dc average being applied to the fan motor which, in turn, reduces the speed of the motor and the vacuum pressure.

5-70. A nominal vacuum is applied to the platen when the pinch wheels are in their raised position with no media loaded. This vacuum is approximately 50% of the total potential vacuum and is required to load media into the platter. Once the media is loaded and the pinch wheels are in the down position, the vacuum platen is at full vacuum. While cursoring or plotting, full vacuum is also maintained. If the pinch wheels are down with media loaded, and no plotting or cursoring has occurred for one minute, the vacuum applied to the platen will decrease to the nominal or 50% vacuum level. This reduction in vacuum makes the platter quieter and prolongs the fan's life.

5-71. When service switch S1B is closed (=1) to perform the "I/O Loopback Test", the fan is switched OFF by shorting the PWM signal to digital common. When the I/O Loopback Test is running, no plotting is required so no vacuum is needed. This condition is the only time the fan and vacuum is turned completely OFF once power is applied to the platter.

5-72. POWER SUPPLY

5-73. The primary of the power supply will operate on any one of four nominal line voltages. The operating voltage is chosen by installing the voltage selector in one of four positions in the power module. The selector closes various switches in the module based upon the line voltage, applying the line voltage to selected segments of the power transformer primary. Contained

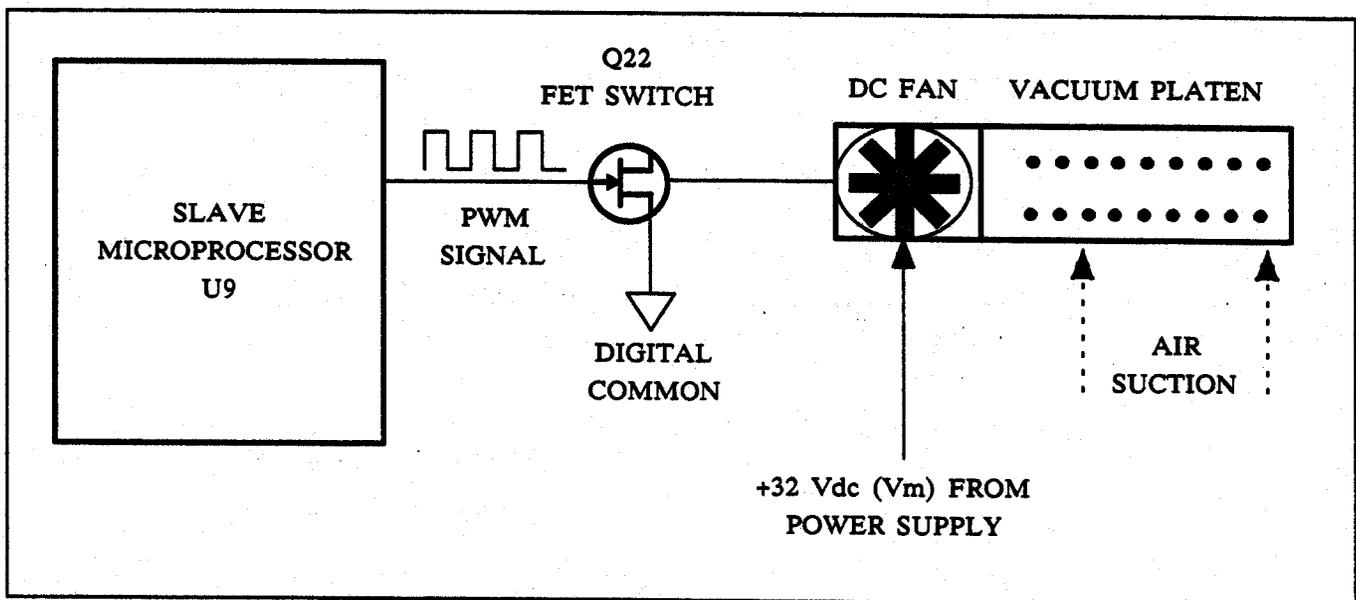


Figure 5-4. Vacuum Platen System Simplified Block Diagram

in the power module are the ac receptacle, line fuse, and the power ON(I)/OFF(O) switch.

5-74. 5-75. The dc voltages produced in this supply are VM (approximately +32 V), +5 V, +12 V, and -12 V. See Figure 5-5.

5-76. The basic supply voltage, VM (motor voltage), is nominally rated at +32 V in normal operation.. It is derived from the output of the secondary of the power

transformer, which is rectified by the full wave bridge CR2-CR5, and then filtered. The VM supply is not regulated. It is used as the source for the other dc voltages, Vcc for U12, and as the motor drive voltage.

5-77. The +5 V supply is a switching supply, controlled by the pulse width modulation control IC, U12. The +5 V supply is used as Vcc for the digital ICs. The two 12 volt supplies are also generated in the PWM controller U12.

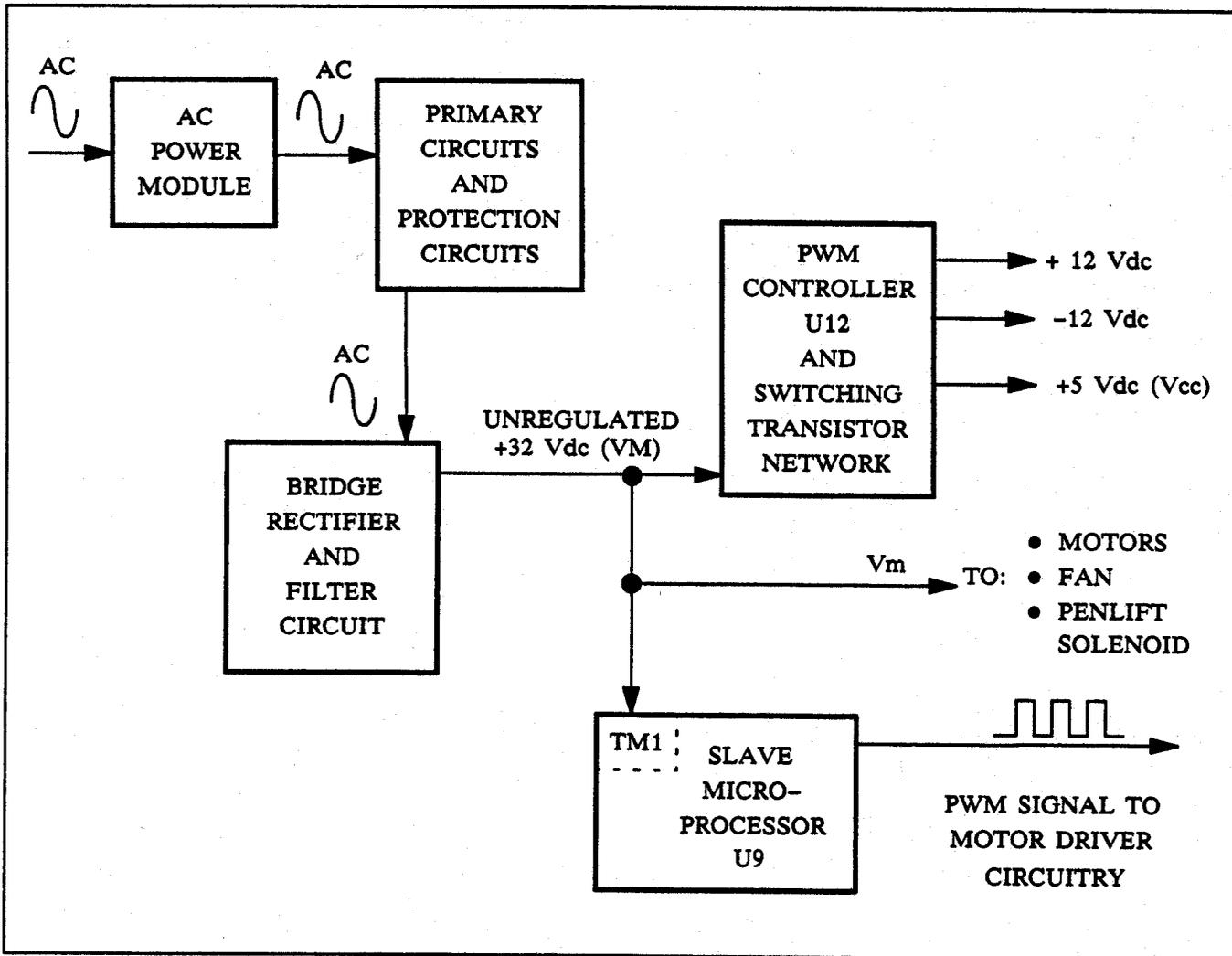


Figure 5-5. Power Supply Simplified Block Diagram

CHAPTER 6

REMOVAL AND REPLACEMENT

6-1. INTRODUCTION

6-2. This chapter contains procedures for the removal and replacement of the HP 7575/6 plotter assemblies and mechanisms.

6-3. SAFETY CONSIDERATIONS

6-4. The Safety Symbols used with Hewlett-Packard instruments are illustrated in the front matter of this manual. **WARNING** and **CAUTION** symbols and instructions must be reviewed before service work is performed. These warnings and cautions must be followed for your protection and to avoid damage to the plotter.

WARNING

Always remove ac power before opening the plotter or removing any of the covers. If servicing requires that power be on while protective covers are removed, proceed only with extreme caution. Failure to observe these precautions may result in severe injury or death.

The following procedures are for use by qualified service personnel who are aware of the possible hazards involved.

CAUTION

Failure to follow the proper procedures may result in damage to the plotter. Assure that the instructions are understood before attempting any of the procedures.

6-5. ESD CONSIDERATIONS

6-6. Integrated circuits can be damaged by electrostatic discharge (ESD). The following procedure must be followed to prevent damage to the plotter's electronic circuits from ESD.

- a. Do not wear clothing which is subject to static build-up.
- b. Do not handle integrated circuits in carpeted areas.
- c. Do not remove an IC from its conductive foam pad until you are ready to install it.
- d. Ground your body while disassembling and working on the plotter. Conductive wristbands (HP P/N 00970-67900) are available for this purpose.
- e. Touch all tools to earth ground to remove static charges before using them on the plotter.

6-7. REQUIRED TOOLS AND EQUIPMENT

6-8. Tools required for the removal and replacement of parts on the HP 7575/6 are listed in Table 6-1. Tools listed are contained in the HP Tool Kit, P/N JTK-536.

Table 6-1. Tools Required

Pliers, needle nose
Screwdrivers, Pozidriv #1 & #2
Screwdriver, common
Torx drivers T 15W & T 20W
Nut drivers, 1/4 in. & 5/16 in.
10 mm wrench
Spring Tool, combination

6-9. DISASSEMBLY AND REASSEMBLY PROCEDURES

WARNING

Disconnect the ac line cord and the interface cable before performing any disassembly or maintenance. Failure to do so may expose high voltage circuits and cause possible personal injury or death.

6-10. Use the following procedures to repair or replace plotter assemblies.

6-11. A matrix of disassembly procedures for the HP 7575/6 is found in Chapter 12 of this manual. To remove a particular part or assembly, find the item in the column at the left of the matrix, follow that row across noting each column marked with an "X". The item at the top of each column references the item procedures which must be followed in sequence to remove the desired part.

6-12. RIGHT CHASSIS COVER REMOVAL

6-13. To remove the right chassis cover, proceed as follows:

- Turn OFF (0) the plotter and disconnect the ac line cord and the interface cable from the back of the right chassis.
- Raise the plotter's window.
- Remove the two machine screws from the lower back edge of the chassis cover. See Figure 6-1.
- Remove the machine screw centered under the front edge of the cover. See Figure 6-1.
- Lift up on the front and back edges of the cover, lifting it straight up from the plotter.

6-14. To install the cover, proceed as follows:

- Carefully lower the cover into position over the chassis assuring that the corners are outside of the base.
- Install the machine screw under the front center of the cover.
- Install the two machine screws at the rear of the cover.

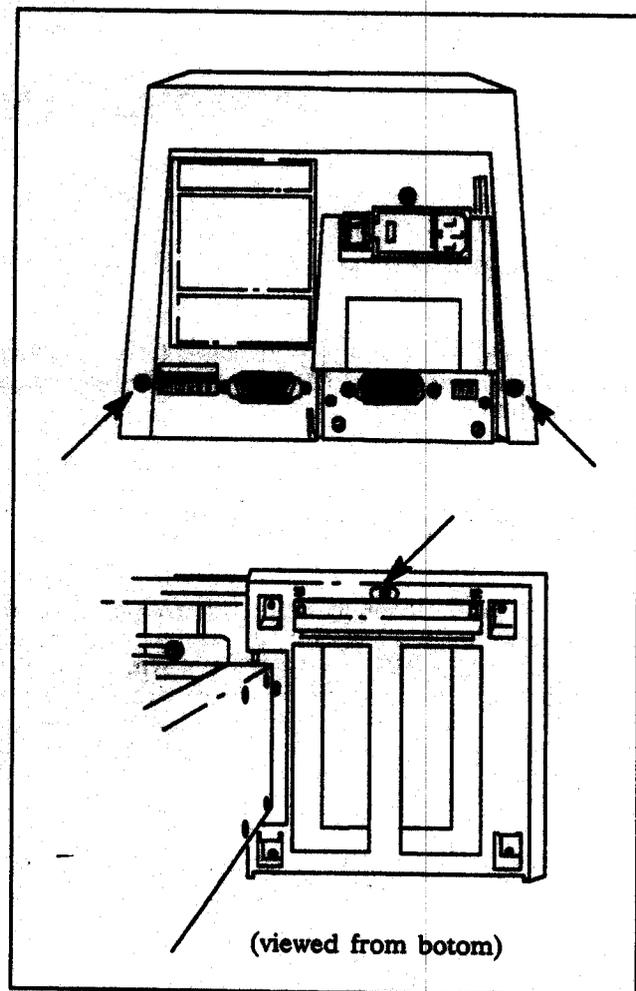


Figure 6-1. Right Chassis Cover Removal

6-15. LEFT CHASSIS COVER REMOVAL

6-16. To remove the left chassis cover, use the following procedure:

- Turn OFF (0) the plotter and disconnect the ac line cord and the interface cable from the back of the right chassis.
- Raise the plotter's window.
- Remove the two machine screws from the lower back edge of the chassis cover. See Figure 6-2.
- Remove the machine screw centered under the front edge of the cover. See Figure 6-2.
- Lift up on the front and back edges of the cover, lifting it straight up from the plotter.

6-17. To install the cover, proceed as follows:

- Carefully lower the cover into position over the chassis assuring that the corners are outside of the base.

- b. Install the machine screw under the front center of the cover.
- c. Install the two machine screws at the rear of the cover ensuring that the flat washer is installed under the left screw and the shoulder washer is installed under the right screw.

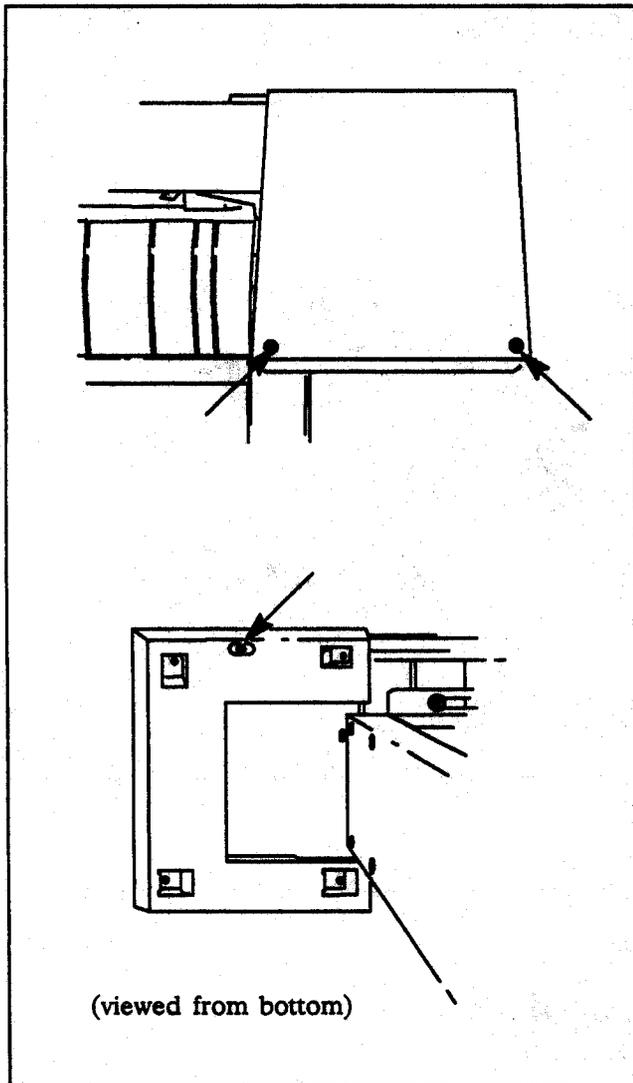


Figure 6-2. Left Chassis Cover Removal

6-18. CENTER COVER AND WINDOW REMOVAL

6-19. To remove the center cover, proceed as follows:

- a. Remove the right and left chassis covers.
 - b. Manually move the pen carriage to the extreme left side of the platen (nearest the pen carousel).
- c. Lower the plotter's window and remove the two self-tapping and one machine screw from the center cover. See Figure 6-3.
 - d. Standing at the rear of the plotter, gently lift the right side (nearest the carousel) of the center cover high enough to disconnect the trailing cable from the pen carriage and disconnect the trailing cable. See Figure 6-3.
 - e. Lower the center cover to the original position after disconnecting the trailing cable.
 - f. Disconnect the trailing cable from the PCA at connector J2. See Figure 6-3.
 - g. Carefully lift the center cover from the plotter, taking care to clear the trailing cable from the right chassis.

6-20. To remove the plotter's window, use the following procedure:

- a. Carefully turn the center cover and window over to expose the tabs that latch the window into the center cover.
- b. Compress the tabs of each window hinge and push them back out of the center cover. See Figure 6-4.
- c. Slide the window away from the center cover.

6-21. To install the window, hook the window hinges over the flanges in the center cover and press the tabs of each hinge into the holes of the center cover.

6-22. To install the center cover, proceed as follows:

- a. Lift the left end of the center cover and connect the trailing cable to the pen solenoid connector.
- b. Route the trailing cable between the slider rod clamp and the slot in the right chassis. See Figure 6-5. When replacing the center cover, ensure that the trailing cable is properly routed between the slider rod clamp and the grounding bracket. Make sure that there are no twists in the trailing cable and position the center cover carefully on the plotter.
- c. Connect the trailing cable to the PCA at J2.
- d. Manually move the pen carriage back and forth to check for cable interference or binding.
- e. Secure the center cover with the two self-tapping screws and one machine screw.
- f. Install the right and left chassis covers.

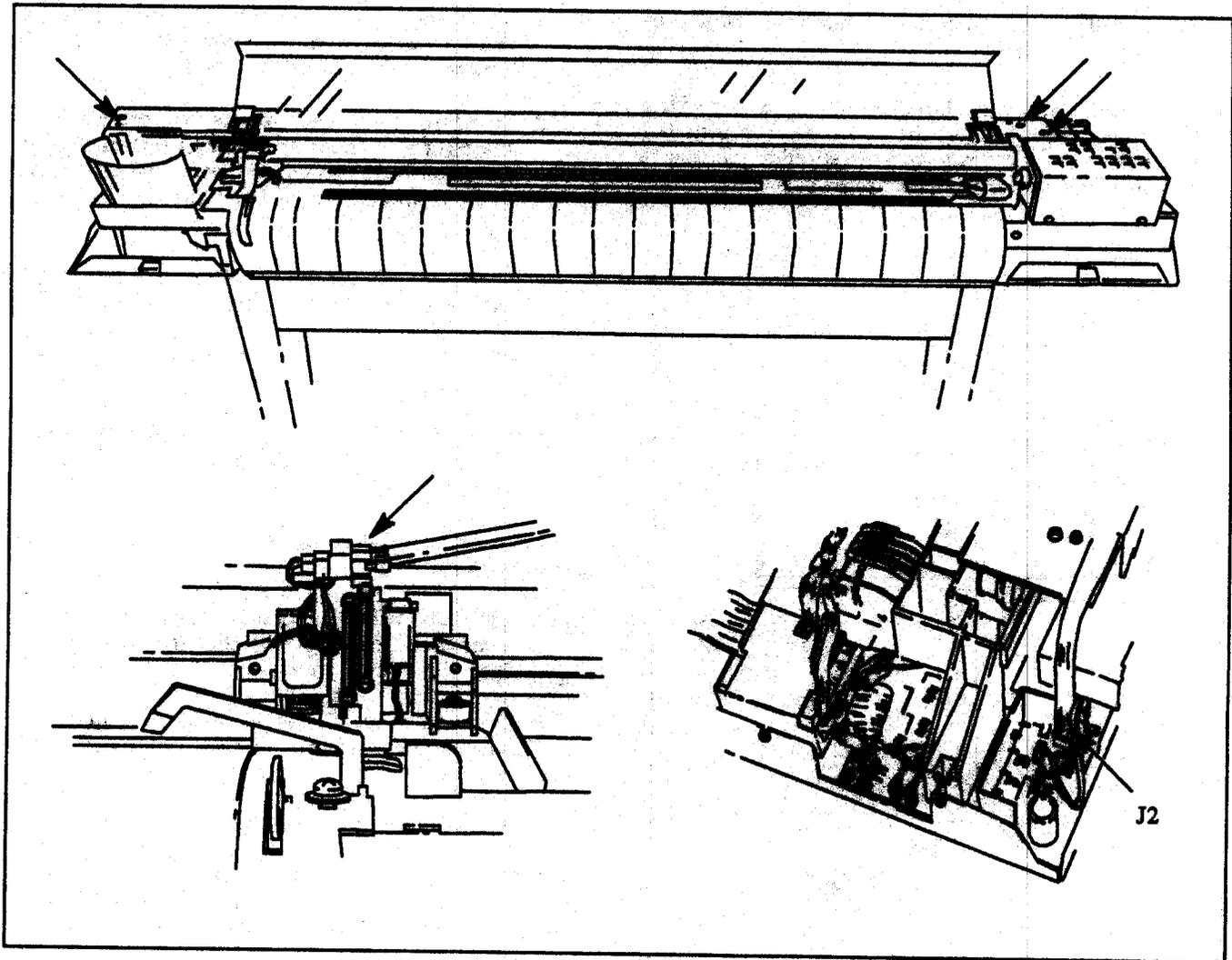


Figure 6-3. Center Cover Removal

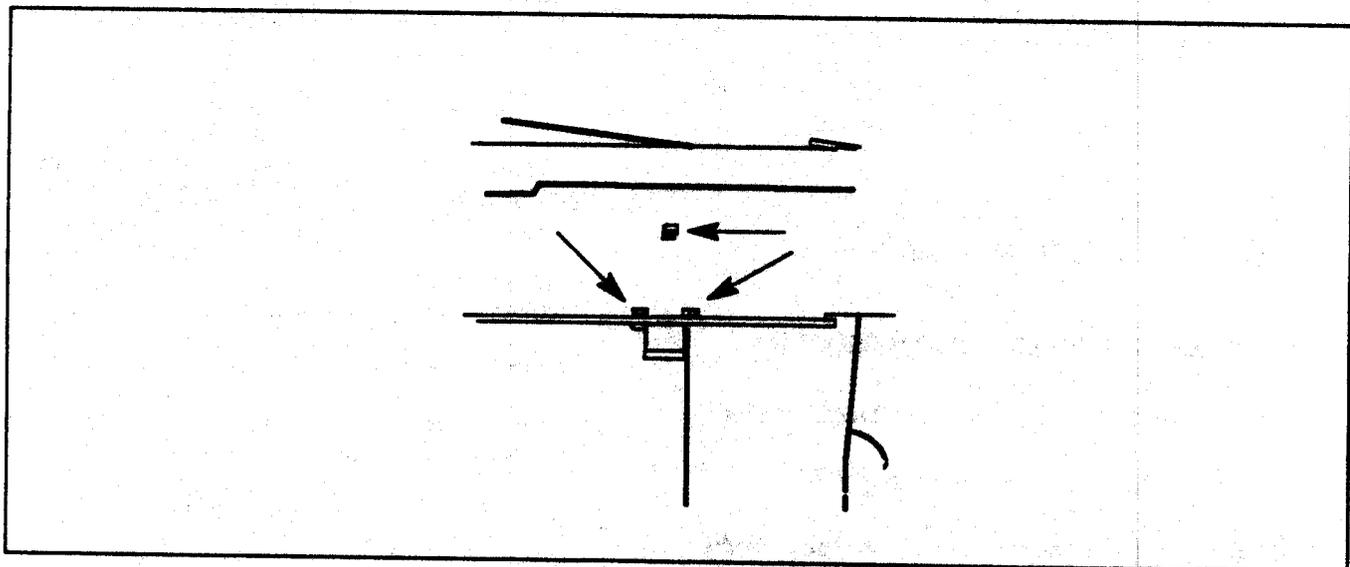


Figure 6-4. Window Removal

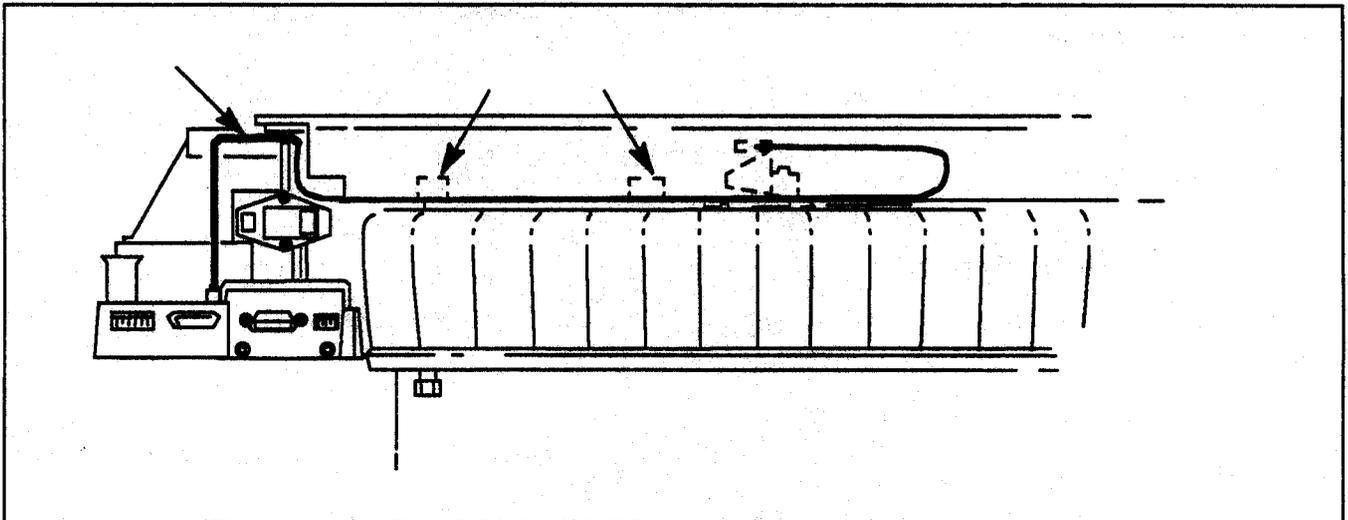


Figure 6-5. Trailing Cable Installation

6-23. FRONT PLATEN REMOVAL

6-24. To remove the front platen, use the following procedure:

CAUTION

- a. Remove the right and left chassis covers.
- b. Raise the pinch wheel lever and slide the movable pinch wheel to the far right side of its travel (nearest the front panel).
- c. Remove the two self-tapping screws securing the upper ends of the platen.
- d. Remove the three machine screws from the bottom edge of the platen as shown. See Figure 6-6. Do NOT remove the screws that mount the front platen to its inside braces.

Exercise caution not to break the front paper sensor as the platen is lifted from the plotter in the next step.

- e. Carefully lift the bottom outer edge of the platen and remove it from the plotter.

6-25. To install the front platen, proceed as follows:

- a. Align the front platen tab with the slot in the center platen, making sure that the platen alignment pin, front paper guide, and two alignment slots are correctly positioned before the platen is lowered to the plotter.

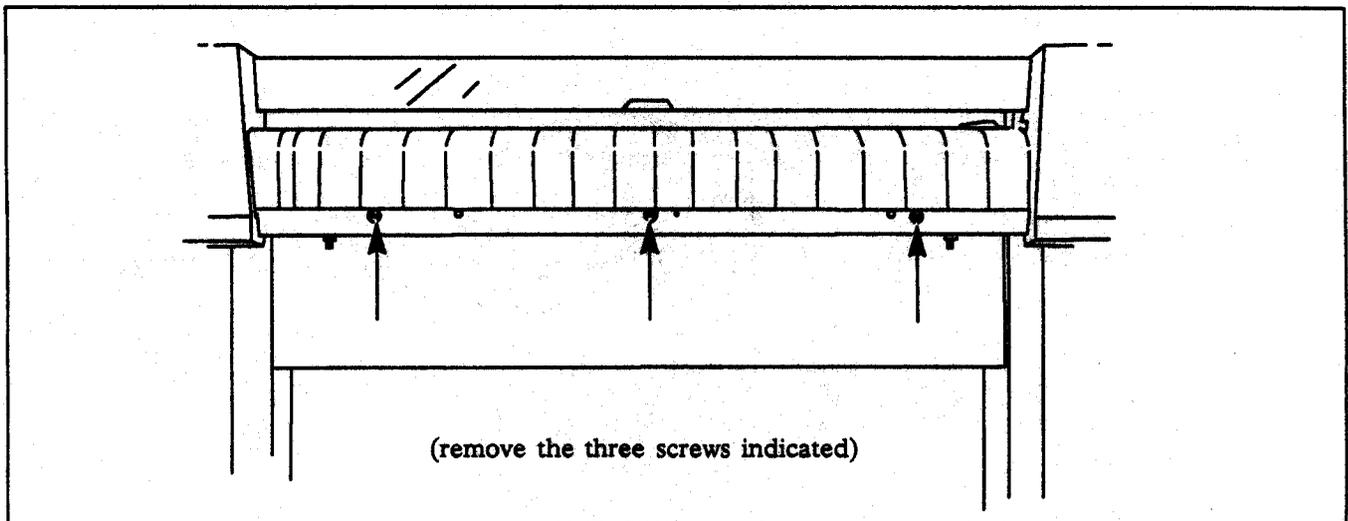


Figure 6-6. Front Platen Removal

- b. Install and tighten the two self-tapping screws at the top of the platen.
- c. Install and tighten the three machine screws at the bottom edge of the platen.
- d. Replace the left and right chassis covers.

6-26. REAR PLATEN REMOVAL

6-27. To remove the rear platen, use the following procedure:

- a. Remove the right and left chassis covers.
- b. Remove the center cover.
- c. Remove the two self-tapping screws from the top of the rear platen. See Figure 6-7.
- d. Remove the three machine screws from the bottom edge of the rear platen. See Figure 6-7.

CAUTION

Exercise caution not to damage the rear paper sensor or the pen carriage as the rear platen is lifted off in the next step.

- e. Grasp the bottom edge of the rear platen and carefully guide the platen between the pen carriage and the rear paper alignment arm and remove it from the plotter.

6-28. To install the rear platen, use the following procedure:

- a. Align the seven tabs of the rear platen with the seven slots in the center platen and lower the platen over the alignment pin, rear paper alignment arm, and the two studs to the plotter.
- b. Install and tighten the two self-tapping and three machine screws on the rear platen.
- c. Install the center cover.
- d. Install the right and left chassis covers.

6-29. FRONT PANEL AND FRONT PANEL CABLE REMOVAL

6-30. To remove the front panel assembly, proceed as follows:

- a. Remove the right chassis cover.
- b. Remove the machine screw and loosen the self-tapping screw from the right side of the center cover. See Figure 6-3.
- c. Remove the two machine screws from the front bottom edge of the front panel assembly. See Figure 6-8.
- d. Carefully disconnect the front panel cable assembly from under the front panel assembly. Figure 6-8.
- e. Lift the rear edge of the panel assembly to disengage the mounting tab, and pull the panel assembly forward slipping the panel shield from under the center cover assembly.

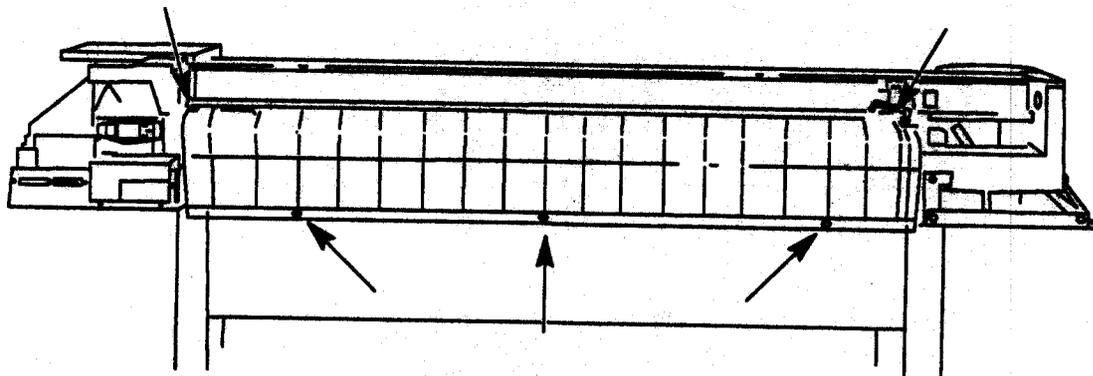


Figure 6-7. Rear Platen Removal

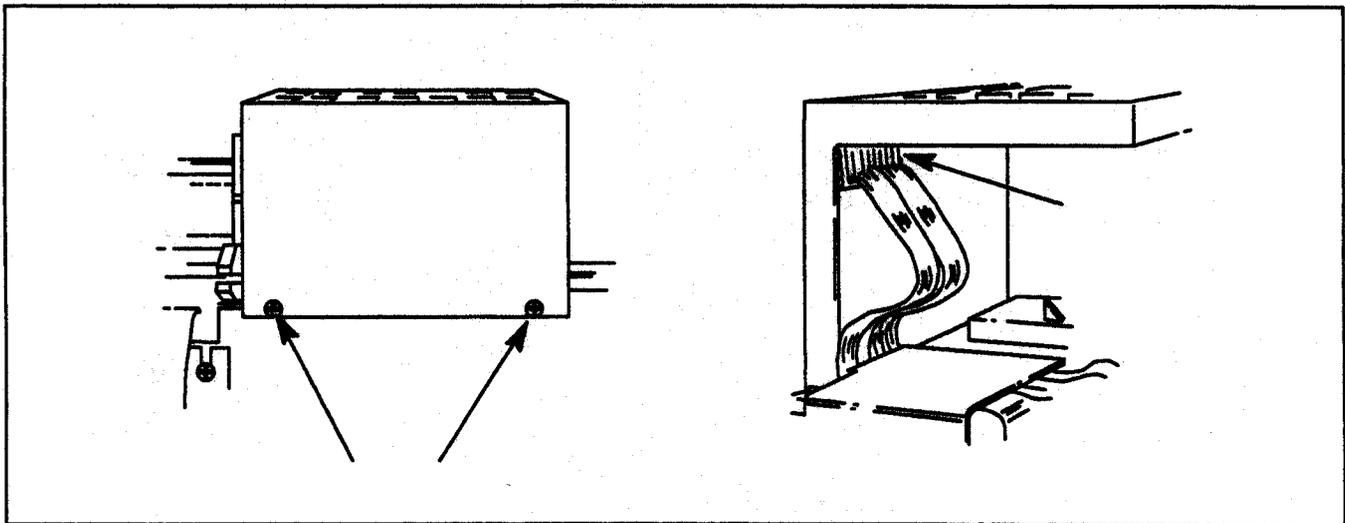


Figure 6-8. Front Panel Removal

f. If the front panel PCA is being replaced, retain the jumper from the front panel PCA for installation on the new front panel PCA.

6-31. To remove the front panel cable assembly:

- a. Loosen the two front screws of the front panel cable shield. See Figure 6-9.
- b. Remove the two $\frac{7}{32}$ in. nuts holding the two motor ground cables to the back of the shield and release the ground cables from the shield.
- c. Disconnect the front panel cable at J9 on the Main PCA. See Figure 6-9.

d. Unhook the paper and pen motor and encoder cables from the cable clamps on the shield.

e. Remove the shield and front panel cable.

6-32. To install the front panel cable assembly:

- a. Route the front panel cable under the shield.
- b. Lower the shield in to position and tighten the two machine screws.
- c. Connect the cable assembly to J9 on the Main PCA.
- d. Insert the paper and pen motor and encoder cables under the cable clamps on the shield.
- e. Connect the two ground straps to the studs on the shield and secure them with $\frac{7}{32}$ in. nuts.

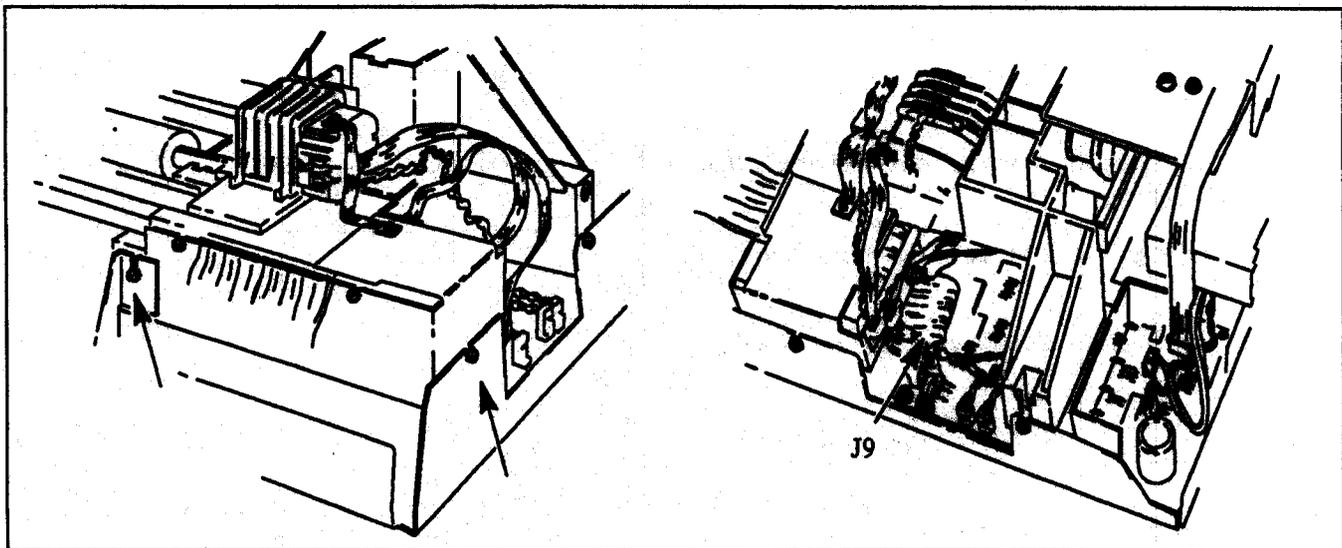


Figure 6-9. Front Panel Cable Removal

6-33. To install the front panel assembly, proceed as follows:

NOTE

Make sure that the front panel jumper is installed in the proper position on the front panel PCA prior to installing the front panel assembly.

In the HP 7575, the jumper must be installed in the W4 position.

In the HP 7576, the jumper must be installed in the W1 position.

- a. Slip the front panel shield under the center cover.
- b. Align the tab at the rear of the front panel assembly with the notch in the chassis and lower the front panel into position.
- c. Connect the front panel cable assembly to the front panel.
- d. Install and tighten the machine screw into the center cover. Tighten the self-tapping screw.
- e. Install the two front panel machine screws.
- f. Install the right chassis cover.

6-34. HP-IB INTERFACE MODULE REMOVAL

6-35. If an HP-IB interface module is installed, removal is accomplished using the following procedure:

- a. Disconnect the interface cable from the module.
- b. Loosen the two module thumbscrews. See Figure 6-10.
- c. Carefully pull the module out from the rear panel.

6-36. To install the HP-IB interface module, proceed as follows:

- a. Raise the rear panel module door and insert the module fully into the rear panel.
- b. Tighten the two module thumbscrews.
- c. Connect the HP-IB interface cable.

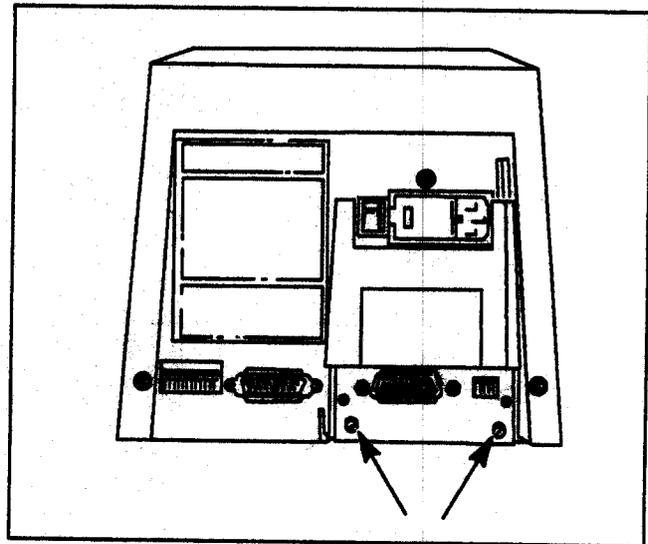


Figure 6-10. HP-IB Interface Module Removal

6-37. MEMORY EXPANSION MODULE REMOVAL

6-38. If a memory expansion module is installed, removal is accomplished using the following procedure:

- a. Loosen the two module thumbscrews. See Figure 6-11.
- b. Carefully pull the module out from the rear panel.

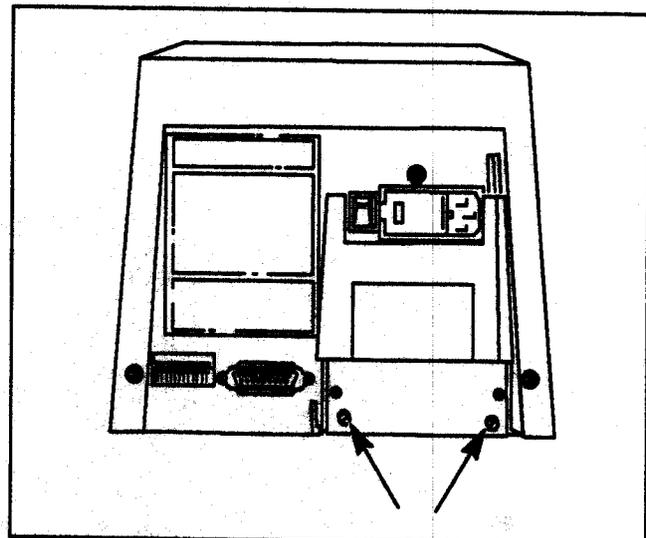


Figure 6-11. Memory Expansion Module Removal

6-39. To install the memory expansion module, proceed as follows:

- a. Raise the rear panel module door and insert the module fully into the rear panel.
- b. Tighten the two module thumbscrews.

6-40. MAIN PCA REMOVAL

6-41. To remove the Main PCA, proceed as follows:

- a. Remove the right chassis cover.
- b. Remove the two 10 mm nuts with washers from under the right side of the plotter that mount the plotter to the stand assembly.
- c. Loosen the two 10 mm nuts with washers at the left side of the plotter that mount the plotter to the stand assembly.
- d. Lift the right end of the plotter approximately three inches and slide the plotter on top of the stand about six inches to the right. Lower the plotter onto the stand.

NOTE

If an HP-IB interface module or memory expansion module is installed, it must be removed before the rear panel is removed.

- e. Remove the two machine screws securing the rear panel to the power module. Remove the rear panel. See Figure 6-12.

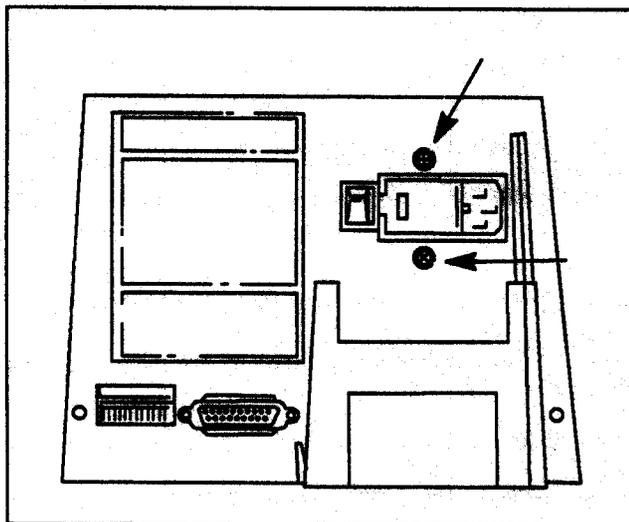


Figure 6-12. Rear Panel Removal

- f. Remove the five screws securing the shield to the right base and the plotter chassis. See Figure 6-13.
- g. Disconnect all cables from the PCA. See Figure 6-14.

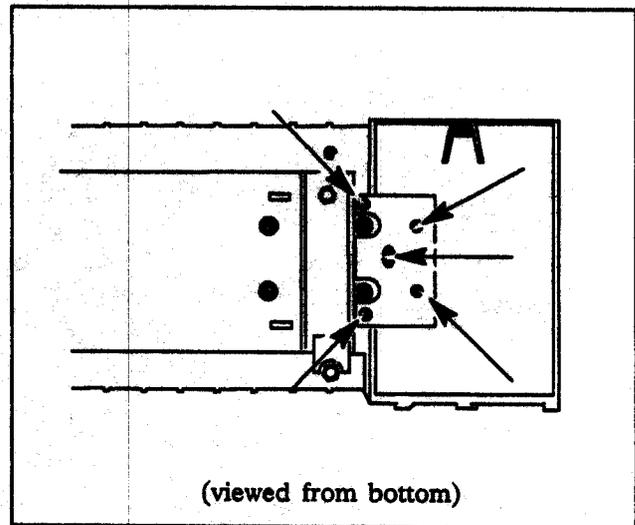


Figure 6-13. Right Shield Removal

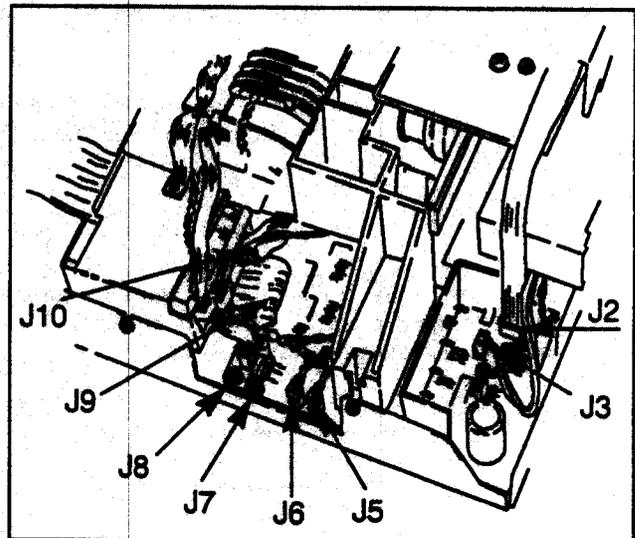


Figure 6-14. Main PCA Cable Connections

CAUTION

The following step will allow the base assembly and PCA to fall free of the plotter. Use care not to damage the base or PCA.

- h. Loosen the three machine screws holding the base to the plotter. See Figure 6-15.
- i. Support the base and remove the fourth machine screw holding the base and PCA to the plotter. See Figure 6-15.
- j. Lower the base and PCA from the plotter.

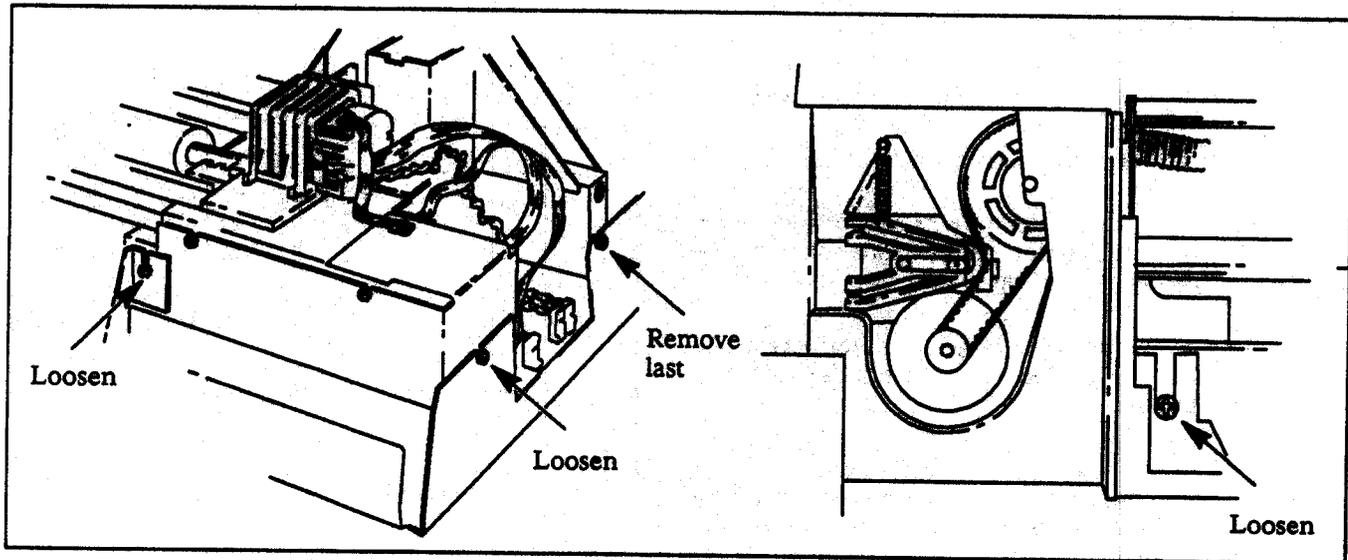


Figure 6-15. Right Base Removal

- k. Remove the five machine screws securing the PCA to the base.
 - l. Slide the PCA toward the front of the base to clear the accessory module guide, and then lift the PCA out.
- 6-42. To install the Main PCA, proceed as follows:
- a. Slide the PCA under the accessory module guide, align it with the standoffs and install the five PCA mounting machine screws.

CAUTION

Carefully position all of the cable assemblies so that none will be damaged while installing the base assembly.

- b. Properly align the base with the mounting screws and raise it into position.
- c. Tighten the three and install the fourth machine screws to secure the base to the plotter.

NOTE

The jacks on the PCA marked PAPER MOT (J5) and PAPER ENC (J7) connect to the motor turning the drive shaft assembly. The jacks marked PEN MOT (J6) and PEN ENC (J8) connect to the motor driving the main belt and the pen carriage assembly.

When connecting the cables to the PCA, route the cables through the cable clips on the shield.

- d. Connect all the cable assemblies to the PCA. See Figure 6-14.
- e. Install the shield that connects the right base to the plotter.
- f. Install the rear panel.
- g. Slide the plotter back into position on the plotter stand.
- h. Install and tighten the four 10 mm nuts that mount the plotter to the stand assembly.
- i. Install the right chassis cover.
- j. Install the accessory module, if removed for disassembly.

6-43. GRIT SHAFT MOTOR/ENCODER REMOVAL

6-44. To remove the grit shaft motor/encoder assembly, proceed as follows:

- a. Remove the right chassis cover.
- b. Remove the front panel assembly.
- c. Remove the grit shaft drive belt tension spring with needle nose pliers or combination spring tool. See Figure 6-16.
- d. Disconnect the motor and encoder cables from the PCA at J5 and J7. See Figure 6-14.
- e. Remove the $\frac{7}{32}$ in. nut securing the ground strap and remove the strap from the motor lug. See Figure 6-17.

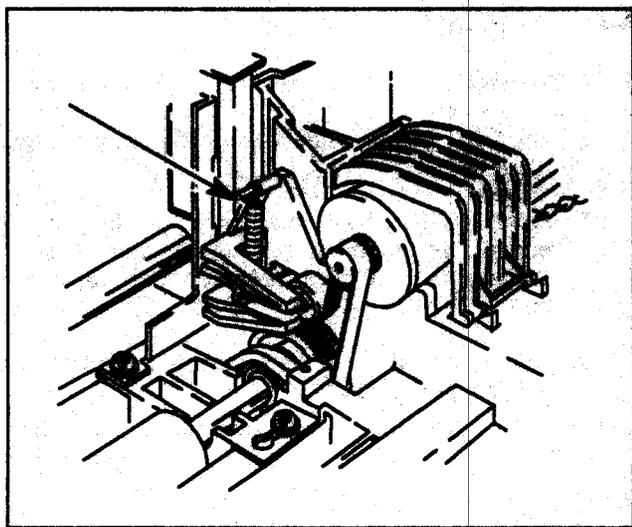


Figure 6-16. Grit Shaft Drive Belt Tension Spring

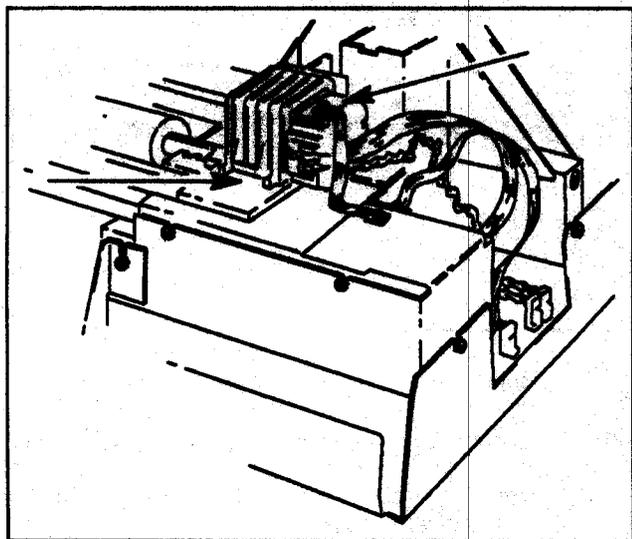


Figure 6-17. Drive Shaft Motor Clamp

- f. Using a common screwdriver, press in and lift at the lower front edge of the motor clamp. See Figure 6-17.
- g. The motor/encoder assembly may now be removed from the plotter.
- h. Remove the drive belt from the motor drive gear.

6-45. To install the grit shaft motor/encoder assembly, proceed as follows:

- a. Loop the grit shaft drive belt over the motor/encoder gear and align the tab on the motor/encoder with the slot in the chassis. Press down on the motor to seat the tab in the chassis slot.

- b. Install the motor clamp by first inserting the hooks on the upper end of the clamp into the slots in the chassis, then pressing down and in to seat the clamp tabs in the chassis slots. The clamp will snap into place when seated correctly.
- c. Install the grit shaft drive belt tension spring using needle-nose pliers or a spring combination tool.
- d. Connect the motor and encoder cables to the PCA at J5 and J7.
- e. Install the ground strap and secure it with the $\frac{7}{32}$ in. nut.
- f. Install the front panel assembly.
- g. Install the right chassis cover.

6-46. PEN CARRIAGE MOTOR/ENCODER REMOVAL

6-47. To remove the pen carriage motor/encoder assembly, proceed as follows:

- a. Remove the right chassis cover.

NOTE

If an HP-IB interface module or memory expansion module is installed, it must be removed before the rear panel is removed.

- b. Remove the rear panel.
- c. Remove the right base and Main PCA.
- d. Remove the $\frac{7}{32}$ in. nut securing the pen carriage motor/encoder ground strap to the shield and remove the ground strap from the shield.
- e. Remove the pen carriage drive belt tension spring with needle-nose pliers or a combination spring tool. See Figure 6-18.
- f. Remove the power module and primary shield to gain access to the drive belt.

CAUTION

The next step will release the motor/encoder assembly from the plotter. Use care not to let the assembly fall as serious damage may result to the encoder.

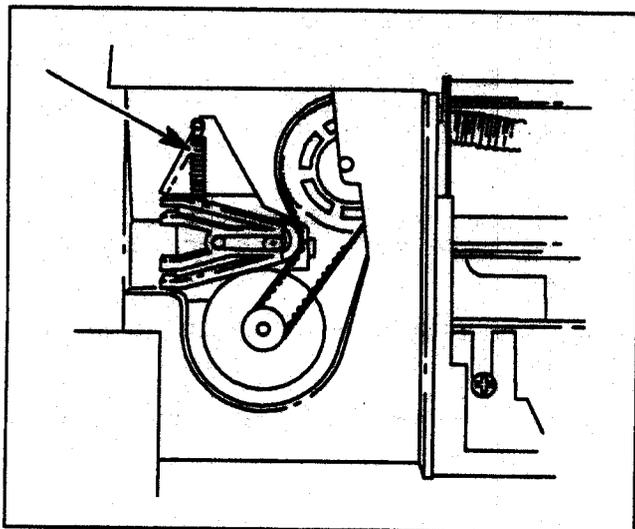


Figure 6-18. Pen Carriage Drive Belt Tensioner

- g. Using a common screwdriver, press in and down at the top edge of the motor clamp releasing it from the chassis.
- h. The motor/encoder assembly may now be removed from the plotter.
- i. Remove the drive belt from around the motor gear.

6-48. To install the pen carriage motor/encoder assembly, proceed as follows:

- a. Insert the motor/encoder into the right chassis and hook the motor gear over the drive belt.
- b. Carefully align the tab on the encoder housing with the slot in the chassis. Seat the motor.
- c. Install the motor clamp by first inserting the hooks at the rear of the clamp and then pressing up and in at the front edge of the clamp. The clamp will snap into position when properly seated.
- d. Install the pen carriage drive belt tension spring using needle-nose pliers or a spring combination tool.
- e. Install the ground strap and secure it with the $\frac{1}{32}$ in. nut.
- f. Install the right base and PCA.
- g. Install the rear panel.
- h. Install the right chassis cover.

6-49. PINCH WHEEL REMOVAL

6-50. To remove a pinch wheel, proceed as follows:

- a. Raise the pinch wheels using the pinch wheel lift lever.
- b. Press on the shaft retainer protruding at the end of the pinch wheel shaft to release the retainer and shaft from the pinch wheel arm. See Figure 6-19.
- c. The shaft may be pulled from the arm, releasing the pinch wheel.

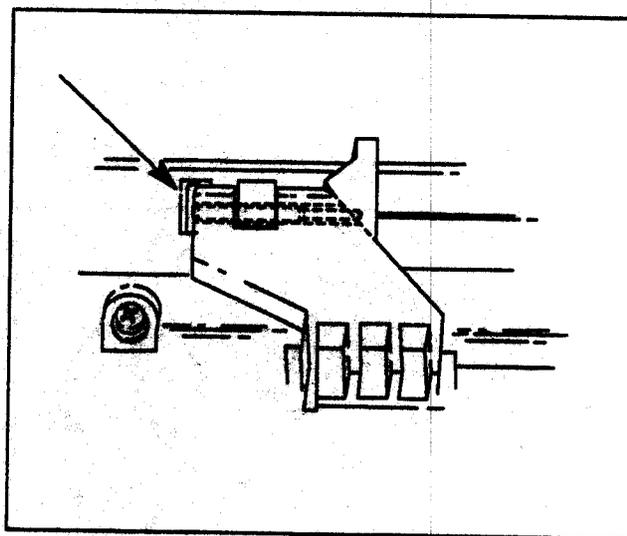


Figure 6-19. Pinch Wheel Removal

6-51. To install the pinch wheel, proceed as follows:

- a. Insert the rubber pinch wheel into the slot in the pinch wheel arm.
- b. Insert the shaft in the pinch wheel arm through the center of the pinch wheel until the clip snaps into place.
- c. Make sure the pinch wheels roll freely.
- d. Lower the pinch wheels using the pinch wheel lift lever.

6-52. PEN CAROUSEL SHIELD REMOVAL

6-53. To remove the pen carousel shield, proceed as follows:

- a. Remove the pen carousel.
- b. Remove the left chassis cover.
- c. Remove the self-tapping screw securing the shield to the plotter. See Figure 6-20.

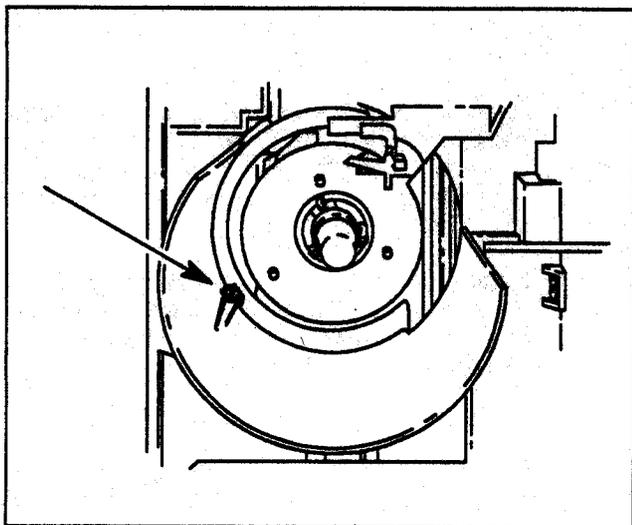
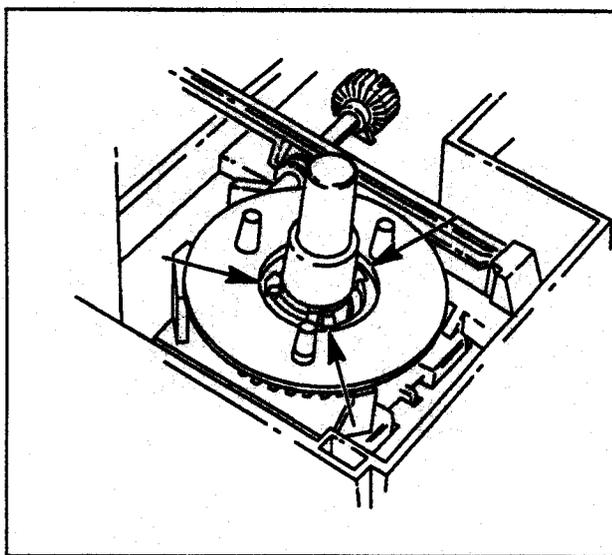


Figure 6-20. Pen Carousel Shield Removal

- d. Lift the shield from the plotter.

6-54. To install the pen carousel shield, proceed as follows:

- a. Position the shield over the carousel mount ensuring that the rear edge of the shield is under the locating tab on the plotter.
- b. Secure the shield to the plotter with the self-tapping screw.
- c. Install the left chassis cover.
- d. Install the carousel.



6-55. CAROUSEL TURNTABLE AND MOUNT REMOVAL

6-56. To remove the carousel turntable and mount, perform the following procedure:

- a. Remove the pen carousel.
- b. Remove the left chassis cover.
- c. Remove the pen carousel shield.
- d. Using a common screwdriver, carefully press in on the three tabs on the carousel mount and lift the carousel turntable off of the mount. See Figure 6-21.
- e. Disconnect the engaging lever spring from the standoff located on the left chassis. See Figure 6-21.
- f. Remove the self-tapping screw holding the carousel mount to the chassis. See Figure 6-21.
- g. Hold the worm gear in place and lift the rear edge of the mount, tipping it toward the front of the plotter. Lift the mount to the vertical position to release the front tabs and remove the mount from the plotter.

6-57. To install the carousel mount, proceed as follows:

- a. Hold the carousel mount in a vertical position and insert the front tabs into the slots.
- b. Lower the mount into position and snap it over the worm gear.
- c. Fasten the mount with the self-tapping screw.

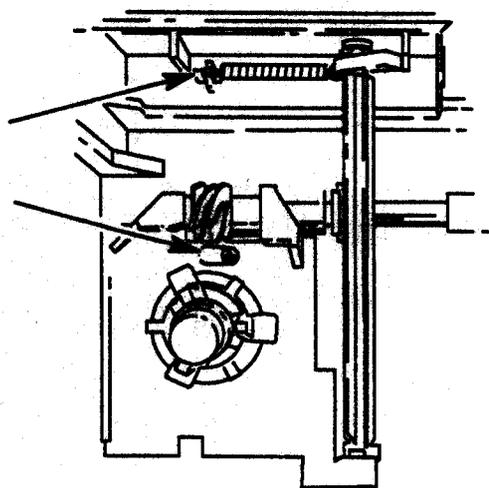


Figure 6-21. Carousel Turntable And Mount Removal

- d. Check to see that the worm gear will move freely.
- e. Connect the engaging lever spring to the stand-off on the left chassis.
- f. Snap the carousel turntable into position over the tabs on the carousel mount.
- g. Install the carousel shield.
- h. Install the left chassis cover.
- i. Install the carousel.

6-58. WORM GEAR AND ENGAGING LEVER REMOVAL

6-59. To remove the worm gear and engaging lever, proceed as follows:

- a. Remove the carousel.
- b. Remove the left chassis cover.
- c. Remove the carousel shield.
- d. Remove the carousel turntable and mount.
- e. The gear engaging lever, worm gear and gear shaft may now be lifted out. The worm gear is a slip fit over the end of the shaft. Slide the worm gear off the end of the shaft to remove. See Figure 6-22.

6-60. To install the worm gear and engaging lever, perform the following:

- a. Install the worm gear and gear shaft assembly. Make sure that the worm gear and shaft are properly seated on their supports and that the coupling gear is on the right side of the chassis stop. See Figure 6-22.
- b. Install the engaging lever, ensuring that the lever arms are properly engaged between the hubs on the worm gear shaft and the lever is on its supports. See Figure 6-22.
- c. Install the carousel mount and turntable.
- d. Connect the engaging lever spring.
- e. Check to see that the engaging lever and gear shaft will move freely.
- f. Install the carousel shield.
- g. Install the left chassis cover.
- h. Install the carousel.

6-61. FRONT AND REAR PAPER SENSOR REMOVAL

6-62. To remove the front and rear paper sensors, use the following procedure:

- a. Remove the carousel.
- b. Remove the left and right chassis covers.
- c. Remove the carousel shield.
- d. Remove the center cover.

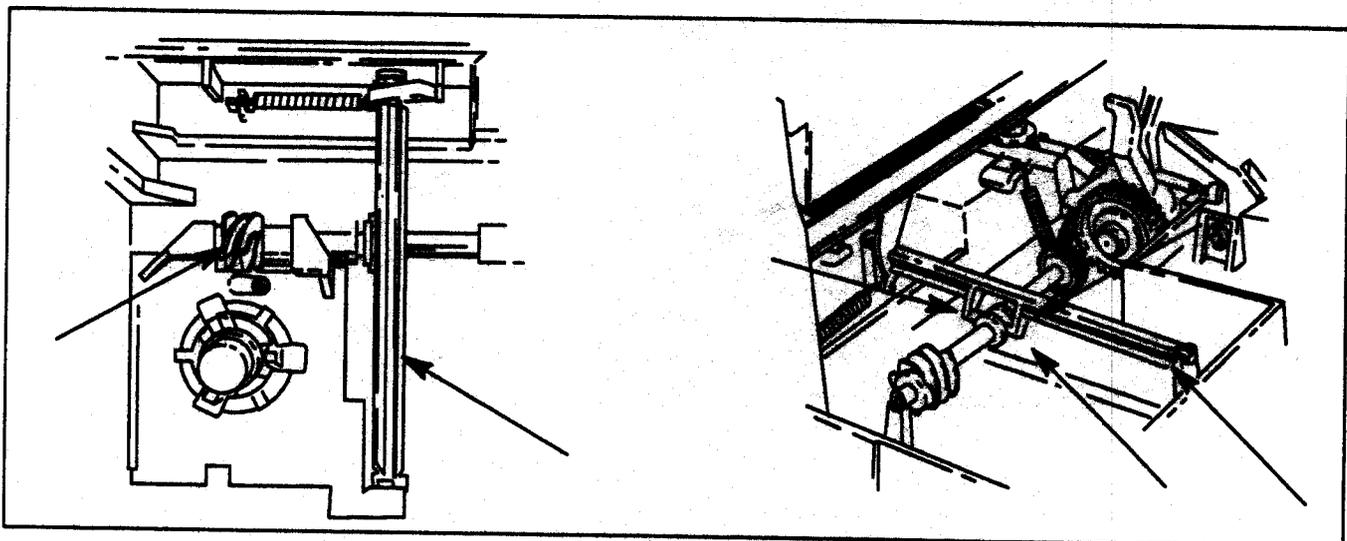


Figure 6-22. Worm Gear And Engaging Lever Removal

- e. Unhook the springs from the front and rear paper sensors. See Figure 6-23.
- f. Remove the self-tapping retaining screw that mounts the paper sensors to the chassis. See Figure 6-23.
- g. Lift the rear paper sensor from the plotter.
- h. Lift up at the rear of the front paper sensor to remove it.

6-63. To install the paper sensors, proceed as follows:

- a. Install the front paper sensor, inserting the front end first.
- b. Hook the spring from the chassis to the front paper sensor.
- c. Install the rear paper sensor.
- d. Hook the spring from the chassis to the rear paper sensor.
- e. Install the self-tapping paper sensor retaining screw.
- f. Install the carousel shield.
- g. Install the center chassis cover.
- h. Install the left and right chassis covers.

6-64. FIXED PINCH WHEEL ARM REMOVAL

6-65. To remove the fixed pinch wheel arm, use the following procedure:

- a. Remove the left and right chassis covers.
- b. Remove the center cover.
- c. Remove the front platen.
- d. Remove the left base.
- e. Remove the spring connected between the rear paper alignment arm and the underside of the left chassis. See Figure 6-24.
- f. Remove the spring from the front paper alignment arm. See Figure 6-24.

WARNING

Wear safety glasses while removing the pinch wheel arm tension springs to avoid the possibility of personal injury from the springs.

- g. Carefully remove the two pinch wheel arm tension springs. See Figure 6-24.
- h. Remove the retaining clip from the end of the pinch wheel arm shaft. See Figure 6-24.
- i. Remove the shaft and pinch wheel arm.

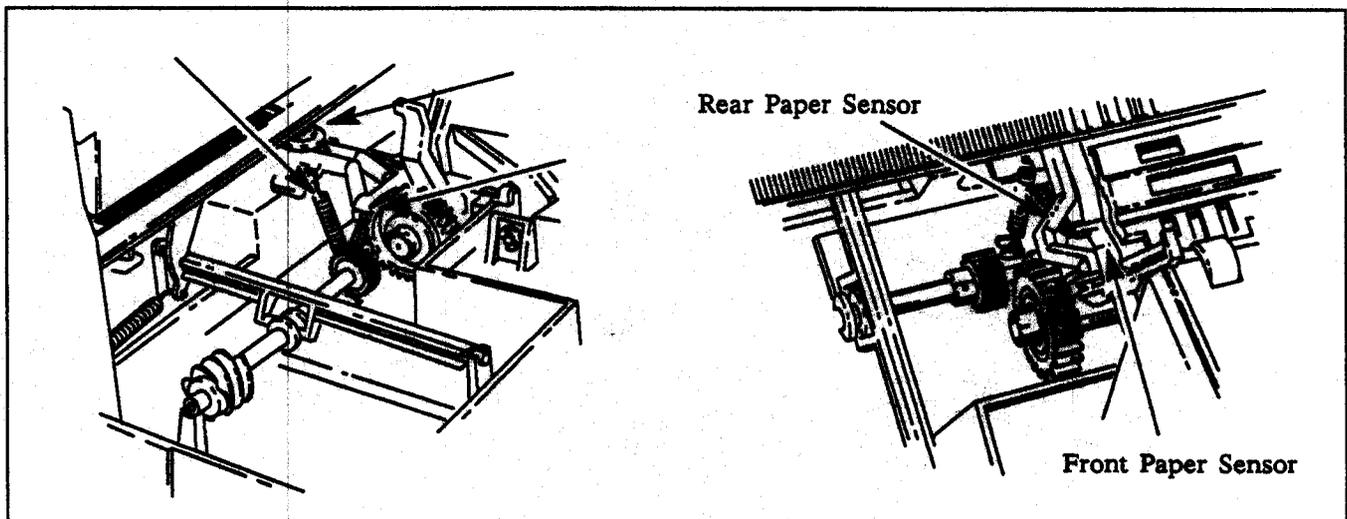


Figure 6-23. Front And Rear Paper Sensor Removal

6-66. To install the fixed pinch wheel arm, proceed as follows:

NOTE

Ensure that the two pinch wheel bushings are installed in the recesses of the pinch wheel arm before the pinch wheel is installed on the plotter.

Ensure that the paper alignment arms are positioned on their pivots before installing the fixed pinch wheel.

- a. Install the fixed pinch wheel with bushings and insert the pinch wheel shaft.
- b. Install the retaining clip on the pinch wheel shaft.
- c. Carefully install the two pinch wheel arm tension springs.
- d. Install the front paper alignment arm spring to the chassis.
- e. Install the spring from the rear paper alignment arm to the bottom of the left chassis.
- f. Install the left base.
- g. Install the front platen.
- h. Install the center cover.
- i. Install the left and right chassis covers.

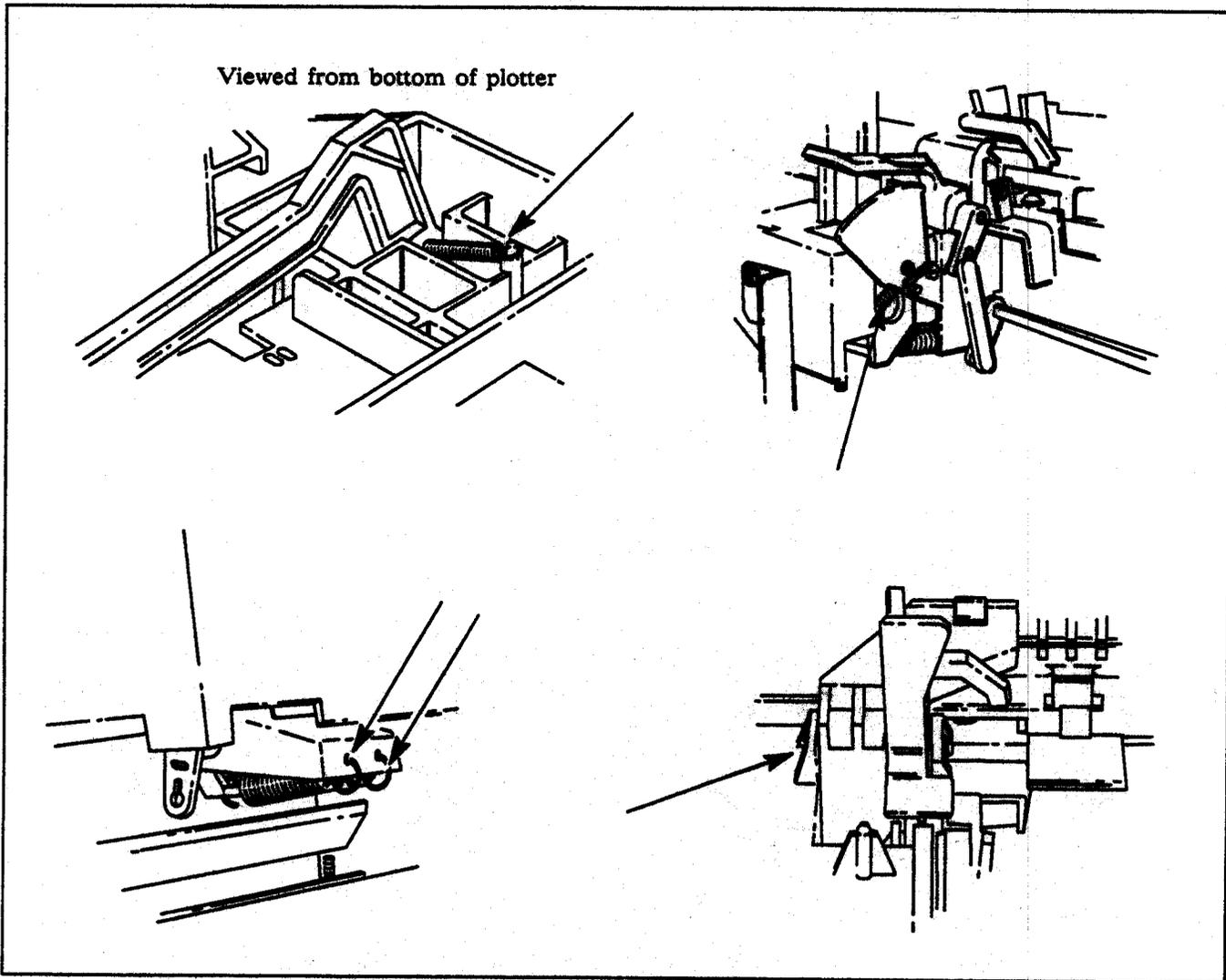


Figure 6-24. Fixed Pinch Wheel Arm Removal

6-67. PAPER ALIGNMENT ARM REMOVAL

6-68. To remove the paper alignment arms, proceed as follows:

- a. Remove the left and right chassis covers.
- b. Remove the center cover.
- c. Remove the front platen.
- d. Remove the left base.
- e. Remove the front and rear paper sensor arms.
- f. Remove the fixed pinch wheel arm.
- g. Disconnect the paper alignment arm springs.
- h. Disconnect the paper alignment arms from their pivot points. See Figure 6-25.

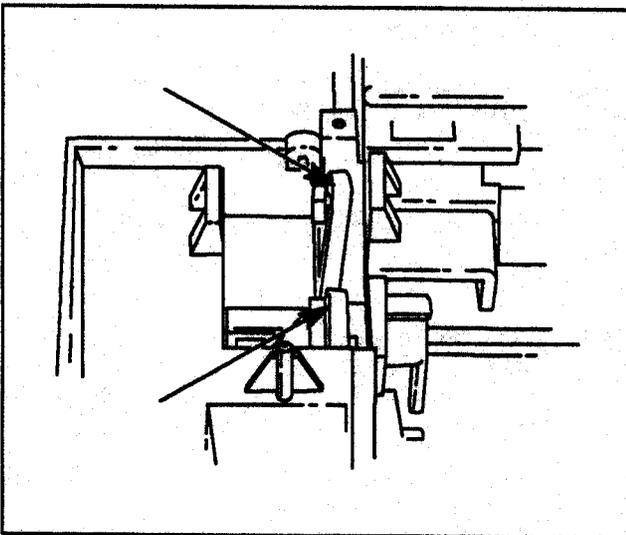


Figure 6-25. Paper Alignment Arms Removal

6-69. To install the paper alignment arms, proceed as follows:

- a. Place the paper alignment arms on their pivot points.
- b. Install the fixed pinch wheel arm.
- c. Install the paper alignment arm springs.
- d. Install the paper sensor arms.
- e. Install the left base.
- f. Install the front platen.
- g. Install the center cover.
- h. Install the left and right chassis covers.

6-70. MOVABLE PINCH WHEEL ARM REMOVAL

6-71. To remove the movable pinch wheel arm, proceed as follows:

- a. Remove the left and right chassis covers.
- b. Remove the front platen.
- c. Remove the left base.
- d. Remove the fixed pinch wheel.
- e. Remove the paper alignment arms.
- f. Remove the movable pinch wheel arm tension springs. See Figure 6-26.

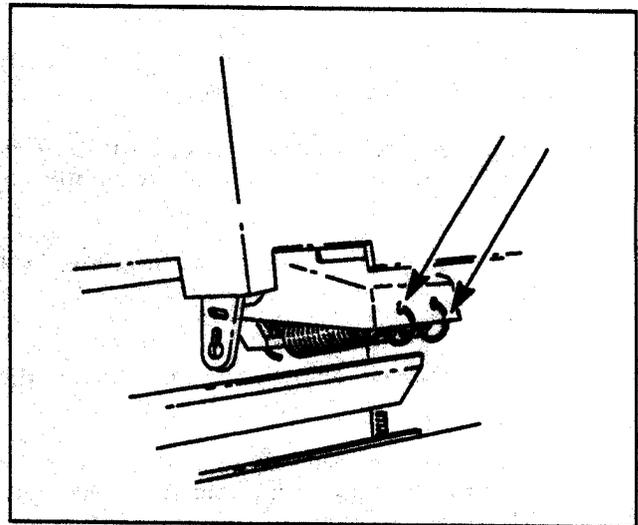


Figure 6-26. Movable Pinch Wheel Arm Removal

- g. Raise the paper load lever to the upright position.
- h. Grasp the paper load lever mechanism and pinch wheel shaft and gently push the shaft towards the rear of the plotter until the left end of the shaft releases from the chassis.
- i. Carefully slide the paper load lever mechanism to the right along the pinch wheel shaft approximately eight inches.
- j. Note the orientation of the paper load lever mechanical linkage and disconnect the linkage from the shaft.
- k. Note the orientation of the pinch wheel sensor switch at the right end of the pinch wheel shaft.
- l. Grasp the pinch wheel sensor switch and carefully slide the pinch wheel shaft to the left until the pinch wheel sensor switch is released from the shaft.

- m. Slide the pinch wheel shaft to the left until it is fully released from the movable pinch wheel.
- n. Remove the screw located at the edge of the recess on the front edge of the datum bar.
- o. Slide the movable pinch wheel to the left as far as possible so that the pinch wheel arm is aligned with the recess on the front edge of the datum bar.
- p. Grasp the movable pinch wheel arm and rotate it clockwise while lifting up at the bottom. The pinch wheel lift cam may fall from under the pinch wheel arm when the arm is removed.

6-72. To install the movable pinch wheel arm, proceed as follows:

- a. Insure that the pinch wheel lift cam is properly positioned in the movable pinch wheel.
- b. Install the movable pinch wheel on the datum bar. Ensure the two bushings are in the recesses on the arm.
- c. Slide the movable pinch wheel arm to the right side along the datum bar. Slide the pen carriage to the left side of the datum bar.
- d. Install the screw removed from the edge of the recess on the front edge of the datum bar.
- e. Slide the pinch wheel shaft through the movable pinch wheel insuring that the fixed pinch wheel cam is aligned.
- f. Slide the pinch wheel shaft through the movable pinch wheel until the end of the shaft is positioned just outside the pinch wheel sensor switch clip.
- g. Insert the pinch wheel sensor switch into the right chassis and ensure it is properly positioned.
- h. Install the lobe lever linkage. Slide the lobe lever mechanism to the left assuring the lobe lever engages the post on the chassis and the pinch wheel lift cam is seated in the slots of the chassis.
- i. Install the pinch wheel arm tension springs.
- j. Install the paper alignment arms.
- k. Install the left base.
- l. Install the front platen.
- m. Install the left and right chassis covers.

6-73. Y ARM AND PEN CARRIAGE REMOVAL

6-74. To remove the Y arm, use the following procedure:

- a. Remove the right and left chassis covers.
- b. Remove the center cover.
- c. Release the tension on the pen carriage belt at the left side of the chassis by reaching under the chassis and very carefully pulling the belt tensioner tab toward the left end of the plotter. See Figure 6-27.
- d. Once the tension has been released, the tensioner and spring may be removed from the plotter. Remove the idler pulley which is now free at the left side of the chassis.
- e. Remove the front panel.
- f. Remove the pen motor/encoder assembly.
- g. Unsnap the axle of the double pulley from the chassis. See Figure 6-27.

NOTE

Do not lose the bushings from the double pulley shaft as it is removed in the next step.

- h. Gently lift the right side of the Y arm up and to the right out of the side of the chassis. Remove the Y arm, the Y arm clamp, the double pulley and the pen carriage motor/encoder belt.

6-75. To remove the pen carriage from the Y arm, use the following procedure:

- a. Gently turn the Y arm over to expose the pen carriage springs at the rear of the pen carriage. See Figure 6-28.
- b. Gently unhook and remove the pen carriage springs. See Figure 6-28.

NOTE

Be careful not to lose the pivot arm bearing as the pen carriage is removed in the next step. See Figure 6-28.

- c. Carefully slide the pen carriage off the Y arm.

6-76. To install the pen carriage on the Y arm, use the following procedure:

- a. Install the pivot arm bearing in the slot on the pen carriage.

- b. Slide the pen carriage onto the Y arm ensuring that the pen carriage belt is not twisted.
- c. Install the pen carriage springs.
- d. Manually slide the pen carriage along the Y arm to assure that there is no binding.

6-77. To install the Y arm, use the following procedure:

- a. Insert the left side of the Y arm into the holes in the left chassis. Lower and hold the right side of the Y arm to a point approximately six inches above the slots in the right chassis.
- b. Insert the pen carriage belt through the Y arm clamp and allow the clamp to rest on the Y arm.

NOTE

Ensure that the axle bushings are installed on the double pulley before it is snapped into the right chassis.

- c. Place the pen carriage motor/encoder drive belt over the narrow side of the double pulley and place the double pulley inside the pen carriage belt. Install the double pulley through the top

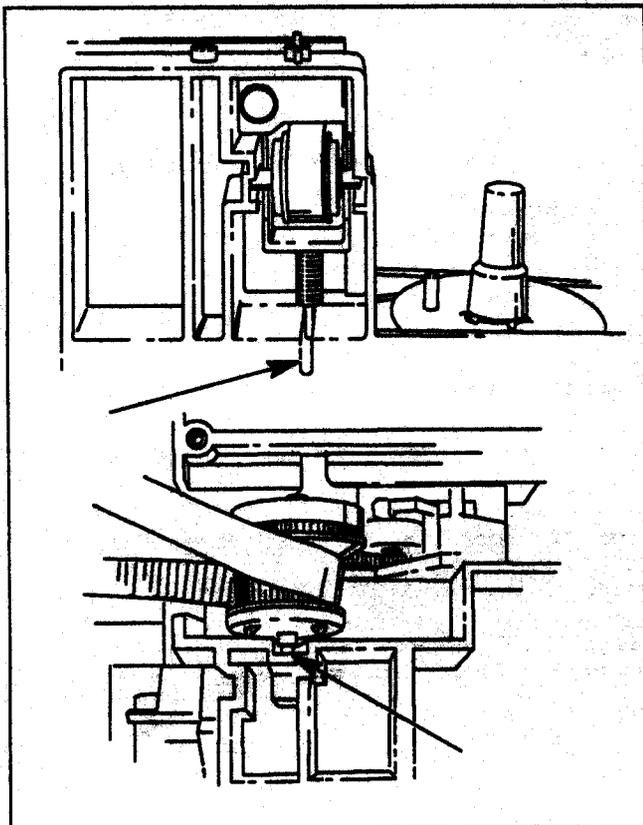


Figure 6-27. Y Arm Removal

- of the right chassis and snap the pulley axle into the chassis.
- d. Lower the Y arm and clamp into the slot in the right chassis.
- e. Install the pen motor/encoder assembly.
- f. Install the front panel.
- g. Install the idler pulley at the left side of the Y arm.
- h. Place the tensioner spring on the tensioner tab.
- i. Insert the tensioner behind the idler pulley.

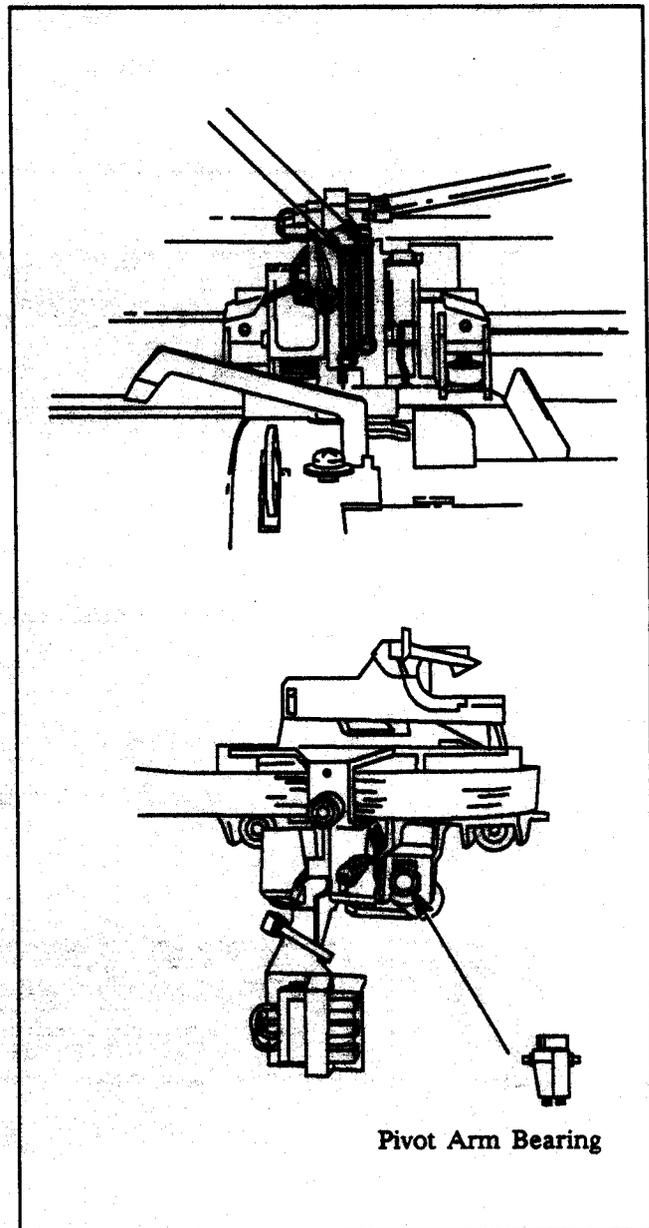


Figure 6-28. Pen Carriage Removal

- j. Compress the spring and insert the tab into the slot in the chassis, pressing inward until the tensioner is fully seated.
- k. Install the center cover.
- l. Install the right and left chassis covers.

6-78. CENTER PLATEN REMOVAL

6-79. To remove the center platen, proceed as follows:

- a. Remove the right and left chassis covers.
- b. Remove the center cover.
- c. Remove the pen carriage motor/encoder.
- d. Remove the Y arm.

- e. Remove the fixed pinch wheel.
- f. Remove the movable pinch wheel.
- g. Move the pen carriage assembly fully to the left.
- h. Remove the press-in screw caps by gently prying them up with a flat-blade screw driver. See Figure 6-29.
- i. Remove the Torx screws securing the center platen to the plotter. See Figure 6-29.
- j. Lift the front edge of the center platen and pull it forward to release the center platen tabs from the chassis tabs. Remove the center platen from the plotter.

6-80. To install the center platen, proceed as follows:

- a. Place the center platen on the plotter and insert the center platen tabs under the chassis tabs.

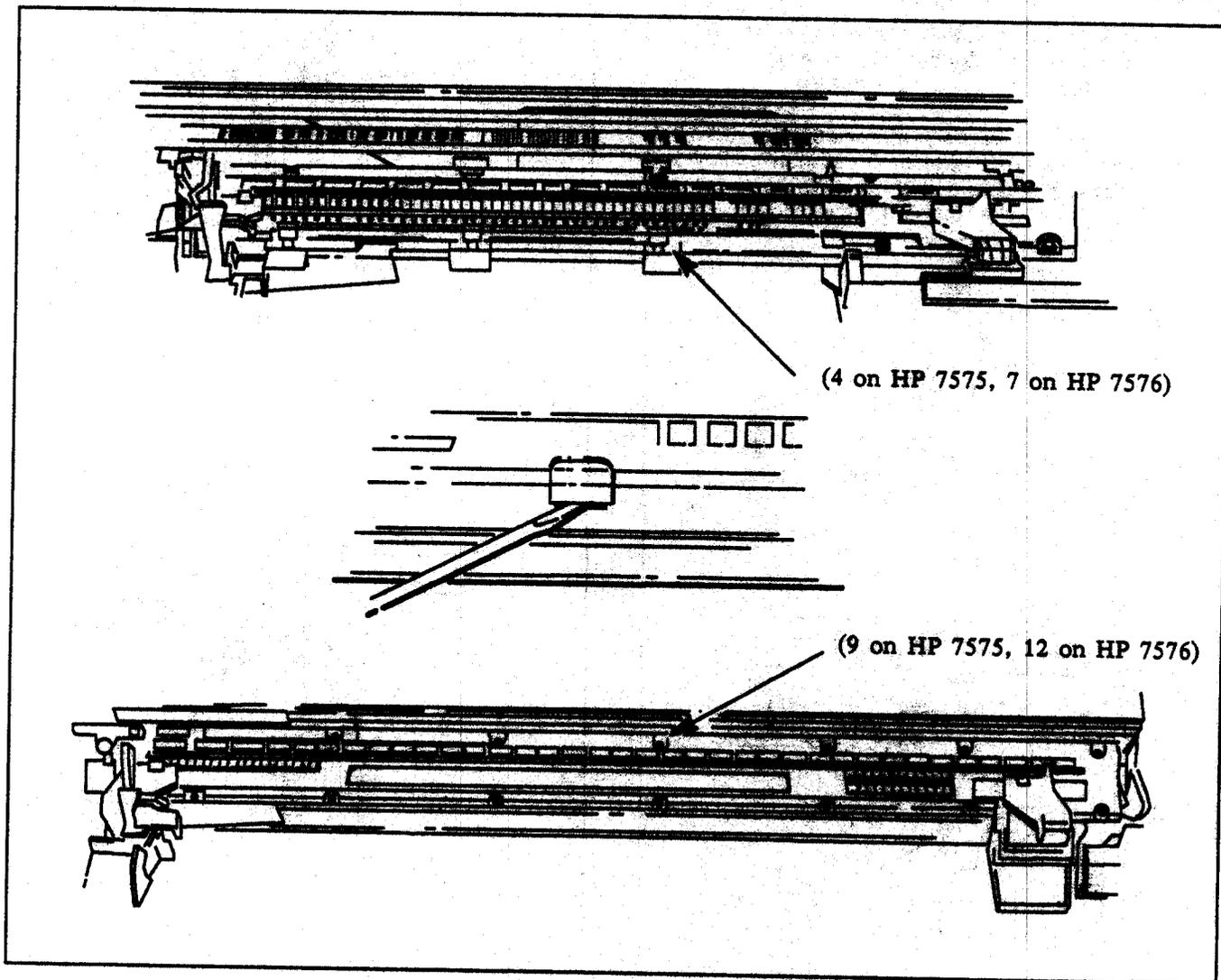


Figure 6-29. Center Platen Removal

- b. Install the Torx screws to secure the center platen to the plotter.
- c. Install the press-in screw caps on the center platen.
- d. Install the movable pinch wheel arm.
- e. Install the fixed pinch wheel arm.
- f. Install the Y arm.
- g. Install the pen carriage motor encoder.
- h. Install the center cover.
- i. Install the right and left chassis covers.
- c. Install the paper drive motor/encoder tensioner in the chassis until it snaps into place.
- d. Install the center platen.
- e. Install the Y arm.
- f. Install the movable pinch wheel.
- g. Install the fixed pinch wheel.
- h. Install the paper sensor arms.
- i. Install the pen carousel shield.
- j. Install the pen carriage motor/encoder.
- k. Install the center cover.

6-81. GRIT SHAFT ASSEMBLY REMOVAL

6-82. To remove the grit shaft assembly, proceed as follows:

- a. Remove the right and left chassis covers.
- b. Remove the center cover.
- c. Remove the pen carriage motor/encoder.
- d. Remove the pen carousel shield.
- e. Remove the paper sensor arms.
- f. Remove the fixed pinch wheel.
- g. Remove the movable pinch wheel.
- h. Remove the Y arm.
- i. Remove the center platen.
- j. Remove the paper drive motor/encoder tensioner by inserting a flat-blade screwdriver in the chassis hole and gently prying up on the tab that holds the tensioner. See Figure 6-30.
- k. Unhook the grit shaft bearing clamps from the chassis at each end of the grit shaft and remove them. See Figure 6-30.
- l. The grit shaft assembly may now be lifted from the plotter.

6-83. To install the grit shaft assembly, use the following procedure:

- a. Place the grit shaft in the bearing guides on the datum bar.
- b. Connect the grit shaft bearing clamps at each end of the grit shaft.

- l. Install the right and left chassis covers.

6-84. POWER TRANSFORMER REMOVAL

6-85. To remove the power transformer, use the following procedure:

- a. Remove the right and left chassis covers.
- b. Remove the center cover.
- c. Remove the rear platen.
- d. Remove the front platen.
- e. Remove the fixed pinch wheel.
- f. Remove the movable pinch wheel.
- g. Remove the two Torx Screws securing the power transformer to the datum bar. See Figure 6-31.
- h. Note the orientation of the primary lead hook up to the power module. Disconnect the transformer primary leads from the ac power module. See Figure 6-31.
- i. Disconnect the transformer secondary leads from the PCA at J3.
- j. Gently pull the transformer leads back through the cable ties pressed into the chassis.
- k. Lift the transformer off the alignment studs.

6-86. To install the power transformer, use the following procedure:

- a. Place the power transformer on the alignment studs.

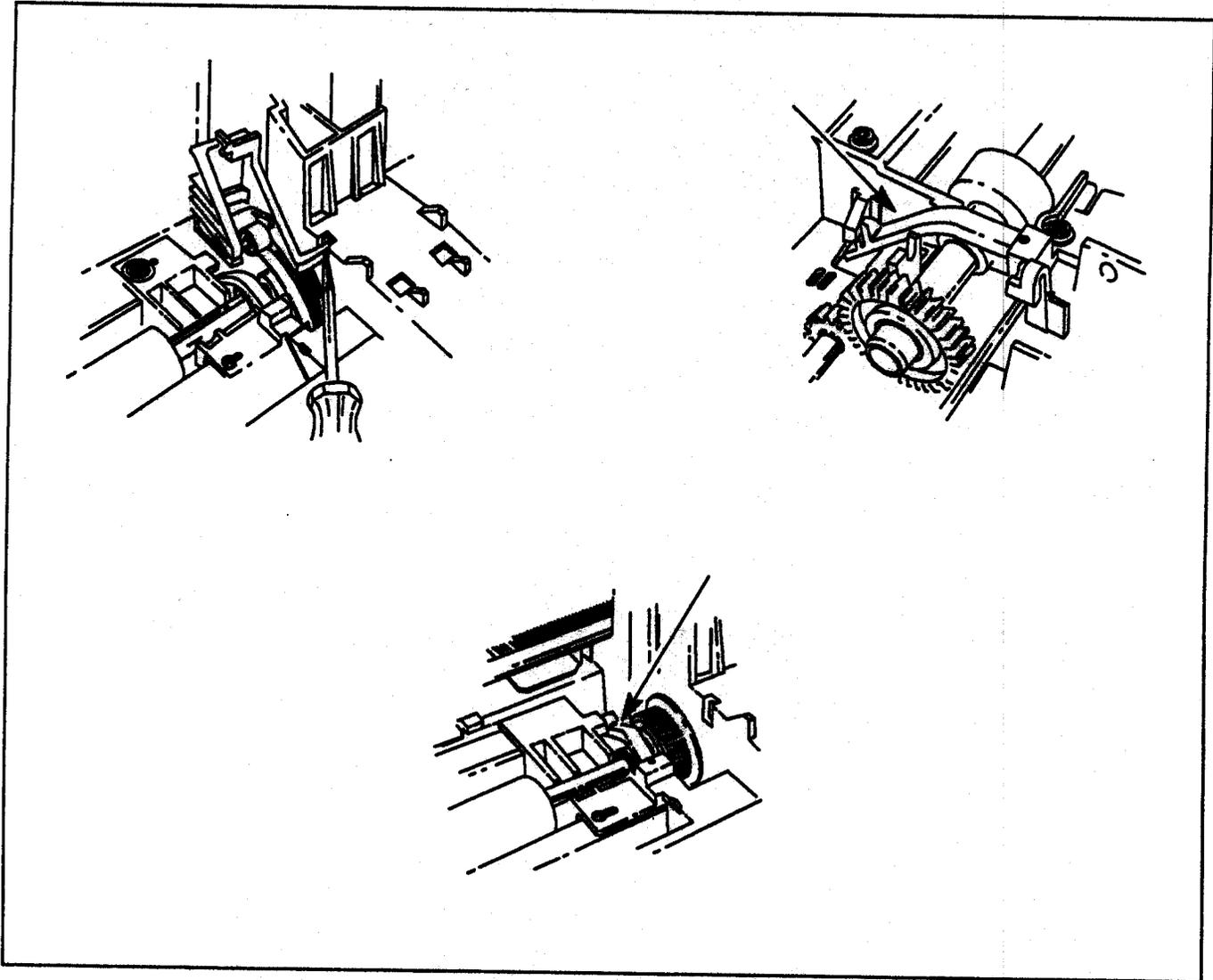


Figure 6-30. Grit Shaft Assembly Removal

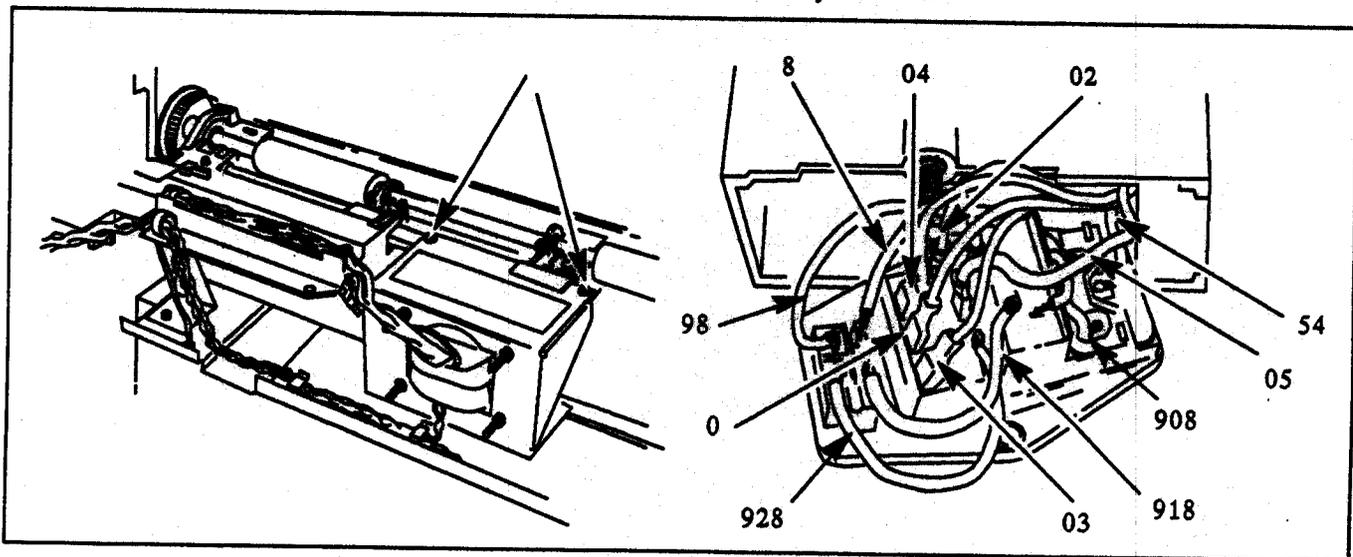


Figure 6-31. Power Transformer Removal

- b. Gently push the transformer leads through the cable ties pressed into the chassis.
- c. Connect the transformer secondary lead to J3 on the PCA.
- d. Connect the transformer primary leads to the ac power module.
- e. Install the two Torx screws securing the power transformer to the datum bar.
- f. Install the movable pinch wheel.
- g. Install the fixed pinch wheel.
- h. Install the front platen.
- i. Install the rear platen.
- j. Install the center cover.
- k. Install the right and left chassis covers.

6-87. AC POWER MODULE REMOVAL

6-88. To remove the ac power module, use the following procedure:

- a. Remove the right and left chassis covers.
- b. Remove the center cover.
- c. Remove the rear platen.
- d. Remove the front platen.
- e. Remove the fixed pinch wheel.
- f. Remove the movable pinch wheel.

- g. Remove the rear panel.
- h. Note the orientation of the primary lead hook up to the power module. Disconnect the transformer primary leads from the ac power module. See Figure 6-32.
- i. Remove the 1/32 in. nut securing the ground wire from the power module to the chassis. See Figure 6-32.
- j. Note the routing of the ground wire then gently pull and guide the ground wire through the chassis and remove the power module.

6-89. To install the ac power module, use the following procedure:

- a. Insert the ground wire from the power module through the right chassis and secure it to the plotter chassis with a 1/32 in. nut.
- b. Connect the power transformer's primary leads to the power module.
- c. Install the rear panel.
- d. Install the movable pinch wheel.
- e. Install the fixed pinch wheel.
- f. Install the front platen.
- g. Install the rear platen.
- h. Install the center cover.
- i. Install the right and left chassis covers.

6-90. LEFT CHASSIS REMOVAL

6-91. To remove the left chassis, use the following procedure:

- a. Remove the right and left chassis covers.

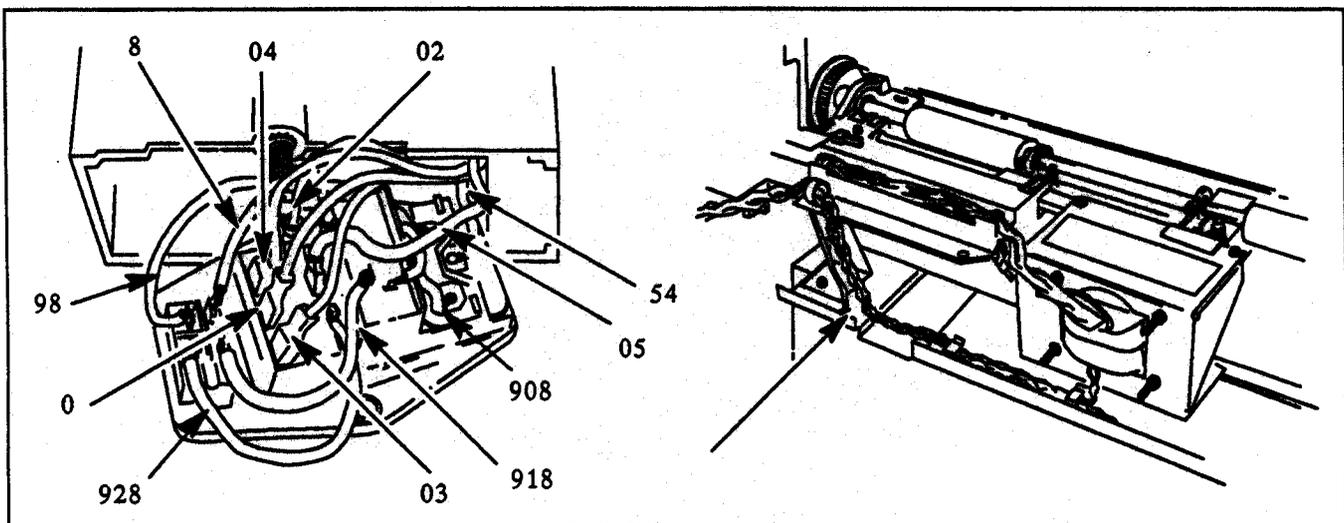


Figure 6-32. Ac Power Module Removal

- b. Remove the center cover.
- c. Remove the front platen.
- d. Remove the rear platen.
- e. Remove the grit shaft motor/encoder.
- f. Remove the pen carousel shield.
- g. Remove the pen carousel mount.
- h. Remove the worm gear and engaging lever.
- i. Remove the front and rear paper sensor arms.
- j. Remove the fixed pinch wheel.
- k. Remove the paper alignment arms.
- l. Remove the movable pinch wheel.
- m. Remove the Y arm.
- n. Remove the center platen.
- o. Remove the grit shaft assembly.
- p. Remove the four Torx screws securing the left chassis to the datum bar. See Figure 6-33.
- q. Slide the left chassis to the left off the datum bar.

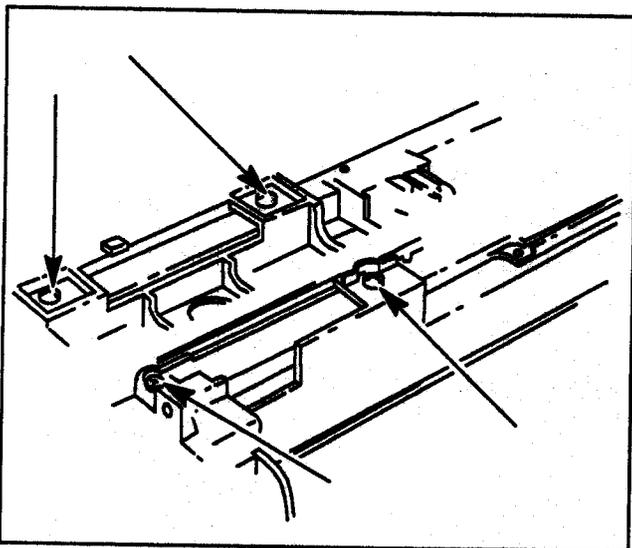


Figure 6-33. Left Chassis Removal

6-92. To install the left chassis, use the following procedure:

- a. Slide the left chassis onto the datum bar and install the four Torx screws to secure the left chassis to the datum bar.

- b. Install the grit shaft assembly.
- c. Install the center platen.
- d. Install the Y arm.
- e. Install the movable pinch wheel.
- f. Install the paper alignment arms.
- g. Install the fixed pinch wheel.
- h. Install the front and rear paper sensor arms.
- i. Install the worm gear and engaging lever.
- j. Install the pen carousel mount.
- k. Install the pen carousel shield.
- l. Install the grit shaft motor/encoder.
- m. Install the rear platen.
- n. Install the front platen.
- o. Install the center cover.
- p. Install the right and left chassis covers.

6-93. RIGHT CHASSIS REMOVAL

6-94. To remove the right chassis, use the following procedure:

- a. Remove the right and left chassis covers.
- b. Remove the center cover.
- c. Remove the front platen.
- d. Remove the rear platen.
- e. Remove the front panel.
- f. Remove the Main PCA.
- g. Remove the grit shaft motor/encoder.
- h. Remove the pen motor/encoder.
- i. Remove the Y arm.
- j. Remove the center platen.
- k. Remove the grit shaft assembly.
- l. Remove the ac power module.
- m. Remove the Torx screw securing the right chassis to the datum bar. See Figure 6-34.

- n. Slide the right chassis to the right and off the end of the datum bar.

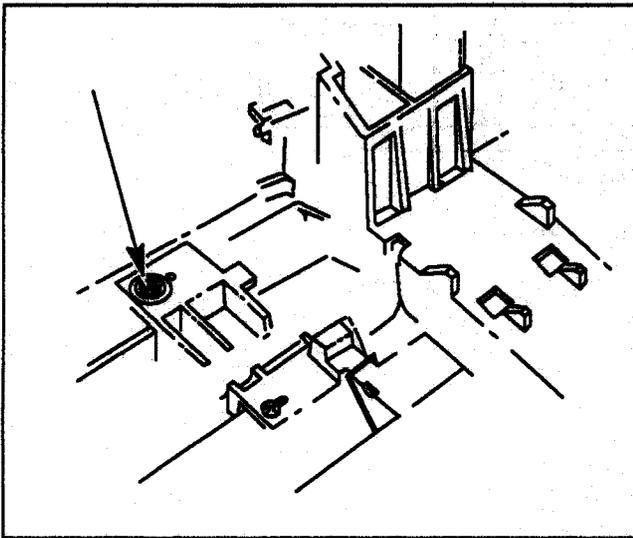


Figure 6-34. Right Chassis Removal

6-95. To install the right chassis, use the following procedure:

- a. Slide the right chassis onto the datum bar and secure it with the Torx screw.
- b. Install the ac power module.
- c. Install the grit shaft assembly.
- d. Install the center platen.
- e. Install the Y arm.
- f. Install the pen motor/encoder.
- g. Install the grit shaft motor/encoder.
- h. Install the Main PCA.
- i. Install the front panel.
- j. Install the rear platen.
- k. Install the front platen.
- l. Install the center cover.
- m. Install the right and left chassis covers.

6-96. FAN AND FAN MOUNT REMOVAL

6-97. To remove the fan, use the following procedure:

- a. Remove the pen carousel if installed.

- b. Remove the four 10 mm nuts with washers that secure the plotter to the plotter stand. See Figure 6-35.
- c. Tape the plotter's window in the down or closed position.
- d. Stand at one end of the plotter and have an assistant stand at the opposite end.

WARNING

The following step requires two people. Do not attempt to perform this procedure alone. Failure to observe this warning could lead to serious injury, or damage to the plotter.

- e. Use two people and lift the plotter from its stand, invert the plotter, and set it down on a flat, sturdy table. The plotter should be setting on its top on a sturdy surface at the completion of this step.
- f. Noting the orientation of the fan power leads, disconnect the leads from the fan.
- g. Remove the four self-tapping screws securing the fan to the mount and notice that the fan is installed with the fan ribs facing the fan mount. See Figure 6-35.
- h. Lift the fan from the mount.

6-98. To remove the fan mount, use the following procedure:

- a. Remove the power leads from the plastic eyelet on the fan mount.
- b. Remove the four Torx screws securing the fan mount to the datum bar. See Figure 6-35.
- c. Lift the fan mount from the plotter.

6-99. To install the fan mount, use the following procedure:

- a. Position the fan mount over the Torx screw holes of the datum bar.
- b. Install and tighten the four Torx screws to secure the fan mount to the datum bar.
- c. Hook the fan power leads into the plastic eyelet on the fan mount.

6-100. To install the fan, use the following procedure:

- a. Position the fan on the fan mount with the fan ribs positioned against the fan mount and the fan power terminals near the power lead eyelet.

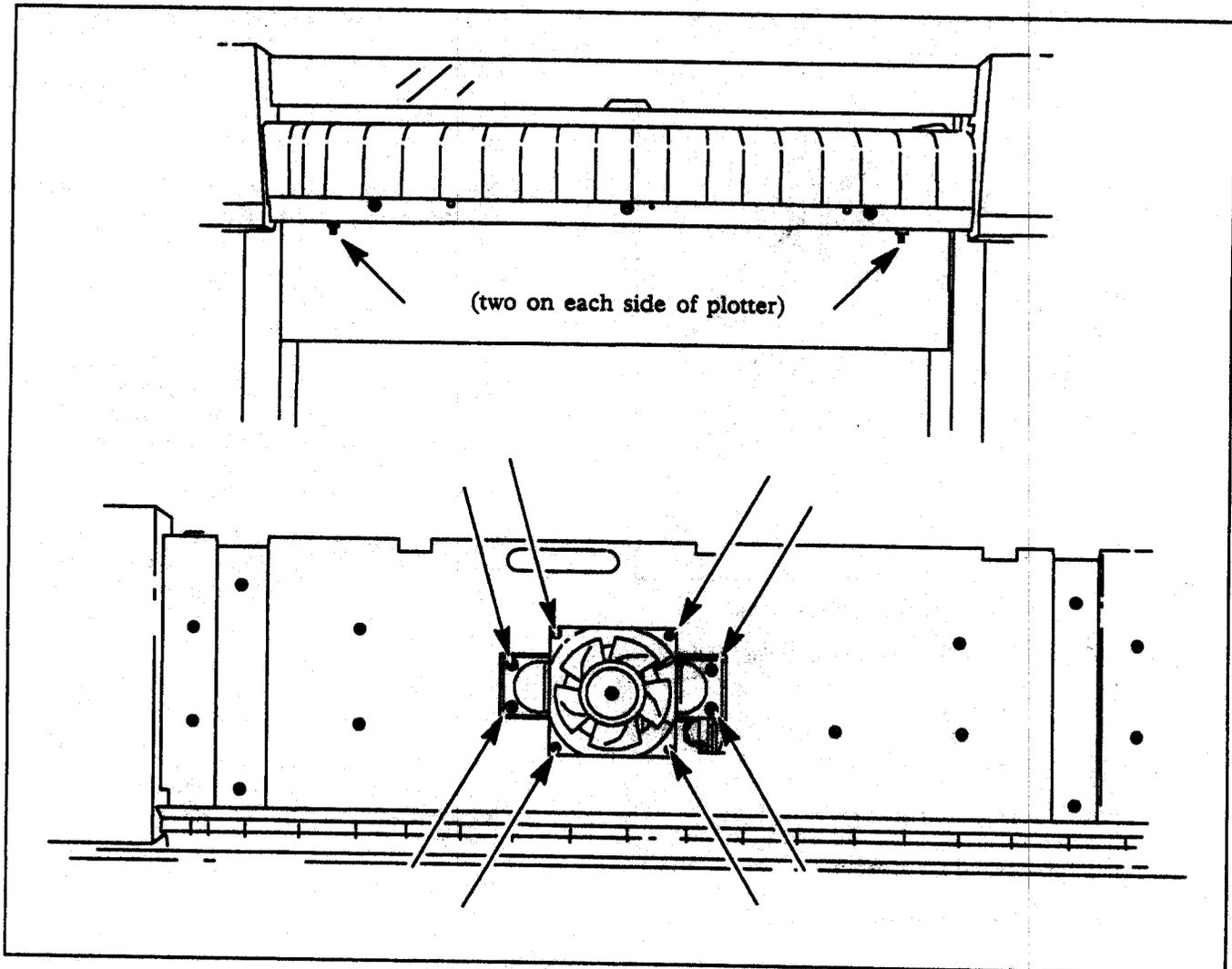


Figure 6-35. Fan and Fan Mount Removal

NOTE

Ensure that the power leads are connected observing the correct polarity in the next step. The red lead connects to the "+" terminal and the black lead to the "-" terminal. If the leads are reversed there will be no vacuum created through the platen.

- b. Connect the power leads to the fan.
- c. Install and tighten the four self-tapping screws that secure the fan to the fan mount.

6-101. DATUM BAR REMOVAL

6-102. To remove the datum bar, use the following procedure:

- a. Remove the right and left chassis covers.
- b. Remove the center cover.
- c. Remove the front platen.
- d. Remove the rear platen.
- e. Remove the front panel.
- f. Remove the Main PCA.
- g. Remove the grit shaft motor/encoder.
- h. Remove the pen motor/encoder.
- i. Remove the pen carousel shield.
- j. Remove the carousel mount.
- k. Remove the worm gear and engaging lever.
- l. Remove the paper sensor arms.

- m. Remove the fixed pinch wheel.
- n. Remove the paper alignment arms.
- o. Remove the movable pinch wheel.
- p. Remove the Y arm.
- q. Remove the center platen.
- r. Remove the grit shaft assembly.
- s. Remove the power transformer.
- t. Remove the left chassis.
- u. Remove the right chassis.
- v. Remove the fan and fan mount.
- w. Remove the Torx screws securing the datum bar to the plotter chassis pan. See Figure 6-36.
- x. Lift the chassis pan from the datum bar. The datum bar should now be free of all parts.

6-103. To replace the datum bar, use the following procedure:

- a. Align the chassis pan with the screw hole of the datum bar. Install and tighten the chassis pan Torx screws to secure the chassis pan to the datum bar.
- b. Install the fan and fan mount.
- c. Install the right chassis.
- d. Install the left chassis.
- e. Install the power transformer.
- f. Install the grit shaft assembly.
- g. Install the center platen.
- h. Install the Y arm.
- i. Install the movable pinch wheel.
- j. Install the paper alignment arms.
- k. Install the fixed pinch wheel.
- l. Install the paper sensor arms.
- m. Install the worm gear and engaging lever.
- n. Install the carousel mount.
- o. Install the pen carousel shield.
- p. Install the pen motor/encoder.
- q. Install the grit shaft motor/encoder.
- r. Install the Main PCA.
- s. Install the front panel.
- t. Install the rear platen.
- u. Install the front platen.
- v. Install the center cover.
- w. Install the right and left chassis covers.

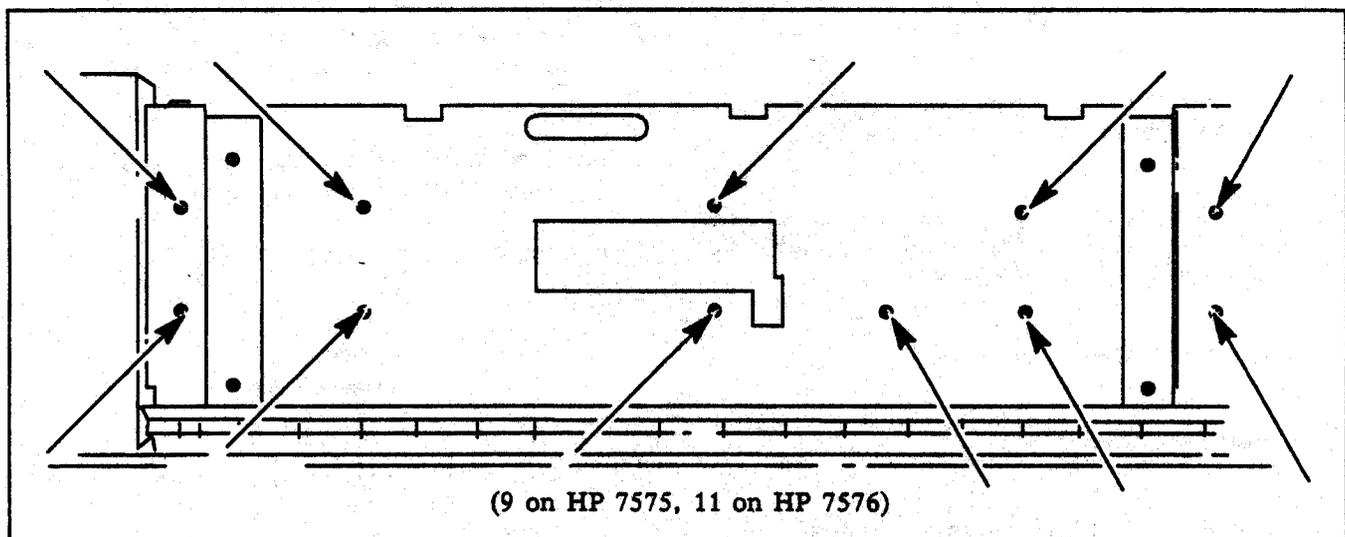


Figure 6-36. Datum Bar Removal

6-104. PINCH WHEEL SENSOR SWITCH REMOVAL

6-105. To remove the pinch wheel sensor switch, use the following procedure:

- a. Remove the right and left chassis covers.
- b. Remove the front platen.
- c. Remove the Main PCA.
- c. Raise the pinch wheels using the pinch wheel lift lever and slide the movable pinch wheel to the far left side (nearest the pen carousel).
- d. Note the orientation of the pinch wheel sensor switch clip and remove the clip. See Figure 6-37.
- e. Gently pull down on the pinch wheel shaft just far enough for the pinch wheel sensor switch to clear the recess in the right chassis.
- f. Note the orientation of the switch and slide the switch from the shaft.

6-106. To install the pinch wheel sensor switch, use the following procedure:

- a. Gently pull down on the pinch wheel shaft just far enough to slide the pinch wheel switch on the end of the shaft.
- b. Position the pinch wheel switch into the recess of the right chassis and install the clip.
- c. Ensure that the pinch wheels are raised and slide the movable pinch wheel to the far right side (nearest the front panel).
- d. Install the Main PCA.
- e. Install the front platen.
- f. Install the right and left chassis covers.

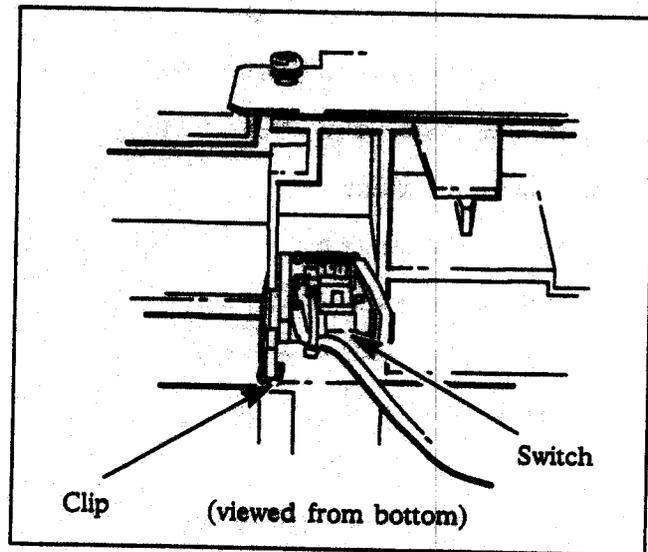


Figure 6-37. Pinch Wheel Sensor Switch Removal

6-107. PLOTTER STAND DISASSEMBLY

6-108. To remove the plotter from the stand, use the following procedure:

WARNING

The following procedure requires two people. Do not attempt to perform this procedure alone. Failure to observe this warning could lead to serious injury, or damage to the plotter.

- a. Remove the four 10 mm nuts with washers that fasten the plotter to the plotter stand. See Figure 6-35.
- b. Stand at one end of the plotter and have an assistant stand at the opposite end.
- c. Lift the plotter from its stand.

WARNING

The plotter's legs must be removed one at a time. Do not attempt to remove both legs at the same time or the plotter stand may fall resulting in injury or damage to the stand.

6-109. To remove a plotter leg from the base, use the following procedure:

- a. Select one of the plotter's legs and pry the four press-in screw caps from the side of the leg. See Figure 6-38.
- b. Remove the four $\frac{1}{4}$ in. allen-head screws and washers from the plotter leg. See Figure 6-38.
- c. Grasp the plotter base with one hand and one of the plotter's legs with the other hand. Raise the base up while pushing down on the plotter leg. The leg should slide in the screw slot. When the leg has moved to one extreme of the slot, move the leg away from the base to remove it. See Figure 6-38.
- d. Repeat steps a through c of this procedure for the remaining plotter leg.

6-110. To install one of the plotter's legs to the base, use the following procedure:

- a. Attach the plotter's leg to the base by lining up the screws of the base with the slotted holes in the leg.
- b. Insert the screws into the slotted holes and press down on the base to latch it in place.
- c. Install the four $\frac{1}{4}$ in. allen-head screws and washers for each leg.
- d. Install the four press-in screw caps to each plotter leg.

6-111. To remove the end caps from either plotter leg, use the following procedure:

- a. Invert the stand and remove the self-tapping screw that holds the end cap to the stand.
- b. Pry the end cap out of the recess in the leg to remove. See Figure 6-38.

6-112. To assemble the plotter stand, use the following procedure:

- a. Insert the end cap into the recess of the plotter leg.
- b. Install the self-tapping screw to hold the end cap to the stand.

6-113. To attach the plotter to the stand, use the following procedure:

WARNING

The following procedure requires two people. Do not attempt to perform this procedure alone. Failure to observe this warning could lead to serious injury, or damage to the plotter.

- a. Stand at one end of the plotter and have an assistant stand at the opposite end.
- b. Pick up the plotter and lower it to the stand aligning the four studs on the plotter with the four slots in the plotter stand.
- c. Install and tighten the four 10 mm nuts with washers to secure the plotter to the stand.

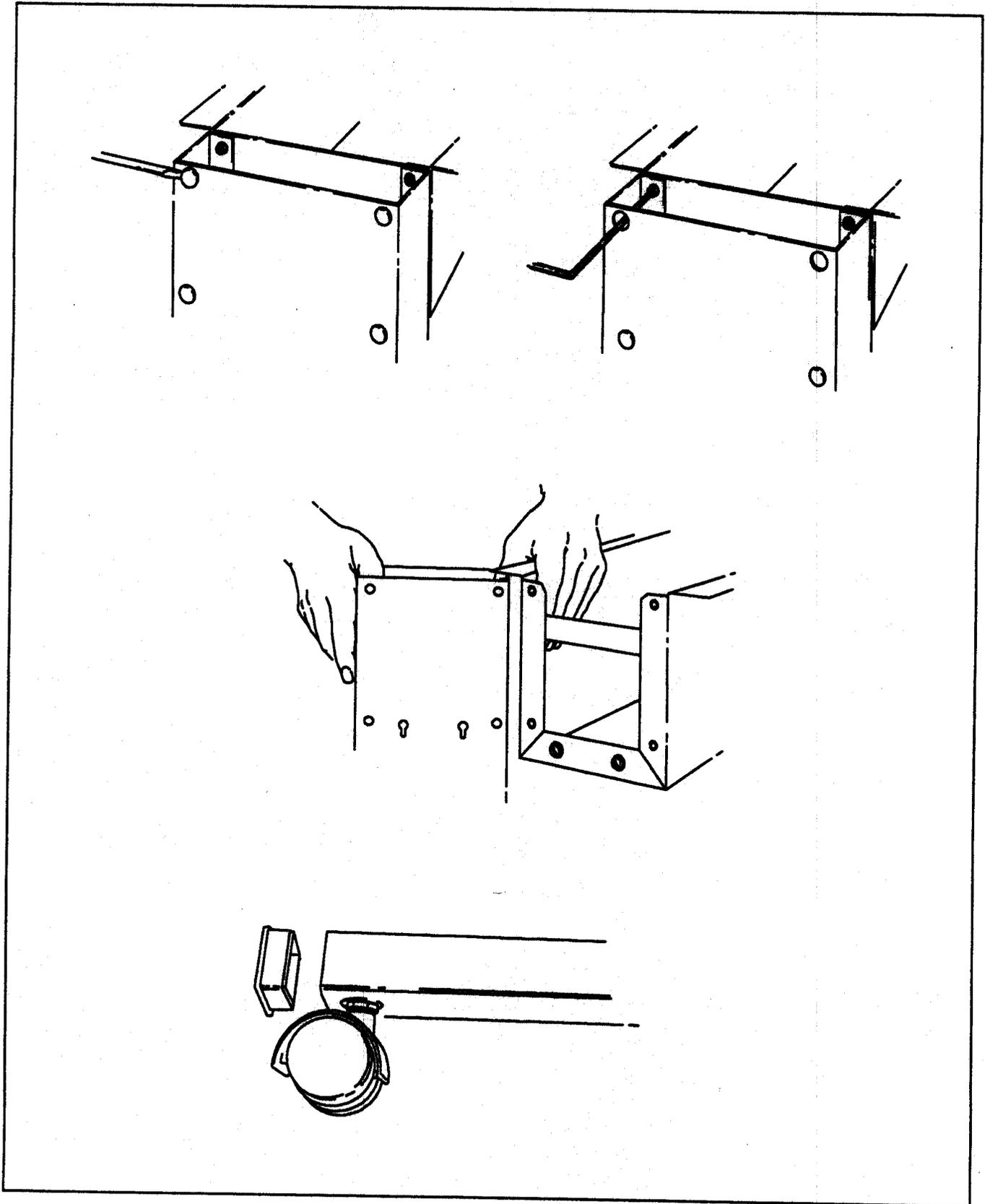


Figure 6-38. Plotter Stand Disassembly

CHAPTER 7

ADJUSTMENTS

7-1. INTRODUCTION

7-2. This chapter would normally contain procedures for the performance of mechanical and electrical adjustments on the HP 7575/6. There are no mechanical or electrical adjustments.

CHAPTER 8

TROUBLESHOOTING AND DIAGNOSTICS

8-1. INTRODUCTION

8-2. The HP 7575/6 has an internal diagnostic routine that is performed upon every power-up sequence and comprehensive built-in operating tests that can be used as aids in troubleshooting. Use these diagnostic aids to quickly isolate a problem to a major assembly and as a guide in verifying proper plotter operation after a repair is performed.

8-3. SAFETY CONSIDERATIONS

8-4. The HP 7575/6 Drafting Plotter has been designed in accordance with accepted safety standards. Safety symbols used with Hewlett-Packard instruments are illustrated in the front matter of this manual. These symbols should be reviewed before service work is performed. Servicing should be performed only by qualified service personnel.

CAUTION

The procedures in this chapter are intended for service trained personnel only. Failure to properly follow these procedures may lead to personal injury or damage to the plotter.

8-5. RECOMMENDED TEST EQUIPMENT

8-6. Test Equipment required to maintain the HP 7575/6 is listed in Table 8-1.

8-7. TROUBLESHOOTING STRATEGY

8-8. Several levels of diagnostics have been built into the HP 7575/6 plotter. It is possible to quickly isolate a problem to a major assembly which may be replaced, or to use more extensive testing to isolate the problem to an individual component. The diagnostics will either run to completion or enter an error condition. An er-

ror will cause the diagnostic routine to stop and the LEDs on the front panel will display failure information that will aid in diagnosing the problem. After successfully isolating the problem, use the procedures in Chapter 6 to perform the repair.

Table 8-1. Recommended Test Equipment

TYPE	RECOMMENDED MODEL
Computer/Controller	HP Portable Plus Computer Model 45711E or 45711F
HP-IL/HP-IB Interface Converter	HP 82169A
HP-IB Cable	HP 10833B
HP-IL Cable	HP 82167B
RS-232-C Cable	HP 92221P
I/O Loopback Connector	HP 07440-60302
GW BASIC Programming Language	Microsoft 82862K opt 400 or GW Basic 45450D
Digital Multimeter	HP 3465A
Oscilloscope	HP 1741A 100 MHz or greater
Optical Comparator	Bausch & Lomb 81-34-35
Metric Scale 0-1000 mm	

8-9. TROUBLESHOOTING PROCEDURES

8-10. To aid in fault isolation, a troubleshooting flowchart is included in Figure 8-1. Always begin with "START" on the first page of the chart and follow the branching references to the successive pages of the flowchart. The reference "A1" returns to the first page of the flowchart, which loops back to retest and verify proper operation of the plotter after any repair has been made.

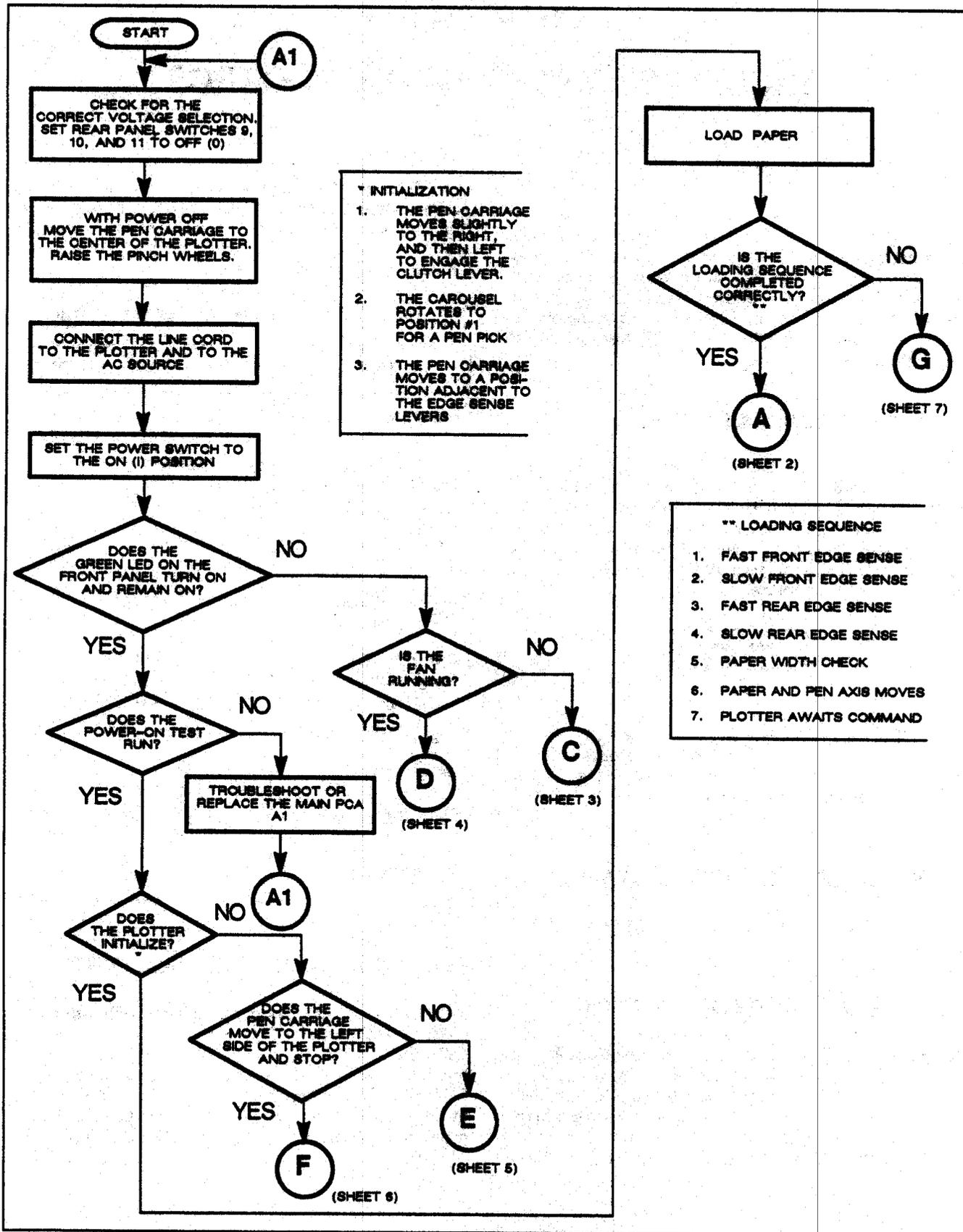


Figure 8-1. Troubleshooting Flowchart (Sheet 1 of 7)

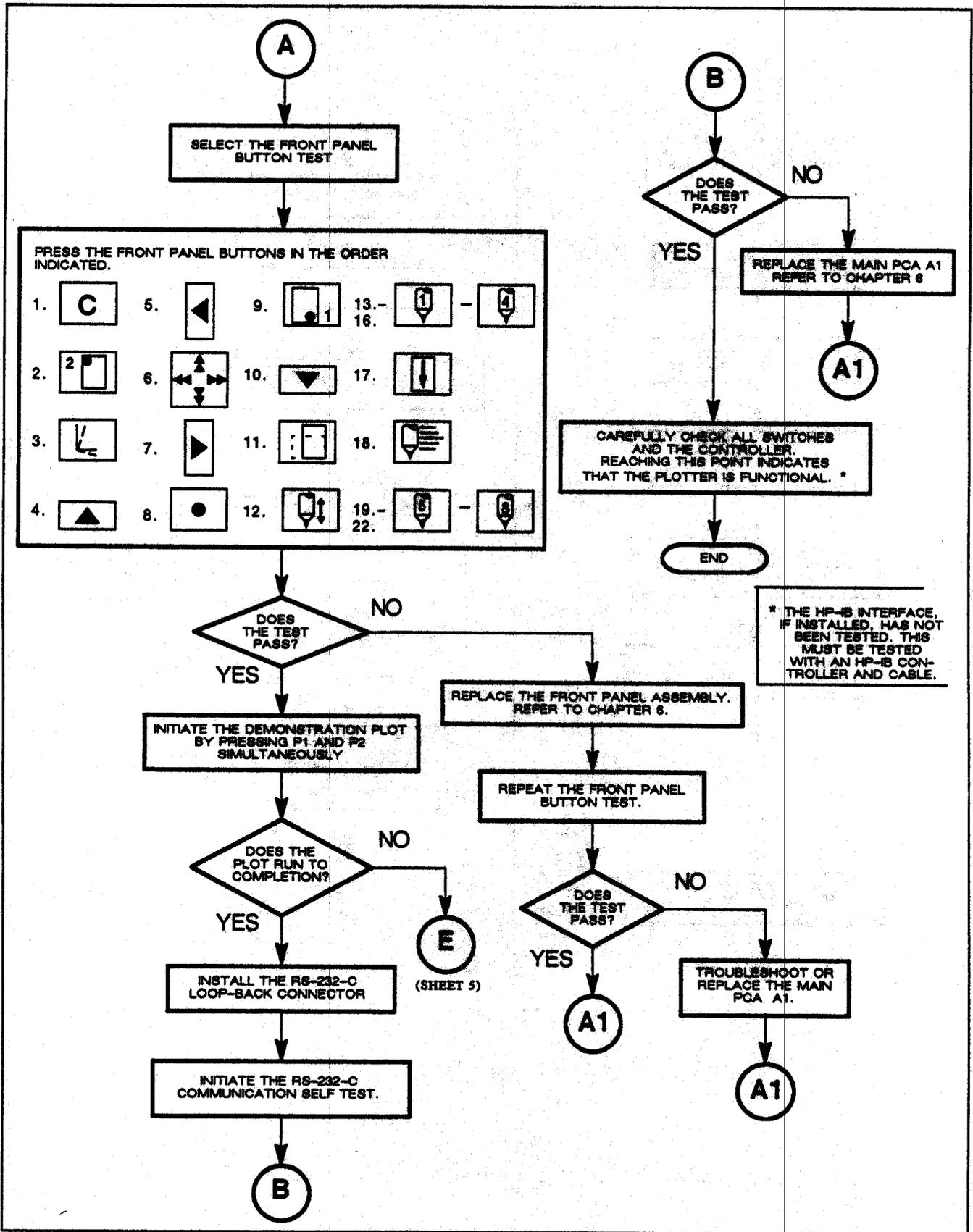


Figure 8-1. Troubleshooting Flowchart (Sheet 2 of 7)

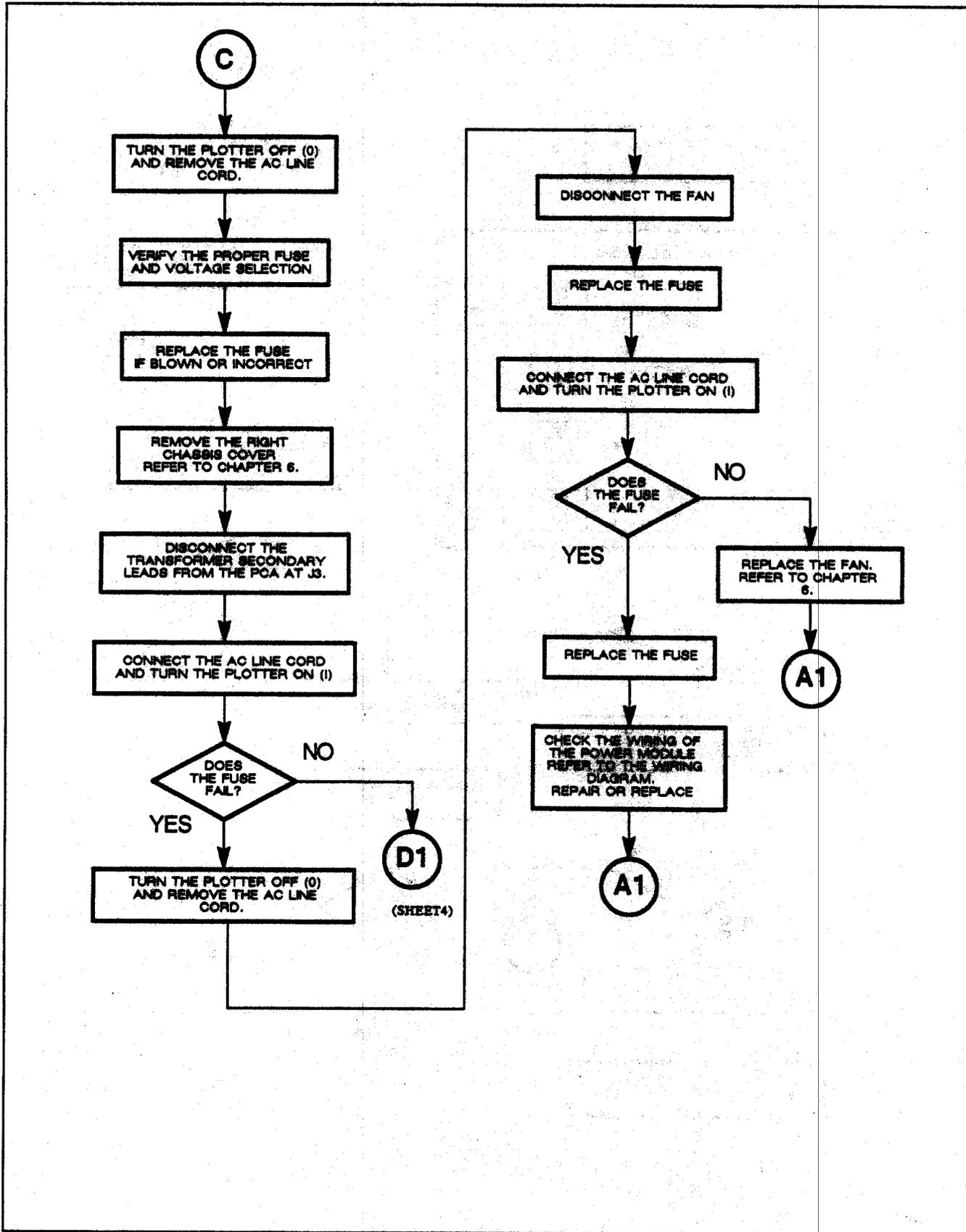


Figure 8-1. Troubleshooting Flowchart (Sheet 3 of 7)

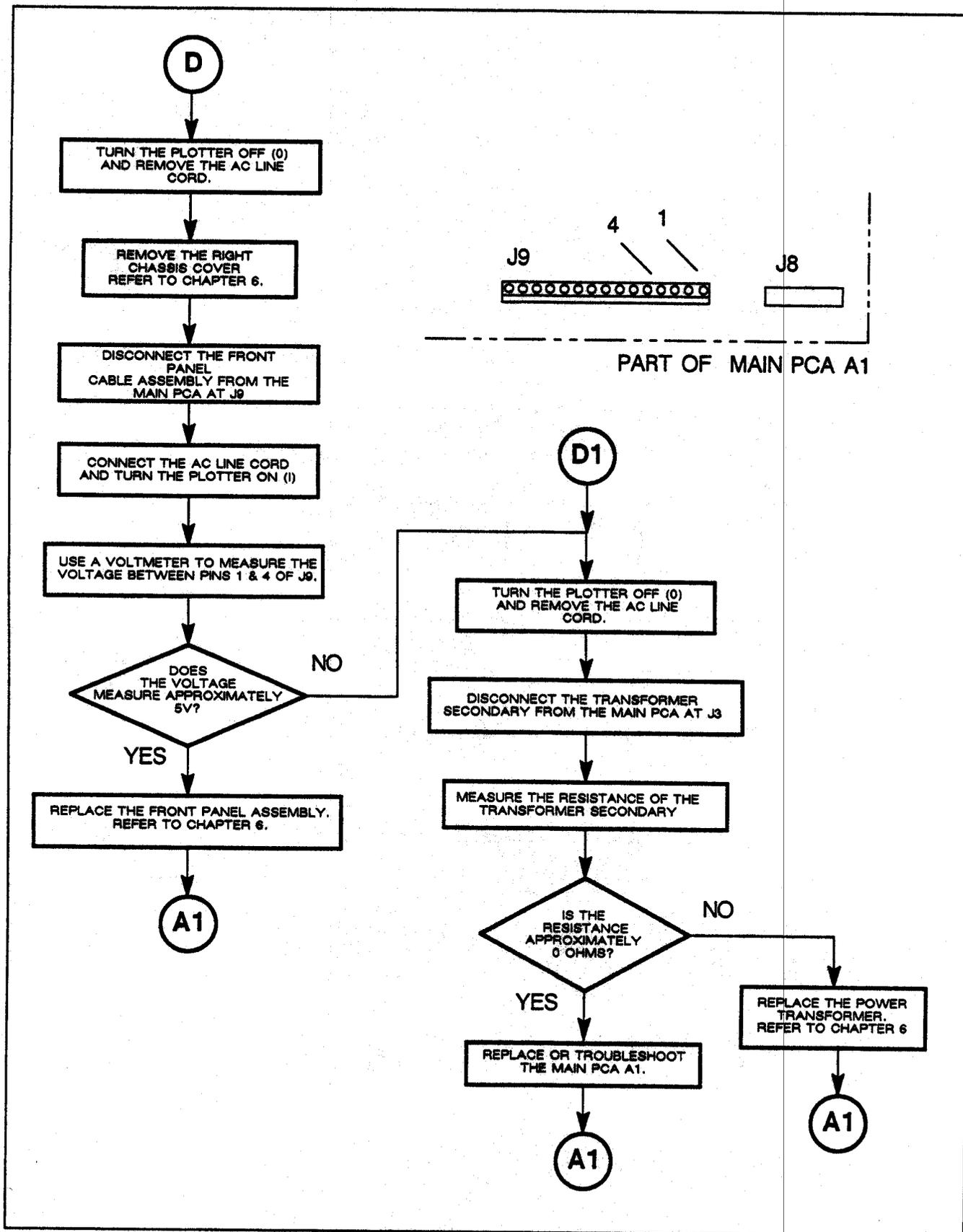


Figure 8-1. Troubleshooting Flowchart (Sheet 4 of 7)

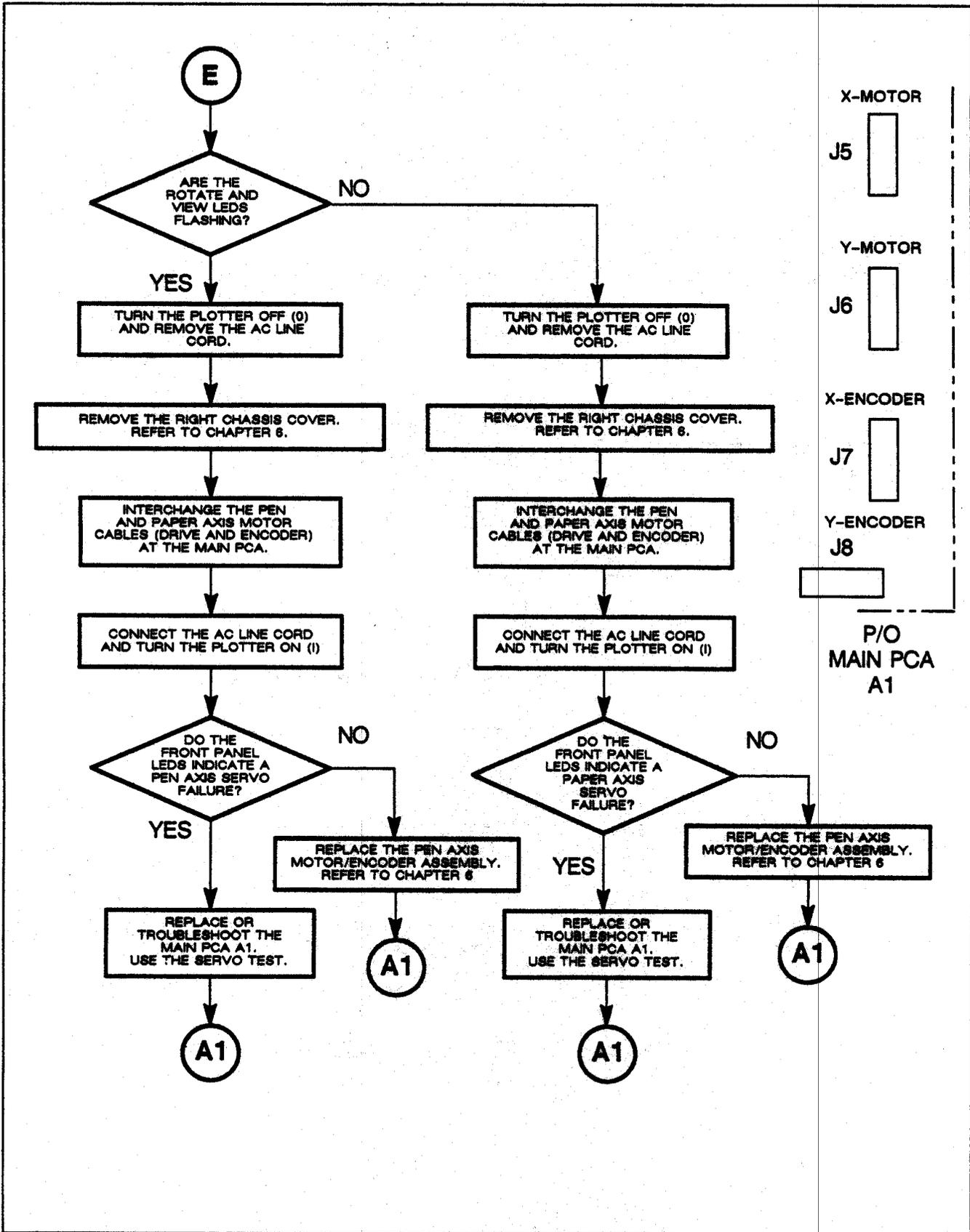


Figure 8-1. Troubleshooting Flowchart (Sheet 5 of 7)

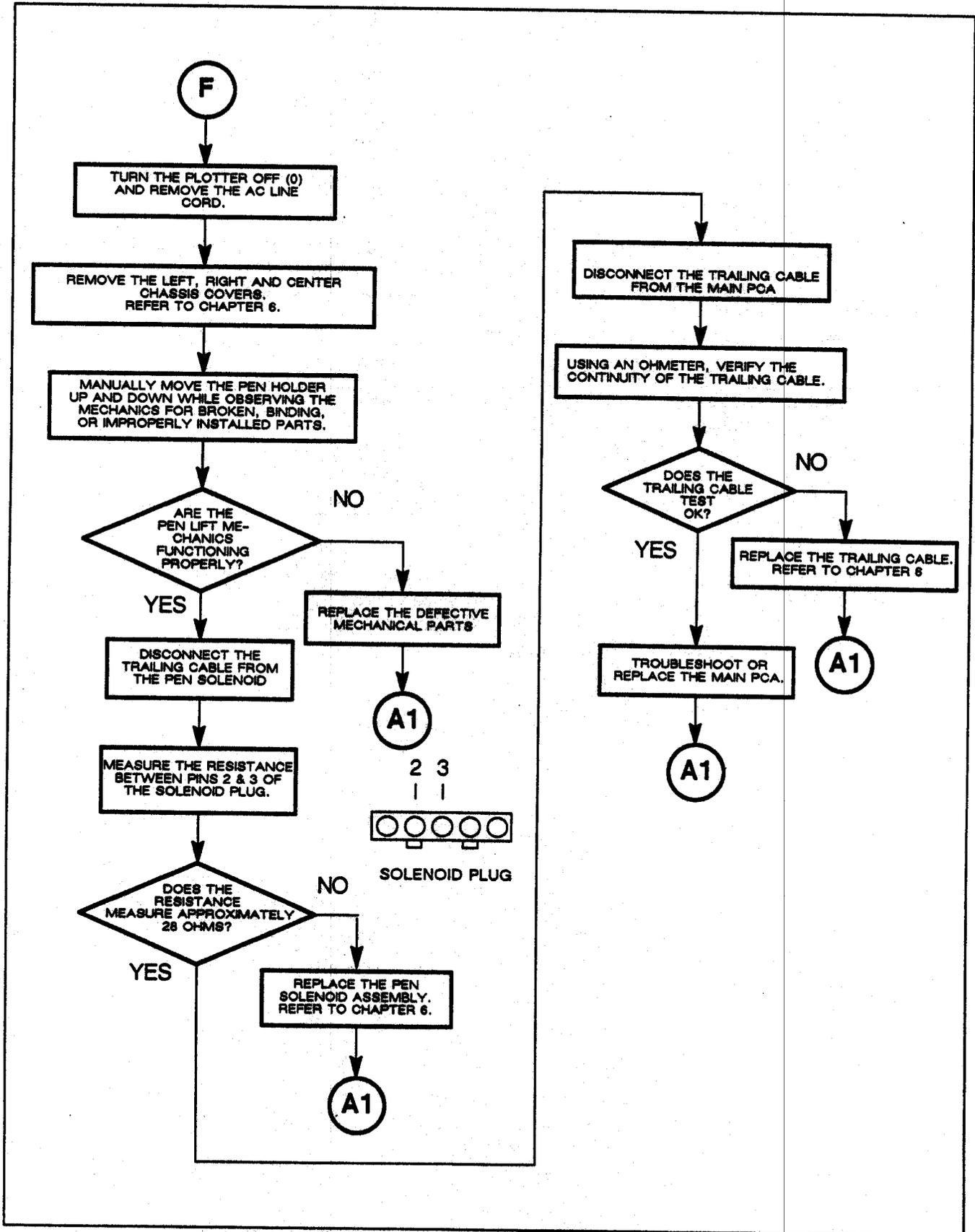


Figure 8-1. Troubleshooting Flowchart (Sheet 6 of 7)

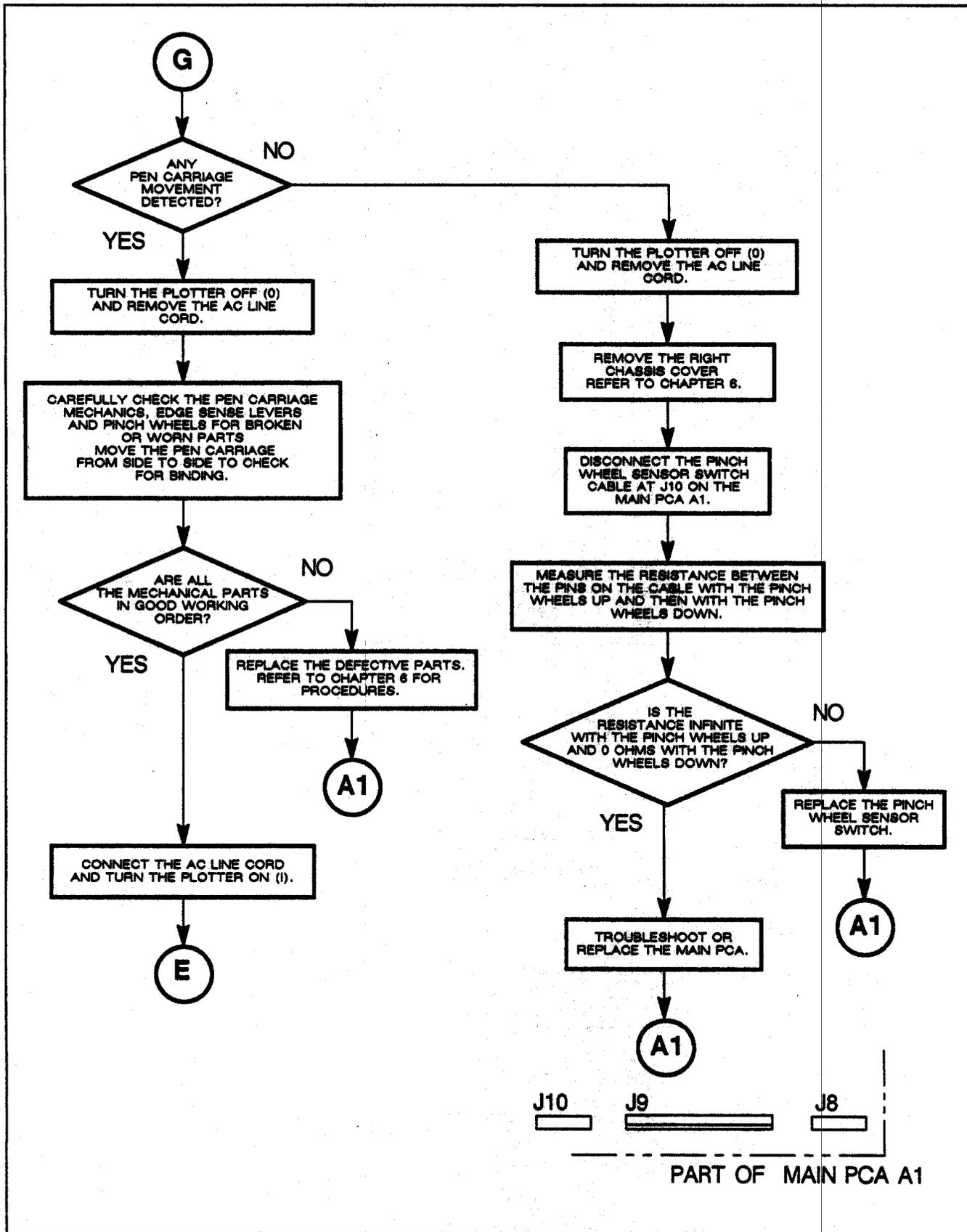


Figure 8-1. Troubleshooting Flowchart (Sheet 7 of 7)

Table 8-2. Power-On Self Test

STEP	TEST	CIRCUIT TESTED	INDICATION
1.	Front Panel LEDs	Slave Microprocessor (U9), SWR (write line), Port 0, some ROM, Servo IC (U13), LED Drivers, cables & Front Panel	Each Front Panel LED should cycle ON individually; VIEW, ROTATE, ENTER, & SPEED
			IF - POWER LED only CHECK - clock, reset, servo IC (U13), front panel wiring, and SRD line
			IF - Any 1 LED does not light CHECK - Front panel, Servo IC (U13), cabling
			IF - Two LEDs ON simultaneously CHECK - Short circuit in Servo IC (U13) output or in the front panel
			IF - All LEDs ON simultaneously CHECK - Clock and reset circuits
2.	Slave Microprocessor and ROM	Slave Microprocessor (U9) & Internal ROM	IF - SPEED LED flashing, or ON steady REPLACE - Slave Microprocessor (U9)
3.	Slave Microprocessor and RAM	Slave Microprocessor (U9), internal RAM & Servo IC (U13) RAM	IF - VIEW LED flashing, or ON steady REPLACE - Slave Microprocessor (U9)
			IF - VIEW & SPEED LEDs flashing CHECK - SAD bus with a logic probe ----- IF - No bus data REPLACE - Slave Microprocessor (U9) ----- IF - Bus data REPLACE - Servo IC (U13)
			IF - VIEW & SPEED LEDs flashing REPLACE - Servo IC (U13)
4.	Servo IC	Servo IC (U13), Internal Pulse Width Modulators, encoder feedback & Up/Down Counters	IF - VIEW & SPEED LEDs flashing REPLACE - Servo IC (U13)
			IF - VIEW & SPEED LEDs ON steady REPLACE - Servo IC (U13) or Slave Microprocessor (U9)

Table 8-2. Power-On Self Test (Continued)

STEP	TEST	CIRCUIT TESTED	INDICATION
5.	Slave and Master Microprocessor handshake	Slave Microprocessor (U9) Port 1 & Master Microprocessor (U6) Port 1	IF - ENTER LED flashing CHECK - Master Microprocessor (U6), master ROM (U14), latch (U7), & Data/Address lines
			IF - ENTER LED ON steady CHECK - Master (U6) & Slave (U9) Microprocessors, master ROM (U14), latch (U7), Data/Address lines, PSEN & ALE
6.	Master ROM Checksums	Checksum on Master ROM (U14)	IF - ENTER & SPEED LEDs flashing REPLACE - Master ROM (U14)
			IF - ENTER & SPEED LEDs ON steady CHECK - Master Microprocessor (U6), latch (U7), & Master ROM (U14)
7.	Master Microprocessor Internal RAM	Reads and writes to internal RAM	IF - ENTER & VIEW LEDs flashing REPLACE - Master Microprocessor (U6)
			IF - ENTER & VIEW LEDs ON steady CHECK - Master Microprocessor (U6)
8.	External RAM	Reads and writes to external RAM (U10)	IF - ENTER, VIEW & SPEED LEDs flashing or ON steady CHECK - READ/WRITE lines REPLACE - External RAM (U10)
9.	KANJI ROM checksum	Performs checksums on additional ROM (if KANJI installed)	ROTATE LED ON 2 seconds indicates KANJI ROM is installed
			IF - ROTATE LED flashing REPLACE - KANJI ROM

Table 8-2. Power-On Self Test (Continued)

STEP	TEST	CIRCUIT TESTED	INDICATION
10.	Initialization	Pen holder and carousel moved to sense location Motor encoders and Servo IC	IF - ROTATE & SPEED LEDs flash
			CHECK - All paper axis mechanics including carousel ----- IF - Mechanical binding - correct the problem IF NOT - Refer to Servo test procedures in this chapter
			IF - ROTATE & VIEW LEDs flashing
			CHECK - All pen axis mechanics ----- IF - Mechanical binding - correct the problem IF NOT - Refer to Servo test procedures in this chapter

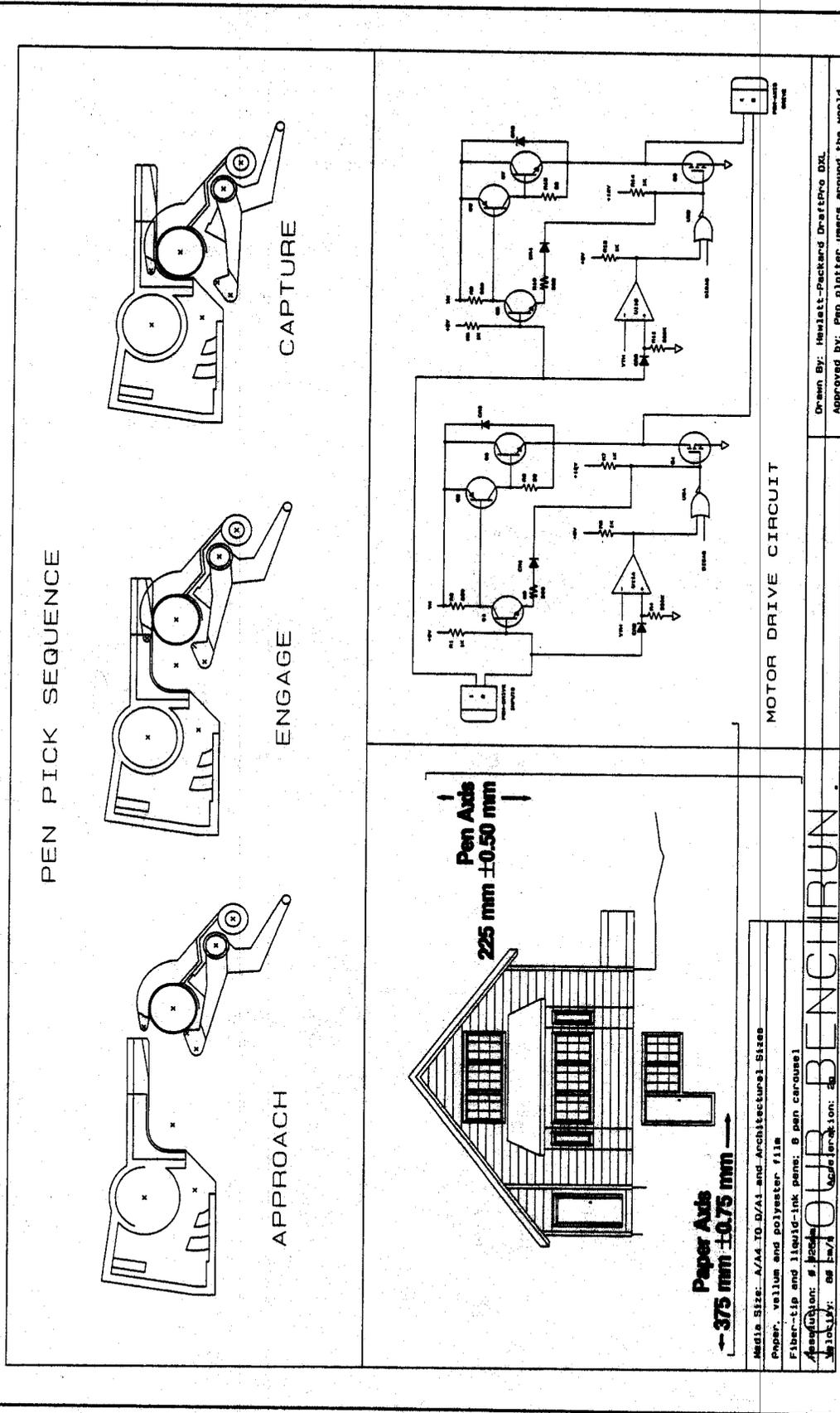
8-16. CONFIDENCE TEST

8-17. The Confidence Test checks the operation of most of the plotter circuitry and produces a plot with features for checking plotter accuracy in both the paper and pen axis.

8-18. To perform the Confidence Test, proceed as follows:

- a. Turn OFF (0) the plotter.
- b. Set the rear panel switch (11) to the ON (1) position.
- c. Load a sheet of ISO A1 (ANSI D) paper.
- d. Install a pen carousel loaded with new 0.3 mm pens.
- e. Turn ON (1) the plotter.
- f. The plotter will start and continuously run the Confidence Test Plot, illustrated in Figure 8-3, until the plotter is turned OFF (0).
- g. Allow the plotter to run at least one plot to completion, then turn the plotter OFF (0), and reset switch (11) to the OFF (0) position.
- h. Accuracy is checked by measuring the length of the test lines, in the Confidence Test Plot, with a metric scale. The length must be:

Paper-axis	375 mm +/- 0.75 mm
Pen-axis	225 mm +/- 0.50 mm



7575-D-12-1

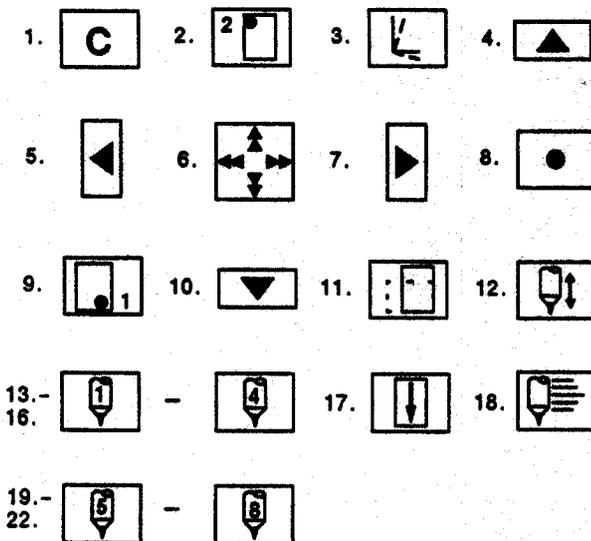
Figure 8-3. Confidence Test Plot

8-19. FRONT PANEL BUTTON TEST

8-20. This test is an operator interactive test used to check the front panel buttons for opens, shorts, and excessive switch bounce.

8-21. To perform the Front Panel Button Test, proceed as follows:

- a. Turn the plotter OFF (O).
- b. Set rear panel switches 9 and 11 to the ON (I) position.
- c. Turn the plotter ON (I).
- d. The SPEED LED on the front panel will flash, indicating the start of the test.
- e. Press each front panel button in the sequence indicated below. If a wrong button is pressed it will disrupt the sequence, causing an error condition to occur, which will require restart of the test.
- f. As each button passes the test, one of the LEDs will light.
- g. An error condition is indicated by all the front panel LEDs flashing.
- h. At successful completion of the button sequence, the SPEED LED will flash ON and OFF. Turn the plotter OFF (O) and reset rear panel switches 9 and 11 to the OFF (O) position.



8-22. SERVO TEST

8-23. During normal operation of the plotter the two servo systems are continuously being monitored. If an error condition occurs, the servos will be shut down, and the front panel LEDs will indicate an error display for the condition.

8-24. To perform the Servo Test, proceed as follows:

- a. Turn the plotter OFF (O).
- b. Remove the right hand chassis cover. If necessary refer to the procedures in Chapter 6.
- c. Center the pen carriage on the platen to allow movement in either direction.
- d. Disconnect the pen and paper motor cable assemblies from the Main PCA at J5 and J6. See Figure 8-4.

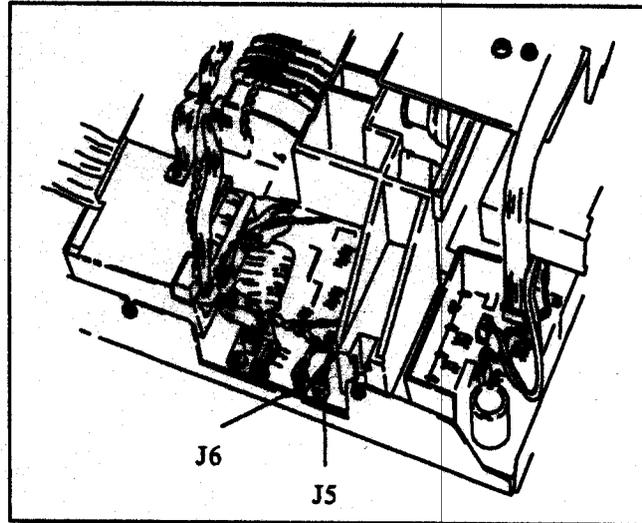


Figure 8-4. Main PCA Motor Cable Connections

- e. Set rear panel switches 9, 10, and 11 to the ON (I) position.
- f. Press and hold the ENTER and UP cursor buttons while turning the plotter ON (I). Hold the buttons down until the Power-On Self Test is completed.
- g. Connect the oscilloscope to the Main PCA pins indicated below to monitor the signal as the corresponding front panel cursor button is pressed.

J5-PIN 1	UP
J5-PIN 2	DOWN
J6-PIN 1	LEFT
J6-PIN 2	RIGHT

- h. Each drive signal should appear similar to the waveform in Figure 8-5.

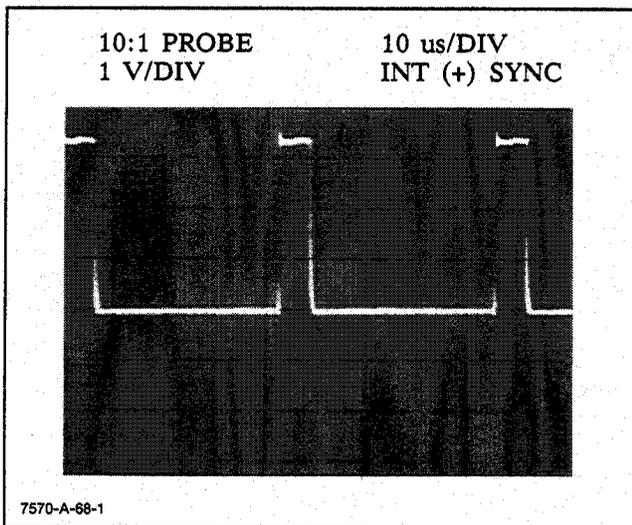


Figure 8-5. Motor Drive Output

- i. Connect the pen and paper motor cables to the Main PCA.

NOTE

Leave the encoder cables connected to the Main PCA jacks to monitor the encoder signal.

- j. While pressing either the UP cursor or DOWN cursor button, monitor the output of the motor encoders with the oscilloscope at pins 3 and 5 of J7 on the Main PCA. See Figure 8-4. The waveforms should appear similar to the one in Figure 8-6.

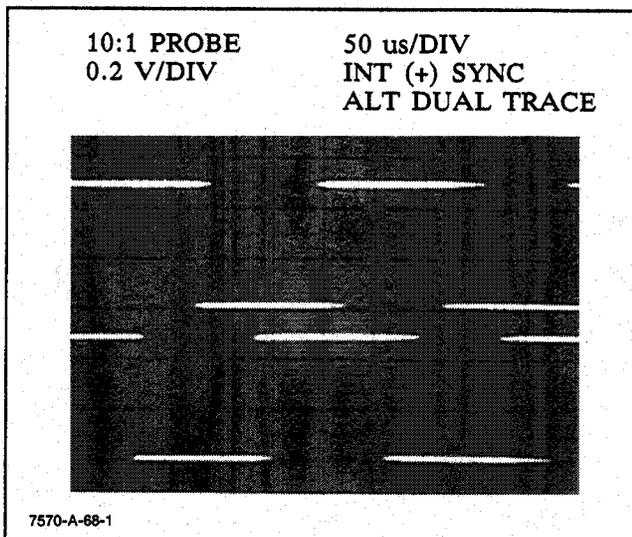


Figure 8-6. Motor Encoder Output

- k. While pressing either the LEFT cursor or RIGHT cursor button, monitor the output of the motor encoders with the oscilloscope at

pins 3 and 5 of J8 on the Main PCA. See Figure 8-4. The waveforms should appear similar to the one in Figure 8-6.

1. Turn OFF (O) the plotter, set rear panel switches 9, 10, and 11 to the OFF (O) position, and install the chassis cover.

8-25. REPEATABILITY TEST

8-26. This test measures the ability of the plotter to return the pen to a specified point.

8-27. To perform the Repeatability Test, proceed as follows:

NOTE

The Repeatability Test is not built in and therefore must be run on the HP Portable Plus controller using GW BASIC.

This test is designed to check both single-pen and pen-to-pen repeatability. To check pen-to-pen repeatability, review steps l through p of this procedure before initiating the test.

- a. Turn OFF (O) the plotter and the HP Portable Plus.
- b. Connect the plotter to the HP Portable Plus using RS-232-C interface cable, P/N 92221P.
- c. Set the plotter rear panel switches to 9600 baud and no parity.
- d. Turn the plotter and the HP Portable Plus to ON (I).
- e. Load a sheet of either ISO A2 (ANSI C) or A1 (ANSI D) paper into the plotter.
- f. Install a new 0.3 mm pen in position 1 of the pen carousel and install the carousel in the plotter.
- g. Enter the program listing given in Figure 8-7 into the HP Portable Plus.
- h. Run the repeatability test program. The resulting plot is shown in Figure 8-8.
- i. Remove the completed test plot for examination.
- j. Using an optical comparator, examine each of the five vector intersect points. These points are indicated by the small circles on the plot.
- k. The end points must match within 100 micrometres (0.004 in.) for single-pen repeatability.

In the system configuration menu of the HP Portable Plus, set the plotter interface setting to "serial".

```

10 REM RS-232-C plotter repeatability test
20 OPEN "com1:9600,n,8,1" AS #1
30 REM set grit tracks in paper
40 PRINT #1, CHR$(27)+".(in;sp0;op;"
50 INPUT #1, A,B,C,D
60 FOR X = 5 TO 25 STEP 10
70 PRINT #1, "vs";X;"
80 PRINT #1, "pd";A;" ";B;" ";C;" ";D
90 NEXT X
100 REM draw vectors and circle intersections
110 PRINT #1, "pusp1pa";A;" ,0pd";A;" ";B;" ,0,";B;" puci150"
120 PRINT #1, "pa0,";D;"pd";C;" ";D;" ";C;" ,0puci150"
130 PRINT #1, "pa";A;" ,0ci150pd";A;" ";D;" ,0,";D;" puci150"
140 PRINT #1, "pa0,";B;"pd";C;" ";B;" ";C;" ,0pu"
150 PRINT #1, "pa";A;" ";D;"pd0,0pu";C;" ";B;"pd0,0puci150"
160 PRINT #1, "pa2000,3250di0,-1lb Plotter Repeatability Test"+CHR$(3)
170 PRINT #1, "sp0nr"
180 CLOSE #1
190 END

```

After running program, type "system" and press return to exit GW BASIC.

Figure 8-7. Repeatability Test Program Listing

- i. To test pen-to-pen repeatability, interrupt the program by pressing the VIEW button on the front panel.
- m. While the program is stopped, manually change the plotter pen with another new 0.3 mm pen of a different color.
- n. Press the VIEW button again to resume the test plot.
- o. When the plot is complete, examine the pen-to-pen vector intersects.
- p. The end points must match within 200 micrometres (0.008 in.) for the pen-to-pen repeatability.
- q. Turn OFF (0) the plotter and the HP Portable Plus before disconnecting the interface cable.

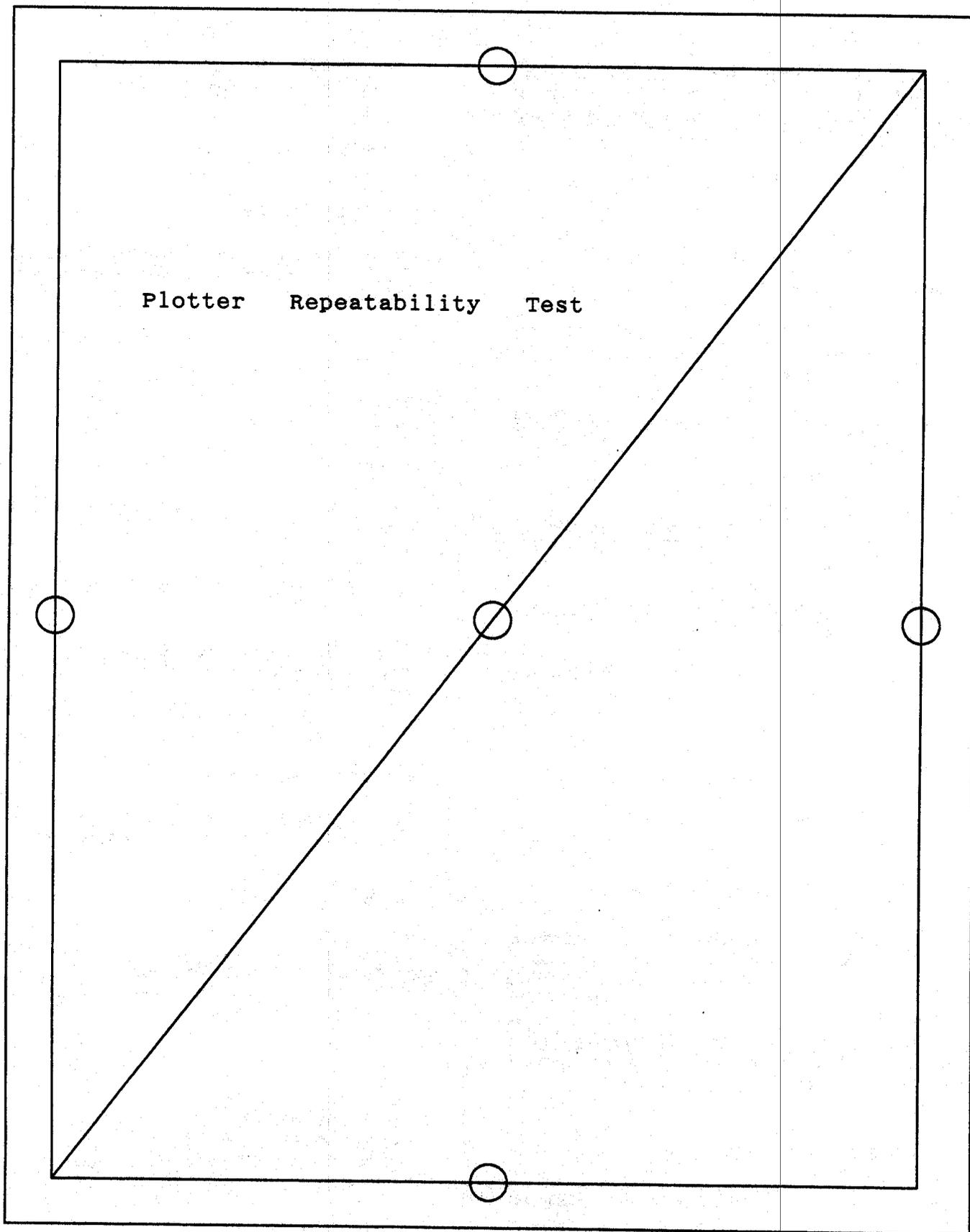


Figure 8-8. Repeatability Test Plot

8-28. I/O LOOPBACK TEST

8-29. The I/O Loopback Test is designed to check the RS-232-C serial Input/Output (I/O) circuitry of the plotter. This test does not check the link between the plotter and the external controller.

8-30. To perform the I/O Loopback Test, proceed as follows:

- a. Turn the plotter OFF (0).
- b. Disconnect the RS-232-C interface cable.
- c. Connect the I/O loopback connector [P/N 07440-60302] to the RS-232-C interface at the rear of the plotter.
- d. Set rear panel switches 10 and 11 to the ON (1) position.
- e. Turn ON (1) the plotter.
- f. Proper completion of the test is indicated by flashing ENTER and SPEED LEDs on the front panel.
- g. ENTER and SPEED LEDs ON steadily indicate no feedback from pin 2 to 3.
- h. Flashing ROTATE and VIEW LEDs indicate an error is detected in the I/O loopback. This may indicate an open from pin 4 to 8, or between pins 5, 6, & 20.
- i. Turn OFF (0) the plotter, remove the loopback connector, and reset the rear panel switches 10 and 11 to the OFF (0) position.

8-31. SYSTEM VERIFICATION TESTS

8-32. System verification, checking communication between the plotter and the controller, may be accomplished by using the HP Portable Plus controller and GW BASIC. Running the interconnection program for the interface will check to see that bi-directional communication has been established between the plotter and the controller. Perform the appropriate interface tests described in the following paragraphs.

8-33. RS-232-C INTERFACE TEST

8-34. This test is designed to verify two-way serial communication between the plotter and the controller. However, the test does not verify handshaking protocol for the system.

NOTE

The RS-232-C Interface Test must be run on the HP Portable Plus controller using GW BASIC.

8-35. To perform the RS-232-C Interface Test, proceed as follows:

- a. Turn the plotter OFF (0).
- b. Connect the HP Portable Plus controller to the RS-232-C interface connector at the rear of the plotter.
- c. Set the plotter rear panel switches to 9600 baud and no parity.
- d. Turn the plotter and HP Portable Plus controller ON (1).
- e. Load a sheet of paper into the plotter.
- f. Install a new 0.3 mm pen in position 1 of the pen carousel and install the carousel in the plotter.
- g. Enter the program listing given in Figure 8-9 into the HP Portable Plus.
- h. Run the RS-232-C Interface Test program. A plot will be generated indicating a good communications link between the plotter and the controller. The resulting test plot is shown in Figure 8-10.
- i. Remove the completed test plot.
- j. Turn the plotter and the HP Portable Plus OFF (0) before disconnecting the interface cable.

8-36. HP-IB INTERFACE TEST

8-37. This test is designed to verify two-way parallel communication between the plotter and the controller. The HP-IB module is an available accessory and not standard equipment on the plotters.

NOTE

The HP-IB Interface Test must be run on the HP Portable Plus controller using GW BASIC, HP-IL and HP-IB cables and the HP 82169A Interface Converter.

The HP-IB Interface module must be installed in the plotter before performing this test.

8-38. To perform the HP-IB Interface Test, proceed as follows:

- a. Turn the plotter OFF (0).
- b. Connect the HP Portable Plus controller, cables and HP 82169A Interface Converter to the HP-IB interface module connector at the rear of the plotter.
- c. Set the plotter HP-IB module address switches to address 05.
- d. Turn the plotter and HP Portable Plus controller ON (1).
- e. Load a sheet of paper into the plotter.
- f. Install a new 0.3 mm pen in position 1 of the pen carousel and install the carousel in the plotter.
- g. Enter the program listing given in Figure 8-11 into the HP Portable Plus.
- h. Run the HP-IB Interface Test program. A plot will be generated indicating a good communications link between the plotter and the controller. The resulting test plot is shown in Figure 8-10.
- i. Remove the completed test plot.
- j. Turn the plotter and the HP Portable Plus OFF (0) before disconnecting the interface cable.

In the system configuration menu of the HP Portable Plus, set the plotter interface setting to "serial".

```

10 REM RS-232-C communication test program
20 OPEN "com1:9600,n,8,1" AS #1
30 PRINT #1, CHR$(27)+".(in;sc0,1,0,1;oi;"
40 INPUT #1, ID$
50 PRINT #1, "sp1;pa0,0;pd1,0,1,1,0,1,0,0;pu.5,.5;"
60 PRINT #1, "lb"+ID$+" Plotter OK"+CHR$(3)
70 PRINT #1, "pa0,0;sp0;"
80 CLOSE #1
90 END

```

After running the program, type "system" and press return to exit GW BASIC.

Figure 8-9. RS-232-C Interface Test Program Listing

7576A Plotter OK

Note: The plot shown is for the HP 7576, the plot for the HP 7575 is similar except for the output identity number.

Figure 8-10. Interface Test Plot

In the system configuration menu of the HP Portable Plus, set the plotter interface setting to "HP-IB:05".

```
10 REM HP-IB communication test program
20 OPEN "0",1,"PLT"
30 OPEN "1",2,"PLT"
40 PRINT #1, "in;sc0,1,0,1;oi;"
50 INPUT #2, ID$
60 PRINT #1, "sp1;pa0,0;pd1,0,1,1,0,1,0,0;pu.5,.5;"
70 PRINT #1, "lb"+ID$+" Plotter OK"+CHR$(3)
80 PRINT #1, "pa0,0;sp0;"
90 CLOSE #1
100 CLOSE #2
110 END
```

After running the program, enter "system" and press return.

Figure 8-11. HP-IB Interface Program Listing

CHAPTER 9

REPLACEABLE PARTS

9-1. INTRODUCTION

9-2. This section contains information for ordering parts for the HP 7575/6. Included are lists of electrical and mechanical parts.

9-3. ORDERING INFORMATION

9-4. To obtain replacement parts or assemblies, address an order or inquiry to the nearest Hewlett-Packard Sales and Support Office. The order must include the part or assembly number, its description and location, the part check digit (CD) from the parts list, the quantity required, and the plotter model and serial number.

9-5. FIELD REPLACEABLE PARTS

9-6. Mechanical parts for the HP 7575/6 plotter are listed in Tables 9-1 through 9-6. The assemblies are illustrated in Figures 12-4 through 12-9.

9-7. Components for the plotter Main PCA are listed in Table 9-7. Components for the HP-IB Interface PCA are listed in Tables 9-8 and 9-9. The cable identification diagram, schematics, and component location diagrams are found in Chapter 12 of this manual.

9-8. REFERENCE DESIGNATIONS AND ABBREVIATIONS

9-9. Table 9-10 lists designators and abbreviations used throughout this manual. Abbreviations in the parts lists are always capital letters. In other parts of the manual both upper and lower case abbreviations are used.

9-10. CODE LIST OF MANUFACTURERS

9-11. Table 9-11 lists the five-digit code numbers assigned to the manufacturers of parts in the HP 7575/6. These code numbers appear with the parts in Tables 9-1 through 9-9 as an aid for ordering replacement parts directly from the manufacturer.

Table 9-1. Parts List, Covers and Stand Assembly

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
1	0515-1722	8	10	SCREW-MACHINE ASSY M4 X 0.7 14MM-LG	28480	0515-1722
2	3050-0818	8	1	WASHER, FLAT	28480	3050-0818
3	07090-20020	4	1	WASHER, SHOULDER	28480	07090-20020
4	07575-20047	1	1	COVER, LEFT TOP	28480	07575-20047
5	07570-40116	2	6	RIB, LONG	28480	07570-40116
6	07570-40119	5	1	INSERT, REAR	28480	07570-40119
7	07575-80014	6	1	PLATEN, REAR (HP 7575 INCLUDES ITEM 5)	28480	07575-80014
	07576-80008	9	1	PLATEN, REAR (HP 7576 INCLUDES ITEM 5)	28480	07576-80008
8	0515-1472	5	4	SCREW-THD RLG ASSY M6 X 1.81 19MM-LG	28480	0515-1472
9	0624-0684	0	2	SCREW, PLASTITE	28480	0624-0684
10	07575-00188	5	1	COVER, CENTER (HP 7575)	28480	07575-00188
	07576-00186	4	1	COVER, CENTER (HP 7576)	28480	07576-00186
11	07575-40111	2	2	HINGE, FEMALE	28480	07575-40111
	07576-40012	2	2	HINGE, MALE	28480	07576-40012
12	07575-40009	7	1	WINDOW (HP 7575)	28480	07575-40009
	07576-40006	5	1	WINDOW (HP 7576)	28480	07576-40006
13				NOT ASSIGNED		
14	07575-20048	2	1	COVER, RIGHT TOP	28480	07575-20048
15	07575-80112	5	1	PLATEN, FRONT (HP 7575 INCL. ITEMS 5 & 17)	28480	07575-80112
	07576-80066	7	1	PLATEN, FRONT (HP 7576 INCL. ITEMS 5 & 17)	28480	07576-80066
16	07570-40118	4	1	INSERT, FRONT	28480	07570-40118
17	07570-40017	2	2	RIB, SHORT	28480	07570-40017
18				NOT ASSIGNED		
19	07575-00032	2	1	BRACE, STAND (HP 7575)	28480	07575-00032
	07576-00030	1	1	BRACE, STAND (HP 7576)	28480	07576-00030
20	07575-80035	1	1	KIT, HARDWARE	28480	07575-80035
21	0515-2090	5	4	SCREW, M6 X 1.0 X 14	28480	0515-2090
22	07575-80009	9	2	LEG ASSEMBLY (HP 7575 INCL. # 21, 23, 24)	28480	07575-80009
	07576-80004	5	1	LEG ASSEMBLY (HP 7576 INCL. # 21, 23, 24)	28480	07576-80004
23	07575-40026	8	4	CAP, END	28480	07575-40026

Table 9-2. Parts List, Left Chassis Assembly

Reference Designation	HP Part Number	C	D	Qty	Description	Mfr Code	Mfr Part Number
1	0624-0684	0		1	SCREW, PLASTITE	28480	0624-0684
2	07570-40021	8		1	SHIELD, CAROUSEL	28480	07570-40021
3	07570-40050	3		1	PINCHWHEEL CAROUSEL	28480	07570-40050
4	07570-20031	8		1	MOUNT, CAROUSEL	28480	07570-20031
5	07570-40060	5		1	LEVER, ENGAGING	28480	07570-40060
6	1460-2134	2		3	SPRING-EXT 4.8-MM-OD 28.6-MM-LG SST	28480	1460-2134
7	0510-1294	9		2	RETAINER RING, E-R EXT	28480	0510-1294
8	07570-40016	9		1	GEAR, WORM	28480	07570-40016
9	07570-40070	7		1	SHAFT, WORM GEAR	28480	07570-40070
10	07575-20050	6		2	BUSHING, PINCH WHEEL ARM	28480	07575-20050
11	07570-40165	1		1	SENSOR, REAR EDGE	28480	07570-40165
12	0515-1472	5		1	SCREW-THD RLG ASSY M5 X 1.51 19MM-LG	28480	0515-1472
13	1460-2129	5		2	SPRING-EXT 4.8-MM-OD MLW ZN	28480	1460-2129
14	07570-40065	6		1	SENSOR, FRONT EDGE	28480	07570-40065
15	07570-40065	0		1	CLAMP, BEARING	28480	07570-40065
16	07575-40007	5		2	RETAINER, SHAFT	28480	07575-40007
17	07575-20008	4		1	SHAFT, PINCHWHEEL	28480	07575-20008
18	5061-7623	2		1	PINCHWHEEL ASSY	28480	5061-7623
19	07575-40048	4		1	COVER, LEFT BOTTOM	28480	07575-40048
20	07575-20060	4		1	SHAFT, PINCHWHEEL ARM, LEFT	28480	07575-20060
21	07575-40025	7		1	ARM, PINCHWHEEL, LEFT	28480	07575-40025
22	1460-2135	3		2	SPRING-EXT 11.1-MM-OD 60-MM-LG ZN	28480	1460-2135
23	07570-40018	3		1	PAPER STOP, FRONT	28480	07570-40018
24	07570-40009	2		1	LEVER, PAPER STOP, FRONT	28480	07570-40009
25	07570-40180	0		1	HANDLE, PINCHWHEEL	28480	07570-40180
26	07575-20176	7		1	CHASSIS, LEFT	28480	07575-20176
27	0535-0065	8		3	NUT-SQUARE NO-CHAM M4 X 0.7 3.2MM-THK	28480	0535-0065
28	07570-40036	6		1	COUPLER, LIFT ARM	28480	07570-40036
29	07570-40019	4		1	PAPER STOP, REAR	28480	07570-40019
30	07570-40010	5		1	LEVER, PAPER STOP, REAR	28480	07570-40010
31	07570-00013	4		1	BRACKET, GROUND	28480	07570-00013
32	0515-1722	8		9	SCREW-MACHINE ASSY M4 X 0.7 14MM-LG	28480	0515-1722
33	07575-00028	4		1	BASE, LEFT	28480	07575-00028
34	07570-00017	8		1	SHIELD, LEFT	28480	07570-00017
35	1460-2139	7		1	SPRING, MAIN TENSIONER	28480	1460-2139
36	07570-40105	9		1	TENSIONER, MAIN	28480	07570-40105
37	07570-80105	1		1	IDLER ASSEMBLY, MAIN	28480	07570-80105

Table 9-3. Parts List, Center Chassis Assembly

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
1	07575-80150	1	1	CABLE ASSEMBLY, TRAILING (HP 7575)	28480	07575-80150
2	07575-80150	2	1	CABLE ASSEMBLY, TRAILING (HP 7575)	28480	07575-80150
3	07575-80080	2	1	PEN CARRIAGE ASSY.	28480	07575-80080
	07575-80032	8	1	Y-ARM ASSEMBLY (HP 7575)	28480	07575-80032
	07575-80030	7	1	Y-ARM ASSEMBLY (HP 7575)	28480	07575-80030
4	1500-0799	7	1	BELT, DRIVE (HP 7575)	28480	1500-0799
5	1500-0797	5	1	BELT, DRIVE (HP 7575)	28480	1500-0797
6	0515-1743	3	1	SCREW, TAPTITE	28480	0515-1743
	07575-40043	9	1	PLATEN, CENTER (HP 7575)	28480	07575-40043
	07575-40043	0	1	PLATEN, CENTER (HP 7575)	28480	07575-40043
7	07575-40085	9	1	CAP. PLATEN (* 4 IN HP 7575, 6 IN HP 7576)	28480	07575-40085
8	07575-80133	7	1	GRIT WHEEL SHAFT ASSEMBLY (HP 7575)	28480	07575-80133
	07575-80133	1	1	GRIT WHEEL SHAFT ASSEMBLY (HP 7575)	28480	07575-80133
9	0884-0884	0	4	SCREW, PLASTITE	28480	0884-0884
10	07575-00070	8	1	MOUNT, TRANSFORMER	28480	07575-00070
11	9100-4817	6	1	TRANSFORMER, POWER	28480	9100-4817
12	0515-1984	4	1	SCREW, YOKE STOP	28480	0515-1984
13	07575-40051	9	2	GASKET, CHASSIS	28480	07575-40051
14	07575-20131	4	1	BAR, DATUM (HP 7575)	28480	07575-20131
	07575-20131	5	1	BAR, DATUM (HP 7576)	28480	07575-20131
15	07570-00018	9	1	SHIELD, RIGHT	28480	07570-00018
16	0515-1597	5	3	SCREW M4 X 0.7, 14MM-LG	28480	0515-1597
17	07575-00057	1	1	FAN (HP 7575)	28480	07575-00057
	07575-00055	0	1	FAN (HP 7576)	28480	07575-00055
18	07575-40032	6	2	OAM, PINCHWHEEL ARM LEFT	28480	07575-40032
19	07575-80029	3	1	STATIC DISSIPATOR ASSEMBLY (HP 7575)	28480	07575-80029
	07575-80119	7	1	STATIC DISSIPATOR ASSEMBLY (HP 7576)	28480	07575-80119
20	07575-20072	2	1	BAR, PINCHWHEEL (HP 7575)	28480	07575-20072
	07575-20070	1	1	BAR, PINCHWHEEL (HP 7576)	28480	07575-20070
21	07575-40045	1	1	MOUNT, FAN	28480	07575-40045
22	3180-0471	2	1	FAN-TBAX	28480	3180-0471
23	07575-80019	1	1	CABLE ASSEMBLY, FAN RESISTOR (HP 7575)	28480	07575-80019
24	3080-0883	0	4	WASHER	28480	3080-0883
25	0884-0879	3	4	SCREW	28480	0884-0879
26	07575-80033	9	1	CABLE ASSEMBLY, FAN	28480	07575-80033
27	07575-00053	7	1	BRACKET-GRIT SUPPORT	28480	07575-00053
28	07575-80154	5	2	GRIT SUPPORT ROLLER ASSEMBLY	28480	07575-80154

Table 9-4. Parts List, Right Chassis Assembly

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
1	07570-40075	2	1	COVER, PORT	28480	07570-40075
2	0515-0357	1	2	SCREW-MACH M4 X 0.7 18MM-LG	28480	0515-0357
3	07570-40111	7	1	PANEL, REAR	28480	07570-40111
4	07570-80112	0	2	IDLER, DRIVE TENSIONER	28480	07570-80112
5	07550-40104	4	2	CAM, TENSIONER	28480	07550-40104
6	1480-2061	4	2	SPRING-EXT .157-IN-OD MUW ZN	28480	1480-2061
7	07570-40100	4	2	BRACKET, TENSIONER MOUNTING	28480	07570-40100
8	07575-40068	6	1	COVER, RIGHT BOTTOM	28480	07575-40068
9	07575-00060	6	1	CLAMP, Y-ARM	28480	07575-00060
10	07570-20040	8	1	BUSHING, DOUBLE PULLEY	28480	07570-20040
11	07570-20025	0	1	SHAFT, DOUBLE PULLEY	28480	07570-20025
12	1500-0683	8	2	BELT-GEAR .25-IN-WD .043-IN-THK 103-IN-T	28480	1500-0683
13	07570-40120	8	1	PULLEY, DOUBLE	28480	07570-40120
14	07570-00012	3	1	SHIELD, ESD	28480	07570-00012
15	0535-0043	6	1	NUT, HEX	28480	0535-0043
16	07570-40065	0	1	CLAMP, BEARING	28480	07570-40065
17	07570-40006	9	2	CLAMP, MOTOR	28480	07570-40006
18	07570-80019	6	2	STRAP, GROUND	28480	07570-80019
19	0535-0031	2	4	NUT, HEX M3 X 0.5	28480	0535-0031
20	07570-80067	4	2	MOTOR ENCODER ASSEMBLY	28480	07570-80067
21	07570-80003	8	1	CABLE ASSY, X-ENCODER	28480	07570-80003
22	07570-80002	7	1	CABLE ASSY, Y-ENCODER	28480	07570-80002
23	1400-1021	8	2	CLIP, CABLE, 1 IN-LG	28480	1400-1021
24	07570-00014	5	1	SHIELD, GROUND CABLE	28480	07570-00014
25	0515-1722	8	12	SCREW-MACHINE ASSY M4 X 0.7, 14MM-LG	28480	0515-1722
26	07570-80220	1	1	FRONT PANEL ASSEMBLY	28480	07570-80220
27	07570-80025	4	1	CABLE ASSY, FRONT PANEL	28480	07570-80025
28	0515-1597	5	1	SCREW-MACHINE ASSY M4 X 0.7, 14MM-LG	28480	0515-1597
29	07575-80144	3	1	MAIN PCA ASSEMBLY	28480	07575-80144
30	07575-00027	6	1	BASE, RIGHT	28480	07575-00027
31	07570-00018	9	1	SHIELD, RIGHT	28480	07570-00018
32	0624-0884	0	1	SCREW, PLASTITE	28480	0624-0884
33	07570-40039	8	1	GUIDE, CARTRIDGE	28480	07570-40039
34	07570-80061	8	1	SWITCH ASSEMBLY, PINCHWHEEL SENSOR	28480	07570-80061
35	07570-40115	1	1	LEVER, SWITCH, PINCHWHEEL SENSOR	28480	07570-40115
36	1480-2136	6	1	SPRING-EXT 3.2-MM-OD 16-MM-OA-LG SST	28480	1480-2136
37	07570-40061	0	1	BRACKET, SWITCH, PINCHWHEEL SENSOR	28480	07570-40061
38	0535-0065	8	1	NUT-SQUARE NO-CHAM M4 X 0.7 3.2MM-THK	28480	0535-0065
39	07575-20175	6	1	CHASSIS, RIGHT (HP 7575)	28480	07575-20175
40	07575-20175	7	1	CHASSIS, RIGHT (HP 7575)	28480	07575-20175
41	07575-20105	2	1	CLIP, BAR	28480	07575-20105
42	1480-2135	3	1	SPRING-EXT 11.1-MM-OD 60-MM-OA-LG ZN	28480	1480-2135
43	0610-1294	9	2	RETAINER-RING E-R EXT	28480	0610-1294
44	07575-40065	5	1	YOKE, PINCHWHEEL, RIGHT ARM	28480	07575-40065
45	07575-20065	3	1	SHAFT, PINCHWHEEL ARM, RIGHT	28480	07575-20065
46	07575-40030	4	1	ARM, PINCHWHEEL, RIGHT	28480	07575-40030
47	07580-80069	4	1	PINCHWHEEL ASSEMBLY	28480	07580-80069
48	07575-20008	4	1	SHAFT, PINCHWHEEL ARM	28480	07575-20008
49	07575-40007	5	2	RETAINER, SHAFT	28480	07575-40007
50	1480-2141	1	3	SPRING-TURN 10.25-MM-OD 54.4-MM-OA-LG	28480	1480-2141
51	1400-1428	9	5	CLAMP, CABLE	28480	1400-1428
52	1500-0788	6	1	BELT, X-DRIVE	28480	1500-0788
53	07570-40035	4	1	SHIELD, PRIMARY	28480	07570-40035
54	07570-80041	4	1	POWER MODULE	28480	07570-80041
55	2110-0687	6	1	FUSEHOLDER-6PR TYP 6A 250 V	28480	2110-0687
56	9135-0248	4	1	VOLTAGE SELECTOR DRUM V: 100, 120	28480	9135-0248
57	2110-0788	8	1	FUSE, 1.25 A 250 V	28480	2110-0788
	07575-20050	6	2	BUSHINGS, PINCH WHEEL ARM	28480	07575-20050

Table 9-5. Parts List, Pen Carousel

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
1	07570-80055	0	1	CAROUSEL, DRAFTING PENS	28480	07570-80055
	07570-80050	5	1	CAROUSEL, FIBER TIP PENS	28480	07570-80050
2	5081-8098	3	1	LABEL, DRAFTING PENS	28480	5081-8098
	5081-8099	4	1	LABEL, FIBER TIP PENS	28480	5081-8099
	0624-0679	3	1	SCREW-TPG 6-19 2.25-IN-LG PAN-HD-POZI	28480	0624-0679
3	07570-40086	1	1	HAT, CAROUSEL	28480	07570-40086
4	07570-40215	2	1	TOP, CAROUSEL	28480	07570-40215
5	1480-2124	0	2	SPRING-QTR 1.6-MM-OD 40-MM-OA-LG SST	28480	1480-2124
6	07570-40225	4	1	BASE, CAROUSEL	28480	07570-40225
7	07570-40220	9	8	PAWL, CAROUSEL	28480	07570-40220
8	07570-40210	7	8	CAPPER	28480	07570-40210
9	07475-40002	9	8	BOOT, FIBER PEN	28480	07475-40002
	07570-40235	8	8	BOOT, DRAFTING PEN	28480	07570-40235

Table 9-6. Parts List, HP-IB Interface Module

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
1	17570A	2	1	HP-IB INTERFACE MODULE	28480	17570A
	17571A	3	1	HP-IB + KANJI INTERFACE MODULE	28480	17571A
2	07570-20097	6	1	DOOR, CARTRIDGE	28480	07570-20097
3	1480-2132	0	1	SPRING-TRSN 4.18-MM-OD 67-MM-LG SST	28480	1480-2132
4	0515-1877	4	2	SCREW-THD-PLG M3 X 0.5 6MM-LG PAN-HD	93907	2 84-07200-382
5	07570-00096	3	1	PANEL, REAR	28480	07570-00096
	1631-0319	2	2	PIN, CARTRIDGE	28480	1631-0319
6	07570-80060	1	1	HOUSING, CARTRIDGE	28480	07570-80060
7	07570-80120	0	1	PCA, HP-IB	28480	07570-80120
8	07570-80140	4	1	PCA, HP-IB + KANJI	28480	07570-80140
	07570-80010	7	1	PANEL, FRONT	28480	07570-80010
9	0515-1939	9	2	SCREW, FLATHEAD	28480	0515-1939
10	1390-0551	4	2	SCREW, THUMB	28480	1390-0551
11	0380-0844	4	2	STANDOFF-HEX .327-IN-LG 6-32THD	28480	0380-0844
12	1251-7999	4	1	DUST COVER-MICRO RSN 24 CONT CONN	71785	474-11-81-707

Table 9-7. Parts List, Main PCA A1

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A1	07575-60144	3	1	PCA-MAIN (DATE CODE 8021-11)	28480	07575-60144
A1	07575-69144	1	1	PCA-MAIN (REBUILT)	28480	07575-69144
C1	0180-3335	0	7	CAPACITOR-FXD 470PF +-10% 100VDC CER	28480	0180-3335
C2	0180-3335	0		CAPACITOR-FXD 470PF +-10% 100VDC CER	28480	0180-3335
C3	0180-3335	0		CAPACITOR-FXD 470PF +-10% 100VDC CER	28480	0180-3335
C4	0180-4835	7	11	CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0180-4835
C5	0180-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0180-4835
C6	0180-3811	9	1	CAPACITOR-FXD 6800UF+-20% 50VDC AL	28480	0180-3811
C7	0180-6353	8	1	CAPACITOR-FXD 0.47UF +-20% 100VDC	28480	0180-6353
C8	0180-4574	1	1	CAPACITOR-FXD 1000PF +-10% 100VDC CER	28480	0180-4574
C9	0180-4832	4	10	CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0180-4832
C10	0180-6597	2	1	CAPACITOR-FXD 1UF +-20% 250VDC	D5243	MKT 1855-510/250
C11	0180-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0180-4835
C12	0180-3810	8	1	CAPACITOR-FXD 68UF+-20% 50VDC AL	28480	0180-3810
C13	0180-4832	4		CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0180-4832
C14	0180-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0180-4835
C15	0180-4832	4		CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0180-4832
C16	0180-3809	5	1	CAPACITOR-FXD 470UF+-20% 18VDC AL	28480	0180-3809
C17	0180-3705	0	2	CAPACITOR-FXD 47UF+-20% 50VDC AL	28480	0180-3705
C18	0180-3705	0		CAPACITOR-FXD 47UF+-20% 50VDC AL	28480	0180-3705
C19	0180-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0180-4835
C20	0180-3335	0		CAPACITOR-FXD 470PF +-10% 100VDC CER	28480	0180-3335
C21	0180-3335	0		CAPACITOR-FXD 470PF +-10% 100VDC CER	28480	0180-3335
C22	0180-3335	0		CAPACITOR-FXD 470PF +-10% 100VDC CER	28480	0180-3335
C23	0180-3335	0		CAPACITOR-FXD 470PF +-10% 100VDC CER	28480	0180-3335
C24	0180-4832	4		CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0180-4832
C25	0180-4787	8	1	CAPACITOR-FXD 22PF +-5% 100VDC CER	28480	0180-4787
C26	0180-4818	6	1	CAPACITOR-FXD 47PF +-10% 100VDC CER	28480	0180-4818
C27	0180-4832	4		CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0180-4832
C28	0180-4832	4		CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0180-4832
C29	0180-4832	4		CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0180-4832
C30	0180-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0180-4835
C31	0180-4832	4		CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0180-4832
C32	0180-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0180-4835
C33	0180-0207	9	1	CAPACITOR-FXD .01UF +-5% 200VDC POLYE	28480	0180-0207
C34	0180-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0180-4835
C35	0180-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0180-4835
C36	0180-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0180-4835
C37	0180-4832	4		CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0180-4832
C38	0180-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0180-4835
C39	0180-4832	4		CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0180-4832
CR1	1901-1065	2	6	DIODE-PWR RECT 1N4936 400V 1A 200NS	14936	1N4936
CR2	1901-1229	0	4	DIODE-3A RECT 100PIV	28480	1901-1229
CR3	1901-1229	0		DIODE-3A RECT 100PIV	28480	1901-1229
CR4	1901-1229	0		DIODE-3A RECT 100PIV	28480	1901-1229
CR5	1901-1229	0		DIODE-3A RECT 100PIV	28480	1901-1229
CR7	1901-0965	9	1	DIODE-PWR RECT 100V 3A 200NS	28480	1901-0965
CR8	1901-1065	2		DIODE-PWR RECT 1N4936 400V 1A 200NS	14936	1N4936
CR9	1901-1065	2		DIODE-PWR RECT 1N4936 400V 1A 200NS	14936	1N4936
CR10	1901-1065	2		DIODE-PWR RECT 1N4936 400V 1A 200NS	14936	1N4936
CR11	1901-1065	2		DIODE-PWR RECT 1N4936 400V 1A 200NS	14936	1N4936
CR12	1901-1202	9	2	DIODE-HV RECT 175V 200MA 50NS DO-35	07283	FDH400
CR13	1901-1202	9		DIODE-HV RECT 175V 200MA 50NS DO-35	07283	FDH400
CR14	1901-0050	3	9	DIODE-SWITCHING 80V 200MA 2NS DO-35	28480	1901-0050
CR15	1901-0050	3		DIODE-SWITCHING 80V 200MA 2NS DO-35	28480	1901-0050
CR16	1901-0050	3		DIODE-SWITCHING 80V 200MA 2NS DO-35	28480	1901-0050
CR17	1901-0050	3		DIODE-SWITCHING 80V 200MA 2NS DO-35	28480	1901-0050
CR18	1901-0050	3		DIODE-SWITCHING 80V 200MA 2NS DO-35	28480	1901-0050
CR19	1901-0050	3		DIODE-SWITCHING 80V 200MA 2NS DO-35	28480	1901-0050
CR20	1901-0050	3		DIODE-SWITCHING 80V 200MA 2NS DO-35	28480	1901-0050
CR21	1901-0050	3		DIODE-SWITCHING 80V 200MA 2NS DO-35	28480	1901-0050
CR22	1901-0050	3		DIODE-SWITCHING 80V 200MA 2NS DO-35	28480	1901-0050
CR23	1901-1065	2		DIODE-PWR RECT 1N4936 400V 1A 200NS	14936	1N4936
E1	07570-00030	5	1	HEAT SINK-X5TR	28480	07570-00030
H1	0361-0482	8	2	RIVET-BLIND FL-STEM DOME-HD .125 DIA	28480	0361-0482
H2	0361-0482	8		RIVET-BLIND FL-STEM DOME-HD .125 DIA	28480	0361-0482
H3	0515-1877	4	6	SCREW-THD-RLG M3 X 0.5 5MM-LG PAN-HD	93907	284-07200-382
H4	0515-1877	4		SCREW-THD-RLG M3 X 0.5 5MM-LG PAN-HD	93907	284-07200-382
H5	0515-1877	4		SCREW-THD-RLG M3 X 0.5 5MM-LG PAN-HD	93907	284-07200-382

Table 9-7. Parts List, Main PCA A1 (Continued)

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
H6	0515-1877	4		SCREW-THD-RLG M3 X 0.5 8MM-LG PAN-HD	93907	284-07200-382
H7	0515-1877	4		SCREW-THD-RLG M3 X 0.5 8MM-LG PAN-HD	93907	284-07200-382
H8	0515-1877	4		SCREW-THD-RLG M3 X 0.5 8MM-LG PAN-HD	93907	284-07200-382
H9	0340-1005	9	1	INSULATOR-XSTR POLYI	28480	0340-1005
H10	3050-1249	1	1	WASHER-SHLD NO. 4 .121-IN-ID 25+-OD	28480	3050-1249
H11	0535-0031	1		NUT, HEX M3 X 0.5	28480	0535-0031
J1	1252-1584	9	1	CONN-R5232	28480	1252-1584
J2	1252-1484	8	1	CONN-POST TYPE .100-PIN-SPOG 5-CONT	28480	1252-1484
J3	1252-0781	6	4	CONN-POST TYPE .156-PIN-SPOG 2-CONT	28480	1252-0781
J4	1252-1483	7	1	CONN-POST TYPE .100-PIN-SPOG 30-CONT	28480	1252-1483
J5	1252-0761	6		CONN-POST TYPE .156-PIN-SPOG 2-CONT	28480	1252-0761
J6	1252-0761	6		CONN-POST TYPE .156-PIN-SPOG 2-CONT	28480	1252-0761
J7	1252-1485	9	2	CONN-POST TYPE .100-PIN-SPOG 5-CONT	28480	1252-1485
J8	1252-1485	9		CONN-POST TYPE .100-PIN-SPOG 5-CONT	28480	1252-1485
J9	1252-1482	6	1	CONN-POST TYPE .100-PIN-SPOG 15-CONT	28480	1252-1482
J10	1252-0761	6		CONN-POST TYPE .156-PIN-SPOG 2-CONT	28480	1252-0761
J11	1251-8427	1	1	CONN-POST TYPE .100-PIN-SPOG 2-CONT	28480	1251-8427
Q1	1884-0326	8	1	THYRISTOR-TRIAC TO-220AB	04713	MAC320-4
Q2	1854-0973	8	5	TRANSISTOR NPN SI TO-92 PD-350MW	04713	MP88098
Q3	1854-0973	8		TRANSISTOR NPN SI TO-92 PD-350MW	04713	MP88098
Q4	1854-0973	8		TRANSISTOR NPN SI TO-92 PD-350MW	04713	MP88098
Q5	1854-0973	8		TRANSISTOR NPN SI TO-92 PD-350MW	04713	MP88098
Q6	1853-0826	6	5	TRANSISTOR PNP SI TO-92 PD-825MW	04713	MP82907A
Q7	1853-0826	6		TRANSISTOR PNP SI TO-92 PD-825MW	04713	MP82907A
Q8	1853-0826	6		TRANSISTOR PNP SI TO-92 PD-825MW	04713	MP82907A
Q9	1853-0826	6		TRANSISTOR PNP SI TO-92 PD-825MW	04713	MP82907A
Q10	1854-0456	2	5	TRANSISTOR NPN SI PD-85W FT-3MHZ	01295	TP41A
Q11	1853-0826	6		TRANSISTOR PNP SI TO-92 PD-825MW	04713	MP82907A
Q12	1855-0678	2	2	TRANSISTOR MOSFET N-CHAN E-MODE	3L585	RFP2N06L
Q13	1854-0456	2		TRANSISTOR NPN SI PD-85W FT-3MHZ	01295	TP41A
Q14	1854-0456	2		TRANSISTOR NPN SI PD-85W FT-3MHZ	01295	TP41A
Q15	1854-0456	2		TRANSISTOR NPN SI PD-85W FT-3MHZ	01295	TP41A
Q16	1854-0456	2		TRANSISTOR NPN SI PD-85W FT-3MHZ	01295	TP41A
Q17	1855-0677	1	4	TRANSISTOR MOSFET N-CHAN E-MODE	3L585	RFP12N06
Q18	1855-0677	1		TRANSISTOR MOSFET N-CHAN E-MODE	3L585	RFP12N06
Q19	1855-0677	1		TRANSISTOR MOSFET N-CHAN E-MODE	3L585	RFP12N06
Q20	1855-0677	1		TRANSISTOR MOSFET N-CHAN E-MODE	3L585	RFP12N06
Q21	1854-0973	8		TRANSISTOR NPN SI TO-92 PD-350MW	04713	MP88098
Q22	1855-0678	2		TRANSISTOR MOSFET N-CHAN E-MODE	3L585	RFP2N06L
R1	0683-4725	2	9	RESISTOR 4.7K 5% .25W FC TC=400/+700	01121	CB4725
R2	0683-4725	2		RESISTOR 4.7K 5% .25W FC TC=400/+700	01121	CB4725
R3	0683-4725	2		RESISTOR 4.7K 5% .25W FC TC=400/+700	01121	CB4725
R4	0683-4725	2		RESISTOR 4.7K 5% .25W FC TC=400/+700	01121	CB4725
R5	0683-1025	9	9	RESISTOR 1K 5% .25W FC TC=400/+800	01121	CB1025
R6	0683-1025	9		RESISTOR 1K 5% .25W FC TC=400/+800	01121	CB1025
R7	0683-1025	9		RESISTOR 1K 5% .25W FC TC=400/+800	01121	CB1025
R8	0683-1825	7	6	RESISTOR 1.8K 5% .25W FC TC=400/+700	01121	CB1825
R9	0683-1025	9		RESISTOR 1K 5% .25W FC TC=400/+800	01121	CB1025
R10	0683-8816	6	2	RESISTOR 880 5% .25W FC TC=400/+800	01121	CB8816
R11	0683-2215	1	5	RESISTOR 220 5% .25W FC TC=400/+800	01121	CB2215
R12	0683-2205	9	5	RESISTOR 22 5% .25W FC TC=400/+600	01121	CB2205
R13	0683-2215	1		RESISTOR 220 5% .25W FC TC=400/+800	01121	CB2215
R14	0683-2205	9		RESISTOR 22 5% .25W FC TC=400/+600	01121	CB2205
R15	0683-2215	1		RESISTOR 220 5% .25W FC TC=400/+800	01121	CB2215
R16	0683-2205	9		RESISTOR 22 5% .25W FC TC=400/+600	01121	CB2205
R17	0683-2215	1		RESISTOR 220 5% .25W FC TC=400/+800	01121	CB2215
R18	0683-2205	9		RESISTOR 22 5% .25W FC TC=400/+600	01121	CB2205
R19	0683-4725	2		RESISTOR 4.7K 5% .25W FC TC=400/+700	01121	CB4725
R20	0683-2205	9		RESISTOR 22 5% .25W FC TC=400/+600	01121	CB2205
R21	0683-1025	9		RESISTOR 1K 5% .25W FC TC=400/+800	01121	CB1025
R22	0757-0411	2	5	RESISTOR 332 1% .125W F TC=0+-100	24546	C4-1/8-T0-332R-F
R23	0683-1025	9		RESISTOR 1K 5% .25W FC TC=400/+800	01121	CB1025
R24	0757-0411	2		RESISTOR 332 1% .125W F TC=0+-100	24546	C4-1/8-T0-332R-F
R25	0683-1025	9		RESISTOR 1K 5% .25W FC TC=400/+800	01121	CB1025
R26	0757-0411	2		RESISTOR 332 1% .125W F TC=0+-100	24546	C4-1/8-T0-332R-F
R27	0683-1025	9		RESISTOR 1K 5% .25W FC TC=400/+800	01121	CB1025
R28	0757-0411	2		RESISTOR 332 1% .125W F TC=0+-100	24546	C4-1/8-T0-332R-F
R29	0683-3345	0	6	RESISTOR 330K 5% .25W FC TC=400/+800	01121	CB3345
R30	0683-1825	7		RESISTOR 1.8K 5% .25W FC TC=400/+700	01121	CB1825

Table 9-7. Parts List, Main PCA A1 (Continued)

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
R31	0683-2735	0	4	RESISTOR 27K 5% .25W FC TC=-400/+800	01121	CB2735
R32	0683-4725	2		RESISTOR 4.7K 5% .25W FC TC=-400/+700	01121	CB4725
R33	0683-2215	1		RESISTOR 220 5% .25W FC TC=-400/+800	01121	CB2215
R34	0683-4735	4	3	RESISTOR 47K 5% .25W FC TC=-400/+800	01121	CB4735
R35	0683-4725	2		RESISTOR 4.7K 5% .25W FC TC=-400/+700	01121	CB4725
R36	0683-3345	0		RESISTOR 330K 5% .25W FC TC=-800/+800	01121	CB3345
R37	0683-4735	4		RESISTOR 47K 5% .25W FC TC=-400/+800	01121	CB4735
R38	0683-2735	0		RESISTOR 27K 5% .25W FC TC=-400/+800	01121	CB2735
R39	0683-6815	5		RESISTOR 680 5% .25W FC TC=-400/+800	01121	CB6815
R40	0683-1015	7	1	RESISTOR 100 5% .25W FC TC=-400/+500	01121	CB1015
R41	0683-4725	2		RESISTOR 4.7K 5% .25W FC TC=-400/+700	01121	CB4725
R42	0683-1825	7		RESISTOR 1.8K 5% .25W FC TC=-400/+700	01121	CB1825
R43	0757-0411	2		RESISTOR 332 1% .125W F TC=0+100	24546	C4-1/8-T0-332R-F
R44	0757-0279	0	2	RESISTOR 3.16K 1% .125W F TC=0+100	24546	C4-1/8-T0-3161-F
R45	0757-0439	4	2	RESISTOR 6.81K 1% .125W F TC=0+100	24546	C4-1/8-T0-6811-F
R46	0683-4725	2	9	RESISTOR 4.7K 5% .25W FC TC=-400/+700	01121	CB4725
R47	0683-4735	4	4	RESISTOR 47K 5% .25W FC TC=-400/+800	01121	CB4735
R48	0683-4735	4		RESISTOR 47K 5% .25W FC TC=-400/+800	01121	CB4735
R49	0683-2735	0		RESISTOR 27K 5% .25W FC TC=-400/+800	01121	CB2735
R50	0683-0084	9	1	RESISTOR 2.15K 1% .125W F TC=0+100	24546	C4-1/8-T0-2151-F
R51	0757-0439	4		RESISTOR 6.81K 1% .125W F TC=0+100	24546	C4-1/8-T0-6811-F
R52	0757-0279	0		RESISTOR 3.16K 1% .125W F TC=0+100	24546	C4-1/8-T0-3161-F
R53	0683-3345	0		RESISTOR 330K 5% .25W FC TC=-800/+800	01121	CB3345
R54	0683-3345	0		RESISTOR 330K 5% .25W FC TC=-800/+800	01121	CB3345
R55	0683-3345	0		RESISTOR 330K 5% .25W FC TC=-800/+800	01121	CB3345
R56	0683-3345	0		RESISTOR 330K 5% .25W FC TC=-800/+800	01121	CB3345
R57	0683-1825	7		RESISTOR 1.8K 5% .25W FC TC=-400/+700	01121	CB1825
R58	0683-1025	9		RESISTOR 1K 5% .25W FC TC=-400/+800	01121	CB1025
R59	0683-1825	7		RESISTOR 1.8K 5% .25W FC TC=-400/+700	01121	CB1825
R60	0683-4725	2		RESISTOR 4.7K 5% .25W FC TC=-400/+700	01121	CB4725
RN1	1810-0850	9	1	NETWORK-RES 14-DIP 1.3K OHM X 13	01121	314A132
RN2	1810-0128	1		NETWORK-RES 14-DIP10.0K OHM X 13	11236	760-1-R10K
RN3	1810-0167	0	2	NETWORK-RES 8-SIP330.0 OHM X 4	01121	2088331
RN4	1810-0167	0		NETWORK-RES 8-SIP330.0 OHM X 4	01121	2088331
S1	3101-2879	4	1	SWITCH-SL 12-1A DIP-SLIDE-ASSY .1A 50VDC	11237	11P2489A
T1	9100-4555	1	1	TRANSFORMER, SWITCHING	28480	9100-4555
U1	1820-3322	6	1	IC DRV R DTL COMM EIA RS-232C QUAD	04713	MC1488P
U2	1820-4196	4	1	IC MUXR/DATA-SEL CMOS/74HC 2-TO-1-LINE	27014	MM74HC157N
U3	1820-3321	5	1	IC RCVR DTL COMM EIA RS-232C QUAD	04713	MC1489AP
U4	1820-1050	3	2	IC DRV R TTL NOR DUAL 2-INP	01295	SN75454BP
U5	1820-1050	3		IC DRV R TTL NOR DUAL 2-INP	01295	SN75454BP
U6	1820-5063	6	1	IC-CONTROL-ORIENTED CPU W/RAM AND I/O	28480	1820-5063
U7	1820-4441	2	1	IC LCH CMOS/74HC TRANSPARENT OCTL	3L585	CD74HCT573E
U8	1820-0138	8	2	IC COMPARATOR GP QUAD 14-DIP-P PKG	01295	LM339N
U9	T50870	4	1	IC 8K EPROM	28480	T50870
U10	1818-4085	5	1	IC 32K X 6 SRAM	28480	1818-4085
U11	1820-0138	8		IC COMPARATOR GP QUAD 14-DIP-P PKG	01295	LM339N
U12	1820-1117	5	1	IC V RGLTR-SW/G 16-DIP-P PKG	28480	1820-1117
U13	1TMS-0001	2	1	IC-SERVO	28480	1TMS-0001
U14	07570-18007	3	1	IC-ONE TIME PROGRAMMABLE	28480	07570-18007
VR1	1902-1508	0	2	DIODE 44.3V 5%	28480	1902-1508
VR2	1902-1508	0		DIODE 44.3V 5%	28480	1902-1508
VR3	1902-0551	1	1	DIODE-ZNR 6.2V 5% PD=1W IR=10UA	28480	1902-0551
VR4	1902-3308	0	1	DIODE-ZNR 36.5V 5% DO-35 PD=.4W	28480	1902-3308
XU14	1200-0557	1	1	SOCKET-IC 28-CONT DIP DIP-SLDR	28480	1200-0557
Y1	0410-2096	9	1	RESONATOR 12MHZ	28480	0410-2096

Table 9-8. Parts List, HP-IB Interface PCA

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
	17570A	2		HPIB (Date Code 2718-11)	28480	17570A
C1	0160-4835	7	5	CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0160-4835
C2	0160-4832	4	2	CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0160-4832
C3	0160-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0160-4835
C4	0160-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0160-4835
C5	0160-4832	4		CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0160-4832
C6	0160-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0160-4835
C7	0160-4574	1	1	CAPACITOR-FXD 1000PF +-10% 100VDC CER	28480	0160-4574
C8	0160-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0160-4835
J1	1252-1492	2	1	CONN-RECT MICROBEN 24-CKT 24-CONT	28480	1252-1492
P1	1251-8884	2	1	CONN-POST TYPE .100-PIN-SPOG 30-CONT	28480	1251-8884
R1	0683-4725	2	1	RESISTOR 4.7K 5% .25W FC TC=400/+700	28480	0683-4725
RN1	1810-0206	8	2	NETWORK-RES 8-SIP10.0K OHM X 7	01121	208A103
RN2	1810-0206	8		NETWORK-RES 8-SIP10.0K OHM X 7	01121	208A103
S1	3101-2880	7	1	SWITCH-SL 6-1A DIP-SLIDE-ASSY .1A 50VDC	11237	11P2488A
U3	1820-2549	7	1	IC-8291A P HPIB	28480	1820-2549
U4	1820-4802	7	1	IC DRV R CMOS/74HC LINE HEX	18324	74HCT385N
U5	1820-3829	6	1	IC INV CMOS/74HC HEX	27014	MM74HCT04N
U6	1820-4441	2	1	IC LCH CMOS/74HC TRANSPARENT OCTL	3L585	CD74HCT573E
U9	1820-3847	0	1	IC DCDR CMOS/74HC BIN 3-TO-8-LINE	27014	MM74HCT138N
U10	1LH4-0001	4	1	IC HPIB XCVR	28480	1LH4-0001

Table 9-9. Parts List, HP-IB + KANJI Interface PCA

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
	17571A	3		HPIB/KANJI (Date Code 2718-11)	28480	17571A
C1	0160-4835	7	5	CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0160-4835
C2	0160-4832	4	2	CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0160-4832
C3	0160-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0160-4835
C4	0160-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0160-4835
C5	0160-4832	4		CAPACITOR-FXD .01UF +-10% 100VDC CER	28480	0160-4832
C6	0160-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0160-4835
C7	0160-4574	1	1	CAPACITOR-FXD 1000PF +-10% 100VDC CER	28480	0160-4574
C8	0160-4835	7		CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0160-4835
J1	1252-1492	2	1	CONN-RECT MICROBEN 24-CKT 24-CONT	28480	1252-1492
P1	1251-8884	2	1	CONN-POST TYPE .100-PIN-SPOG 30-CONT	28480	1251-8884
R1	0683-4725	2	1	RESISTOR 4.7K 5% .25W FC TC=400/+800	28480	0683-4725
RN1	1810-0206	8	2	NETWORK-RES 8-SIP10.0K OHM X 7	01121	208A103
RN2	1810-0206	8		NETWORK-RES 8-SIP10.0K OHM X 7	01121	208A103
S1	3101-2880	7	1	SWITCH-SL 6-1A DIP-SLIDE-ASSY .1A 50VDC	11237	11P2488A
U1	07570-18005	1	1	IC-EEPROM A	28480	07570-18005
U2	07570-18010	8	1	IC-EEPROM B	28480	07570-18010
U3	1820-2549	7	1	IC-8291A P HPIB	28480	1820-2549
U4	1820-4802	7	1	IC DRV R CMOS/74HC LINE HEX	18324	74HCT385N
U5	1820-3829	6	1	IC 74HCT04	18324	74HCT04
U6	1820-4441	2	1	IC LCH CMOS/74HC TRANSPARENT OCTL	3L585	CD74HCT573E
U7	07570-18015	3	1	IC-EEPROM C	28480	07570-18015
U8	1820-4830	1	1	IC-74HCT163	28480	1820-4830
U9	1820-3847	0	1	IC DCDR CMOS/74HC BIN 3-TO-8-LINE	27014	MM74HCT138N
U10	1LH4-0001	4	1	IC HPIB XCVR	28480	1LH4-0001

Table 9-10. Reference Designations and Abbreviations

REFERENCE DESIGNATIONS

A	assembly	E	miscellaneous electrical part	P	electrical connector (movable portion); plug	VR	microcircuit voltage regulator;
AT	attenuator; isolator; termination	F	fuse	Q	transistor; SCR; thyristor	W	breakdown diode cable;
B	fan; motor	FL	filter	R	resistor	X	transmission path; wire
BT	battery	H	hardware	RN	resistor network	Y	socket
C	capacitor	J	electrical connector (stationary portion); jack	RT	thermistor	Z	crystal unit (piezo-electric or quartz)
CR	diode; diode thyristor; varactor	K	relay	S	switch		tuned cavity; tuned circuit
DS	annunciator; signaling device (audible or visual); lamp; LED	L	coil; inductor	T	transformer		
		M	meter	TP	test point		
		MP	miscellaneous mechanical part	U	intergrated circuit;		

ABBREVIATIONS

A	ampere	DIA	diameter	GHz	gigahertz	LKWASH	lock washer
ac	alternating current	DIFF AMPL	differential amplifier	GL	glass	LO	low; local oscillator
ADJ	adjustment	DPDT	double-pole, double-throw	GND	ground(ed)	LOG	logarithmic taper
A/D	analog-to-digital	DTL	diode transistor logic	H	henry	log	logarithm(ic)
AMPL	amplifier	DVM	digital voltmeter	h	hour	LPF	low pass filter
ASSY	assembly	ECL	emitter coupled logic	HEX	hexagonal	LV	low voltage
AWG	American wire gauge	EMF	electromotive force	HD	head	m	metre (distance)
BCD	binary coded decimal	EDP	electronic data processing	HG	mercury	mA	milliampere
BKDN	breakdown	ELECT	electrolytic	HI	high	MAX	maximum
CAL	calibrate	EAROM	electrically alterable read only memory	HP	Hewlett-Packard	MΩ	megohm
ccw	counter-clockwise	EPROM	electrically programmable read only memory	HPF	high pass filter	MEG	meg (10 ⁶) (used in parts list)
CER	ceramic	EEPROM	electrically erasable programmable read only memory	HR	hour	MET FLM	metal film
CHAN	channel	EXT	external	HV	high voltage	MET OX	metallic oxide
cm.	centimetre	F	farad	Hz	Hertz	MF	medium frequency; microfarad
COAX	coaxial	FET	field-effect transistor	IC	intergrated circuit	MFR	manufacturer
COEF	coefficient	F/F	flip flop	ID	inside diameter	mg	milligram
COM	common	FH	flat head	IN	inch	MHz	megahertz
COMP	composition	FM	frequency modulation	INCD	incandescent	mH	millihenry
CONN	connector	FP	front panel	INCL	include(s)	mho	mho
CTL	complementary transistor logic	FP	flame proof	INP	input	MIN	minimum
cw	clockwise	FREQ	frequency	INS	insulation	min	minute (time)
D/A	digital-to-analog	FXD	fixed	INT	internal	mm	millimetre
dB	decibel	g	gram	kg	kilogram	MOD	modulator
dBm	decibel referred to 1 mW	GE	germanium	kHz	kilohertz	MOM	momentary
dc	direct current			kΩ	kilohm	MOS	metal-oxide semiconductor
deg	degree (temperature interval or difference)			kV	kilovolt	ms	millisecond
°	degree (plane angle)			lb	pound	MTG	mounting
°C	degree Celsius			LC	inductance-capacitance	MTR	meter (indicating device)
°F	degree Fahrenheit			LED	light-emitting diode		
°K	degree Kelvin			LF	low frequency		
diam	diameter			LG	long		
				LH	left hand		
				Lim	Limit		
				LIN	linear taper (used in parts list)		
				lin	linear		

NOTE

All Abbreviations in the parts list will be in upper case

Table 9-10. Reference Designations and Abbreviations (Continued)

mV	millivolt	description	capacitance	STL	steel
mVac	millivolt, ac	OD	outside diameter	SQ	square
mVdc	millivolt, dc	OPAMPL	operational amplifier	SYNC	synchronize
mVpk	millivolt, peak	OPT	option	T	timed (slow-blow fuse)
mVp-p	millivolt, peak-to-peak	OSC	oscillator	TA	tantalum
mVrms	millivolt, rms	OX	oxide	TC	temperature coefficient
mW	milliwatt	oz	ounce	TD	time delay
MUX	multiplex	Ω	ohm	TERM	terminal
MY	mylar	P	peak	TGL	toggle
μA	microampere	PC	printed circuit	THD	thread
μF	microfarad	pF	picofarad	THRU	through
μH	microhenry	PIV	peak inverse voltage	TI	titanium
μs	microsecond	pk	peak	TOL	tolerance
μV	microvolt	PNP	positive-negative-positive	TRIM	trimmer
μVac	microvolt, ac	P/O	part of	TSTR	transistor
μVdc	microvolt, dc	POLY	polystyrene	TTL	transistor-transistor logic
μVpk	microvolt, peak	PORC	porcelain	μ	micro (10 ⁻⁶) (used in parts list)
μVp-p	microvolt, peak-to-peak	POS	positive; position(s)	UNREG	unregulated
μVrms	microvolt, rms	POSN	position	V	volt
μW	microwatt	POT	potentiometer	VA	voltampere
nA	nanoampere	P-P	peak-to-peak (used in parts list)	Vac	volts, ac
N/C	normally closed	PPM	parts per million	VAR	variable
NEG	negative	PREAMPL	pre-amplifier	Vdc	volts, dc
NI PL	nickel plate	PRF	pulse-repetition frequency	VDCW	volts, dc, working
N/O	normally open	PRR	pulse repetition rate	Vpk	volts, peak
NOM	nominal	ps	picosecond	Vp-p	volts, peak-to-peak
NORM	normal	PT	point	Vrms	volts, rms
NPN	negative-positive-negative	PWV	peak working voltage	VTVM	vacuum-tube voltmeter
ns	nanosecond	RAM	random access memory	W	watt
nW	nanowatt	RC	resistance-	WIV	working inverse voltage
OBD	order by			WW	wirewound
				W/O	without

NOTE

All Abbreviations in the parts list will be in upper case

MULTIPLIERS

Abbreviation	Prefix	Multiple
T	tera	10 ¹²
G	giga	10 ⁹
M	mega	10 ⁶
k	kilo	10 ³
da	deka	10
d	deci	10 ⁻¹
c	centi	10 ⁻²
m	milli	10 ⁻³
u	micro	10 ⁻⁶
n	nano	10 ⁻⁹
p	pico	10 ⁻¹²
f	femto	10 ⁻¹⁵
a	atto	10 ⁻¹⁸

Table 9-11. Code List of Manufacturers

MFR. CODE	MANUFACTURER NAME	ADDRESS		ZIP CODE
D5243	ROEDERSTEIN GMBH	LANDSHUT	GM	8300
00000	ANY SATISFACTORY SUPPLIER			
01121	ALLEN BRADLEY CO INC	EL PASO, TX	US	79935
01295	TEXAS INSTRUMENTS INC	DALLAS, TX	US	75265
02768	ITW FASTEX	DES PLAINES, IL	US	60016
04713	MOTOROLA INC SEMI-COND PROD	PHEONIX, AZ	US	85008
07263	FAIRCHILD CORP	MOUNTAIN VIEW, CA	US	94042
11236	CTS CORP BERNE DIV	BERNE, IN	US	46711
11237	CTS CORP PASO ROBLES	PASO ROBLES, CA	US	93446
14936	GENERAL INSTRUMENT CORP (DIODE)	HICKSVILLE, NY	US	11802
18324	SIGNETICS CORP	SUNNYVALE, CA	US	94086
24546	CORNING ELECTRONICS	SANTA CLARA, CA	US	95050
27014	NATIONAL SEMICONDUCTOR	SANTA CLARA, CA	US	95052
28480	HEWLETT-PACKARD CO CORP HQ	PALO ALTO, CA	US	94304
3L585	RCA CORP SOLID STATE DIV	SOMERVILLE, NJ		
34649	INTEL CORP	SANTA CLARA, CA	US	95054
55130	SKINNER PRECISION INDUSTRIES INC	NEW BRITAIN, CT	US	06050
71785	TRW CONNECTORS	ELK GROVE VILLA, IL	US	60007
83259	PARKER SEAL CO DIV PARKER-HANNIFIN	LEXINGTON, KY	US	90231
86928	SEASTROM MFG CO	GLENDALE, CA	US	91201
93907	CAMCAR SCREW & MFG CO	ROCKFORD, IL	US	61101

CHAPTER 10

REFERENCE

10-1. INTRODUCTION

10-2. This chapter contains miscellaneous reference material including reference publications, schematic diagram symbols, Hewlett-Packard Graphics Language instructions, mnemonics and a glossary.

10-3. OTHER MANUALS AND REFERENCES

10-4. In addition to this manual, other publications which apply to the HP 7575/6 are listed in Table 10-1.

Table 10-1. Other HP 7575/6 Publications

PUBLICATION	HP PART NUMBER
Programmers Reference	07575-90001
Users Guide	07575-90002

10-5. OTHER TECHNICAL DATA

10-6. Table 10-2 contains a list of abbreviations of organizations that contribute to the electronics publications standards used in this manual.

10-7. LOGIC SYMBOLOGY

10-8. Figure 10-1 shows common schematic diagram symbols used in the plotter schematics. The schematics are contained in Chapter 12 of this manual.

10-9. CODE LISTINGS

10-10. The HP 7575/6 uses the Hewlett-Packard Graphics Language (HP-GL) instructions listed in Table 10-3. The instructions are programmed into the plotter through an external controller.

10-11. MNEMONICS

10-12. Mnemonics used through out this manual are listed alphabetically in Table 10-4. These mnemonics are used in the schematic diagrams in Chapter 12 and the theory of operation in Chapter 5.

Table 10-2. Organizational Abbreviations

ABBREVIATION	FULL NAME
ANSI	American National Standards Institute
CCITT	International Telegraph and Telephone Consultative Committee
EIA	Electronics Industries Association
IEEE	Institute of Electrical and Electronics Engineers
ISO	International Organization for Standardization

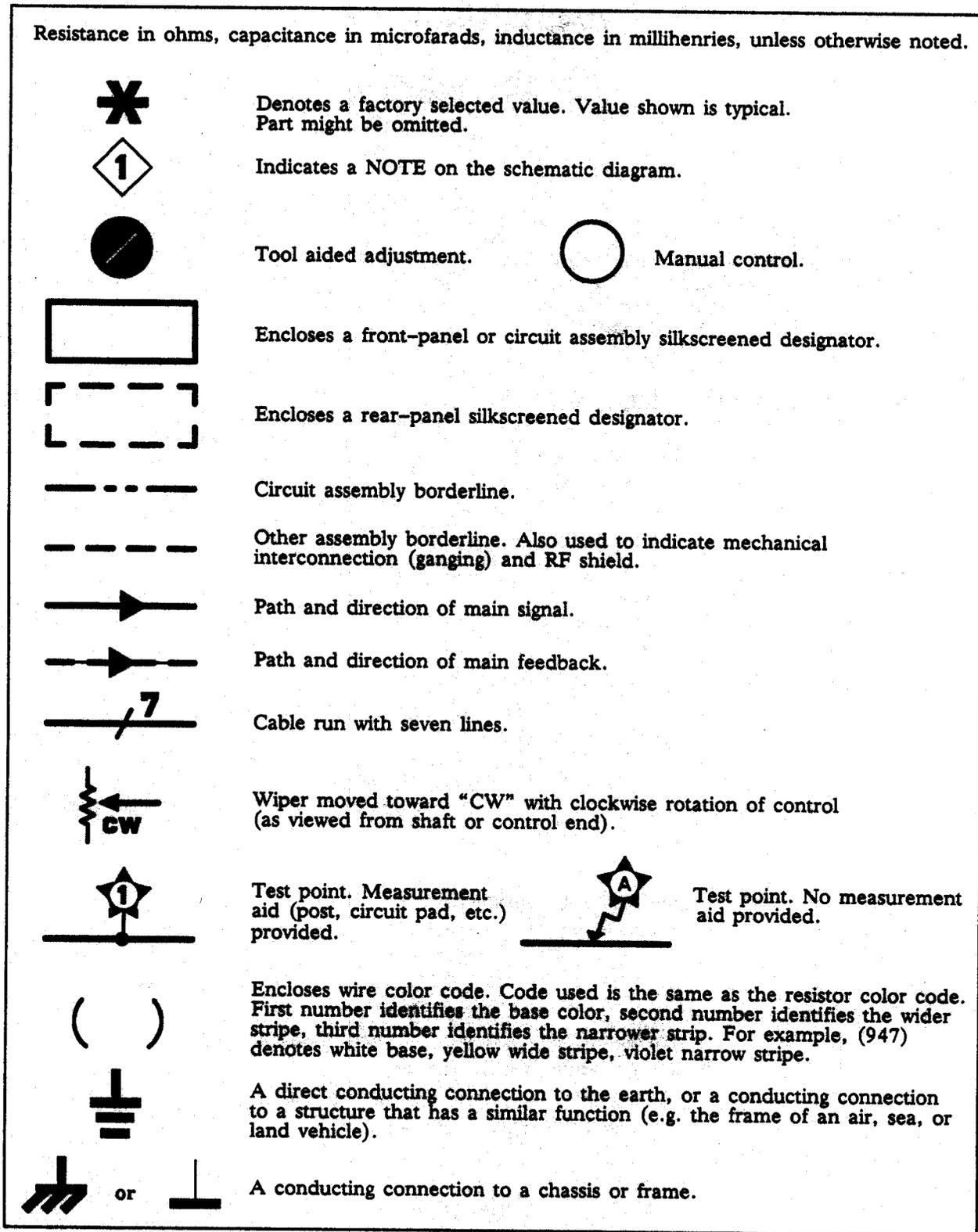


Figure 10-1. Schematic Diagram Notes

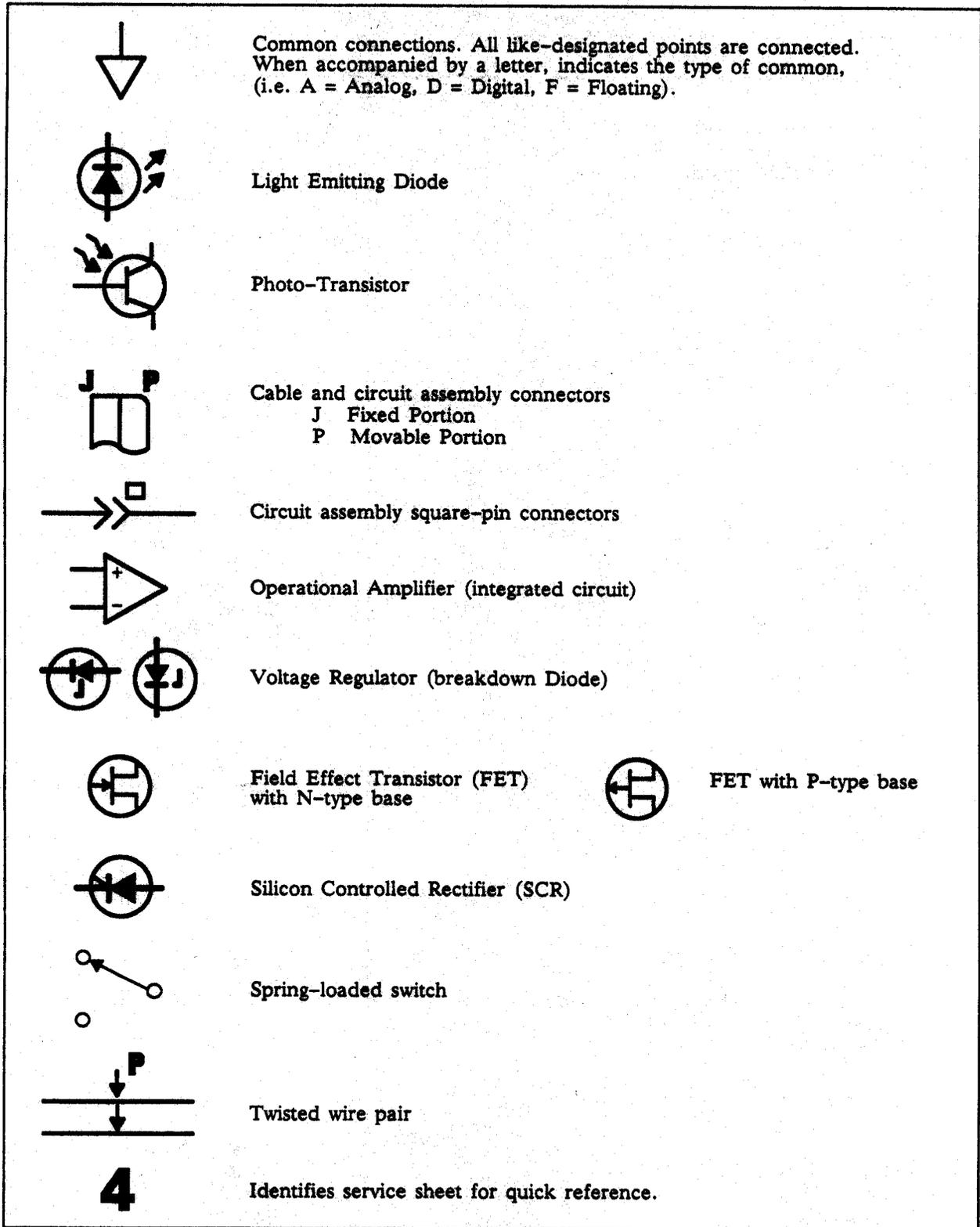


Figure 10-1. Schematic Diagram Notes (Continued)

Table 10-3. HP-GL Instructions

INSTRUCTION	DEFINITION
AA x,y,arc angle(,chord) AP n AR x,y,arc angle(,chord) AS pen acc(,pen number)	Arc Absolute Automatic Pen op Arc Relative Select Pen Accel.
CA set CC chord angle CI radius(,chord tol) CM switch mode(,fallback) CP spaces,lines CS set CT n	Alternate Char set Char Chord mode Circle Char Select mode Character Plot Standard Char set Chord Tol. mode
DC DF DI run,rise DP DR run,rise DS slot,set DT label terminator DV	Digitize Clear Set Default values Abs label direct Digitize point Rel label direct Designate Char set Define label term Set label direction
EA x,y EP ER x,y ES spaces(,lines) EW radius,start angle,sweep angle(,chord) FP	Edge rect abs Edge Polygon Edge Rect Relative Extra Spacing Edge wedge-circle Fill Polygon
FS pen force(,pen number) FT type(,spacing(,angle)) GM (polygon buffer) (,DL char buffer) (,replot buffer) (,vector buffer) IM e(,s(,p))	Select Pen Force Fill Type Graphics Memory Set e,s, & p masks
IN IP P1x,P1y(,P2x,P2y) IV slot(,left) IW x1,y1,x1,y2 LB c...c<ETX> LO position number LT pat num(,pat length) NR	Initialize plotter Input P1 and P2 Invoke slot Input Window Label string Set label Origin Line type Not Ready

Table 10-3. HP-GL Instructions (Continued)

INSTRUCTION	DEFINITION
<p>OA OC OD</p>	<p>Output Actual pos Output Command pos Output Digit. Pt</p>
<p>OE OF OH OI OO</p>	<p>Output Error Output Factors Output Hard-clip Output ID Output Options</p>
<p>OP OS OT OW PA x,y(,x,y,...) PD (x,y,...)</p>	<p>Output P1 & P2 Output Status Output Carousel Output Window Plot Absolute Pen Down</p>
<p>PM n PR x,y(,x,y,...) PT thickness PU (x,y,...) RA x,y RL n RO n</p>	<p>Enable polygon Plot relative Select pen thick Pen Up Fill Rect Abs Front-panel lock Rotate coord sys</p>
<p>RR x,y SA SC Xmin,Xmax,Ymin,Ymax SG group number SI width,height SL tan(angle) SM c SP pen number</p>	<p>Fill Rect rel Select Alt set User-unit scaling Select pen group Abs char size Character Slant Symbol Mode Select Pen</p>
<p>SR width,height SS TL tp(,tn) UC (pen control,)x,y(,pen control)(,...) UF gap1(,gap2,...gap20) VA VN</p>	<p>Relative char size Select Std Set Set tick length User-def char User-def fill type Adaptive Velocity Normal Velocity</p>
<p>VS pen velocity(,pen num) WG radius,start angle,sweep angle(,chord) XT YT</p>	<p>Set Velocity Fill wedge-circle Draw X-axis tick Draw Y-Axis tick</p>

Table 10-4. Mnemonics

Mnemonic	Definition	Mnemonic	Definition
ALE	ADDRESS LATCH ENABLE	NDAC	NOT DATA ACCEPTED
APE	AUTOMATIC POLL ENABLE	NRFD	NOT READY FOR DATA
ATN	ATTENTION	NRXD2	NOT RECEIVED SECONDARY DATA
BP0-BP7	BACK PANEL SWITCH BUS	NSAFE	NOT SAFE
CLK	CLOCK	PPL	PARALLEL POLL LATCH
COMPX	COMPARATOR X FEEDBACK SIGNAL	PSEN	PROGRAM STORE ENABLE
COMPEN	COMPARATOR ENABLE	PWM	PULSE WIDTH MODULATOR
COMPY	COMPARATOR Y SIGNAL	RD	READ
CS	CHIP SELECT	RFD	READY FOR DATA
CTS	CLEAR TO SEND	RLS	RECEIVED LINE SIGNAL
DAC	DATA ACCEPTED	RST	RESET
DAV	DATA AVAILABLE	RXD	RECEIVED DATA
DIO	DATA INPUT/OUTPUT	SALE	SERVO ADDRESS LATCH ENABLE
DISAB	DISABLE	SAD0-SAD7	SERVO ADDRESS/DATA LINES
DMAACK	DIRECT MEMORY ACCESS ACKNOWLEDGE	SOLDR	SOLENOID DRIVE
DMAREQ	DIRECT MEMORY ACCESS REQUEST	SRD	SERVO READ
DSR	DATA SET READY	SRQ	SERVO REQUEST
DTR	DATA TERMINAL READY	SWR	SERVO WRITE
EOI	END OR IDENTIFY	T/R	TRANSMIT/RECEIVE
EXT	EXTERNAL	TXD	TRANSMITTED DATA
FP0-FP7	FRONT PANEL SWITCH BUS	VM	MOTOR VOLTAGE (+32V NOM)
HP-GL	HEWLETT PACKARD GRAPHICS LANGUAGE	VTH	THRESHOLD VOLTAGE - POWER SUPPLY REFERENCE
HP-IB	HEWLETT-PACKARD INTERFACE BUS	WE	WRITE ENABLE
IFC	INTERFACE CLEAR	WR	WRITE
INT	INTERRUPT	XDRVA	X-AXIS PHASE A DRIVE
LED0-LED3	FRONT PANEL LED LINES	XDRVB	X-AXIS PHASE B DRIVE
NB0-NB5	NIBBLE BUS- COMMUNICATION LINES BETWEEN THE TWO PROCESSORS	XENC	X-AXIS ENCODER
		XTAL	CRYSTAL
		YDRVA	Y-AXIS PHASE A DRIVE
		YDRVB	Y-AXIS PHASE B DRIVE
		YENC	Y-AXIS ENCODER

10-13. GLOSSARY

10-14. The following is a list of terms with associated definitions. These terms are used throughout this manual.

Accumulator: One or more registers associated with the ALU which temporarily store sums and other arithmetical and logical results of the ALU.

ALU (Arithmetic Logic Unit): The ALU performs various forms of addition and subtraction. The logic mode performs such logic operations as ANDing the contents of two registers or masking the contents of a register.

Asynchronous: Operation of a switching network by a free-running signal which signals successive instructions; the completion of one instruction triggering the next. There is no fixed time per cycle.

Baud Rate: A measure of data flow. The number of signal elements per second based on the duration of the shortest element.

Bidirectional: A term applied to a port or bus line that can be used to transfer data in either direction.

Buffer: A circuit inserted between other circuit elements to prevent interactions, match impedances, supply additional drive capability, or delay rate of information flow. Buffers may be inverting or non-inverting.

Bus Driver: An integrated circuit which is added to the data bus system to facilitate proper drive to the CPU when several memories are tied to the data bus line. These are necessary because of capacitive loading which slows down the data rate and prevents proper time sequencing of microprocessor operation.

Byte: Indicates a predetermined number of consecutive bits treated as an entity.

Clock: A generator of pulses which controls the timing of switching circuits in a microprocessor.

Control Block: This is the circuitry which performs the control functions of the CPU. It is responsible for decoding microprogrammed instructions and generating the internal control signals that perform the operations requested.

CPU (Central Processing Unit): The processing circuitry of the microprocessor which is made up of storage elements called registers, computational circuits in the ALU, the Control Block, and I/O.

DART (Dual Asynchronous Receiver Transmitter): A dual channel serial to parallel, parallel to serial converter/controller used in the asynchronous mode. It also provides modem control for both channels.

Data Bus: The microprocessor communicates internally and externally by means of the data bus. It is bidirectional and can transfer data to and from the CPU, memory storage, and peripheral devices.

Decrement: A programming instruction which decreases the contents of a storage location.

Dedicated: To set apart for some special use. For example, a ROM is a dedicated memory.

DMA (Direct Memory Access): A method of gaining direct access to main storage to achieve data transfer without involving the CPU.

EEPROM (Electrically Erasable Programmable ROM): Manufactured with a transparent quartz lid covering the silicon die to facilitate erasure with an ultraviolet irradiation instrument. Programming will not degrade after exposure to other light sources.

Execution Time: The time expressed in clock cycles, necessary to carry out an instruction.

Firmware: Software instructions which have been permanently frozen into a ROM.

Flag Bit: An information bit which indicates some form of demarcation has been reached such as overflow or carry. Also an indicator of special conditions such as interrupts.

Flow Chart or Flow Diagram: A graphic representation for the definition, analysis, or solution of a problem, in which symbols are used to represent operations, data, flow, and equipment.

Hardware: Any piece of data processing equipment or the individual components of a circuit, both passive and active.

Hardwired Logic: The interconnection of numerous integrated circuits representing the logic elements.

Instruction Set: Constitutes the total list of instructions that can be executed by a given microprocessor and provides the basic information necessary to assemble a program.

Interface: A common boundary between adjacent components, circuits, or systems. The interface enables the devices to yield and acquire information from one another.

Interrupt: An interrupt involves the suspension of the normal programming routine of a microprocessor in order to handle a sudden request for service.

Interrupt Mask: Prevents the CPU from responding to further interrupt requests until cleared by execution of programmed instructions.

I/O (Input/Output): Package pins which are tied directly to the internal bus network to enable I/O to interface the microprocessor with external elements.

Memory: The part of a system into which information can be inserted and held for future use.

Microprocessor: The semiconductor CPU is one of the principal components of the microcomputer. The elements of the microprocessor are frequently contained on a single chip but can be distributed over several separate chips.

Mnemonic Code: Groups of letters or symbols that suggest the definition of an instruction or the name of a signal.

MOS (Metal-Oxide Semiconductor): In MOS technology, amplification or switching is accomplished by applying a signal voltage to a gate electrode. The resulting electrostatic field creates a conduction channel between the two defused regions in the silicon crystal structure called the source and the drain.

Multiplexing: A process of transmitting more than one signal at a time over a single link, route, or channel.

Parallel Operation: Processing all the digits of a word or byte simultaneously by transmitting each digit on a separate channel or bus line.

Polling: The method used to identify the source of interrupt requests.

Port: Device terminals that provide electrical access to a system or circuit.

Program: A procedure for solving a problem and frequently referred to as software.

Program Counter: One of the registers in the CPU which holds addresses necessary to step the machine through the program.

RAM (Random Access Memory): Provides rapid access to any storage location point in the memory immediately by means of vertical and horizontal coordinates. Information may be "written" in or "read" out in the same way.

Register: A register is a memory on a smaller scale. The words stored in it may involve arithmetical, logical, or transferral operations.

ROM (Read-Only Memory): Information is stored permanently and is read out, but not altered in operation.

Scratchpad: This term is applied to information that the processing unit stores or holds temporarily. It is a memory containing subtotals for various unknowns which are needed for final results.

Software: The programs, routines, and languages used by a programmer to communicate with the computer.

Storage: The word storage is used interchangeably with memory.

Subroutine: Part of a master routine which may be used at will in a variety of master routines.

Throughput: The speed with which problems or segments of problems are performed.

CHAPTER 11

PRODUCT HISTORY

11-1. INTRODUCTION

11-2. This chapter describes the differences between earlier models of the HP 7575/6 and the latest version documented in this manual. These earlier models are identified by their serial number prefix, and the date codes on their printed-circuit assemblies (PCAs). For ease of reference this section is divided into two major topics:

- History of Assemblies by Serial Number Prefix
- History of Printed Circuit Assemblies.

11-3. HISTORY OF ASSEMBLIES BY SERIAL NUMBER PREFIX

11-4. Table 11-1 is a quick-reference table that lists, by plotter serial prefix number, the assemblies that differ from those documented in this manual. Also referenced are Item Numbers under which these differences are described in this chapter.

11-5. Table 11-2 lists the assemblies, other than PCAs, that are described under each item in this chapter.

Table 11-1. Assembly Reference by Serial Number Prefix

SERIAL NUMBER PREFIX	ASSEMBLIES	ITEMS
2806	Main PCA Left Chassis Assembly	See PCA History 2
2839	Main PCA Center Chassis Assembly Covers and Stand Assembly Right Chassis Assembly	See PCA History 5 6 7
2844	Covers and Stand Assembly Center Chassis Assembly	8 9
2918	Center Chassis Assembly Right Chassis Assembly Main PCA	10 11 See PCA History
2920	Main PCA	See PCA History
3016	Main PCA	See PCA History
3028	Center Chassis Assembly Right Chassis Assembly Left Chassis Assembly Covers and Stand Assembly	15 16 17 18

Table 11-2. Item Description

ITEM	ASSEMBLIES
2, 17	Left Chassis Assembly
5, 9, 10, 15	Center Chassis Assembly
6, 8	Covers and Stand Assembly
7, 11, 16	Right Chassis Assembly

11-6. HISTORY OF PRINTED CIRCUIT ASSEMBLIES

11-7. Hewlett-Packard's printed circuit assemblies have three major identification features:

- a. **Part Number.** PCAs having the same part number are directly interchangeable. If a PCA is revised in any way that makes it non-interchangeable with previously issued PCAs of the same part number, a new part number is assigned to the revised PCA.
- b. **Revision Letter.** This letter identifies the most recent revision to the etched circuit pattern. The original issue is identified with the letter A. If the master artwork for a printed circuit board is revised in order to alter performance or manufacture, the revision letter is changed to the next letter in the alphabetical sequence.

- c. **Assembly Date Code.** The date code on the PCA is a four-digit number which identifies the assembly level by date code. The PCA date code is changed when a component or component part number is changed which alters the performance of the PCA. The first two digits represent the last two digits of the current year and are derived by subtracting 60 from the current year; the last two digits represent the week in that year, ie: 2830 = thirtieth week in 1988. Any digits following a hyphen in the date code represent the division that manufactured the PCA.

11-8. Table 11-3 is a quick-reference table that lists PCAs by part number and date code. Listed next to the part number and date code of the PCAs are the Items located in this section that describe the differences between the PCA in question and the level of that PCA described in the main body of this manual.

Table 11-3. PCA Reference by Date Code

PCA	DATE CODE	REVISION	ITEMS
Main PCA (07575-60144)	2829-11	A	1, 3
Main PCA (07575-60144)	2840-11	A	3
Main PCA (07575-68145)	2844-11	A	4, 12
Main PCA (07575-68145)	2903-11	A	12
Main PCA (07575-68146)	2920-11	B	13
Main PCA (07575-68146)	3016-11	B	14

ITEM 1

Date code 2829-11: Except for the parts listed in this item and any parts listed in pertinent higher numbered items, Main PCAs having a date code below 2829-11 have the same components as the Main PCA listed in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
C40			NOT ASSIGNED	
U14	07570-18007	3	IC EPROM	28480

ITEM 2

The paper stop mechanism was improved during the plotter production cycle but did not affect this documentation. Therefore, no change is indicated here.

ITEM 3

Date code 2840-11: Except for the parts listed in this item and any parts listed in pertinent higher numbered items, Main PCAs having a date code below 2840-11 have the same components as the Main PCA listed in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
U14	07570-18001	2	IC EPROM	28480

ITEM 4

Date code 2844-11: This date code was implemented with the part number change of the Main PCA from 07575-60144 to 07575-68145. Except for the parts listed in this item and any parts listed in pertinent higher numbered items, Main PCAs having a date code below 2844-11 have the same components as the Main PCA listed in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
R59	0683-1825	7	RESISTOR 1.8k	28480
U9	07575-18003	4	IC 3k EPROM	28480
U10	1818-4085	5	IC 32k X 8 SRAM	28480
U14	07575-18004	5	IC EPROM	28480

ITEM 5

Except for the following differences, the Center Chassis Assembly is the same as the assembly documented in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
22	3160-0564	4	FAN, TBAX (HP 7575)	28480
23			NOT ASSIGNED	

ITEM 6

Except for the following differences, the Covers and Stand Assembly is the same as the assembly documented in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
21			NOT ASSIGNED	

ITEM 7

Except for the following differences, the Right Chassis Assembly is the same as the assembly documented in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
33	07570-40039	8	CARTRIDGE, GUIDE	28480

ITEM 8

Except for the following differences, the Covers and Stand Assembly is the same as the assembly documented in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
21	0515-1985	5	NUT, LOCKING	28480

ITEM 9

Except for the following differences, the Center Chassis Assembly is the same as the assembly documented in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
17	07575-00057	1	PAN (HP 7575)	28480
	07576-00055	0	PAN (HP 7576)	28480

ITEM 10

Except for the following differences, the Center Chassis Assembly is the same as the assembly documented in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
6	07576-40040	7	PLATEN, CENTER	28480
8	07576-60020	5	GRIT WHEEL SHAFT AY	28480
14	07576-20030	3	BAR, DATUM (HP 7576)	

ITEM 11

Except for the following differences, the Right Chassis Assembly is the same as the assembly documented in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
39	07575-20075	5	CHASSIS, RIGHT (HP 7576)	28480

ITEM 12

Date code 2903-11: Except for the parts listed in this item and any parts listed in pertinent higher numbered items, Main PCAs having a date code below 2903-11 have the same components as the Main PCA listed in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
U14	07570-18005	6	IC EPROM	28480

ITEM 13

Date code 2920-11: Except for the parts listed in this item and any parts listed in pertinent higher numbered items, Main PCAs having a date code below 2920-11 have the same components as the Main PCA listed in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
U14	07570-18007	3	IC EPROM	28480

ITEM 14

Date code 3016-11: Except for the parts listed in this item and any parts listed in pertinent higher numbered items, Main PCAs having a date code below 3016-11 have the same components as the Main PCA listed in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
A1	07575-68146	3	PCA-MAIN (REBUILT)	28480
U14	07575-18006	7	IC EPROM	28480

ITEM 15

Except for the following differences, the Center Chassis Assembly is the same as the assembly documented in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
6	07575-40042	8	PLATEN, CENTER (HP 7575)	28480
	07576-40140	8	PLATEN, CENTER (HP 7576)	28480
8	07575-60023	7	G. WHEEL SHAFT AY (7575)	28480
	07576-60120	6	G. WHEEL SHAFT AY (7576)	28480
14	07575-20032	4	BAR, DATUM (HP 7575)	28480
	07576-20130	4	BAR, DATUM (HP 7576)	28480

ITEM 16

Except for the following differences, the Right Chassis Assembly is the same as the assembly documented in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
39	07575-20075	5	CHASSIS, RIGHT (HP 7575)	28480
	07576-20075	6	CHASSIS, RIGHT (HP 7576)	28480

ITEM 17

Except for the following differences, the Left Chassis Assembly is the same as the assembly documented in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
26	07570-40011	1	CHASSIS, LEFT	28480

ITEM 18

Except for the following differences, the Covers and Stand Assembly is the same as the assembly documented in Chapter 9.

<u>REF. DES.</u>	<u>HP PART NUMBER</u>	<u>CD</u>	<u>DESCRIPTION</u>	<u>MFR. CODE</u>
15	07575-60130	7	PLATEN, FRONT (HP 7575)	28480
	07576-60140	0	PLATEN, FRONT (HP 7576)	28480

CHAPTER 12

DIAGRAMS

12-1. INTRODUCTION

12-2. This chapter contains engineering diagrams, mechanical drawings, and electrical drawings. These diagrams should be used as aids in troubleshooting and performing repairs.

12-3. ENGINEERING DIAGRAMS

12-4. BLOCK DIAGRAMS

12-5. Simplified and Functional Block Diagrams for the plotter are shown in Figures 12-1 and 12-2. These diagrams are designed to support the Functional Theory described in Chapter 5. A Disassembly matrix diagram is provided in Figure 12-3 as an aid to the Disassembly procedures given in Chapter 6 of this manual.

12-6. MECHANICAL DIAGRAMS

12-7. Figures 12-4 through 12-9 contain the Illustrated Parts Breakdown (IPB) diagrams for each major mechanical assembly of the HP 7575/6 Plotter. Parts identification and ordering information is contained in Chapter 9 of this manual.

12-8. ELECTRICAL DIAGRAMS

12-9. A Cable and Connector Diagram for the plotter is shown in Figure 12-10. The component location diagrams and schematics for the Main PCA are contained in Figures 12-11 through 12-14. A schematic for the Front Panel PCA is given in Figure 12-15. The component location diagram and schematic for the optional HP-IB Interface PCA are found in Figures 12-16 and 12-17 respectively.

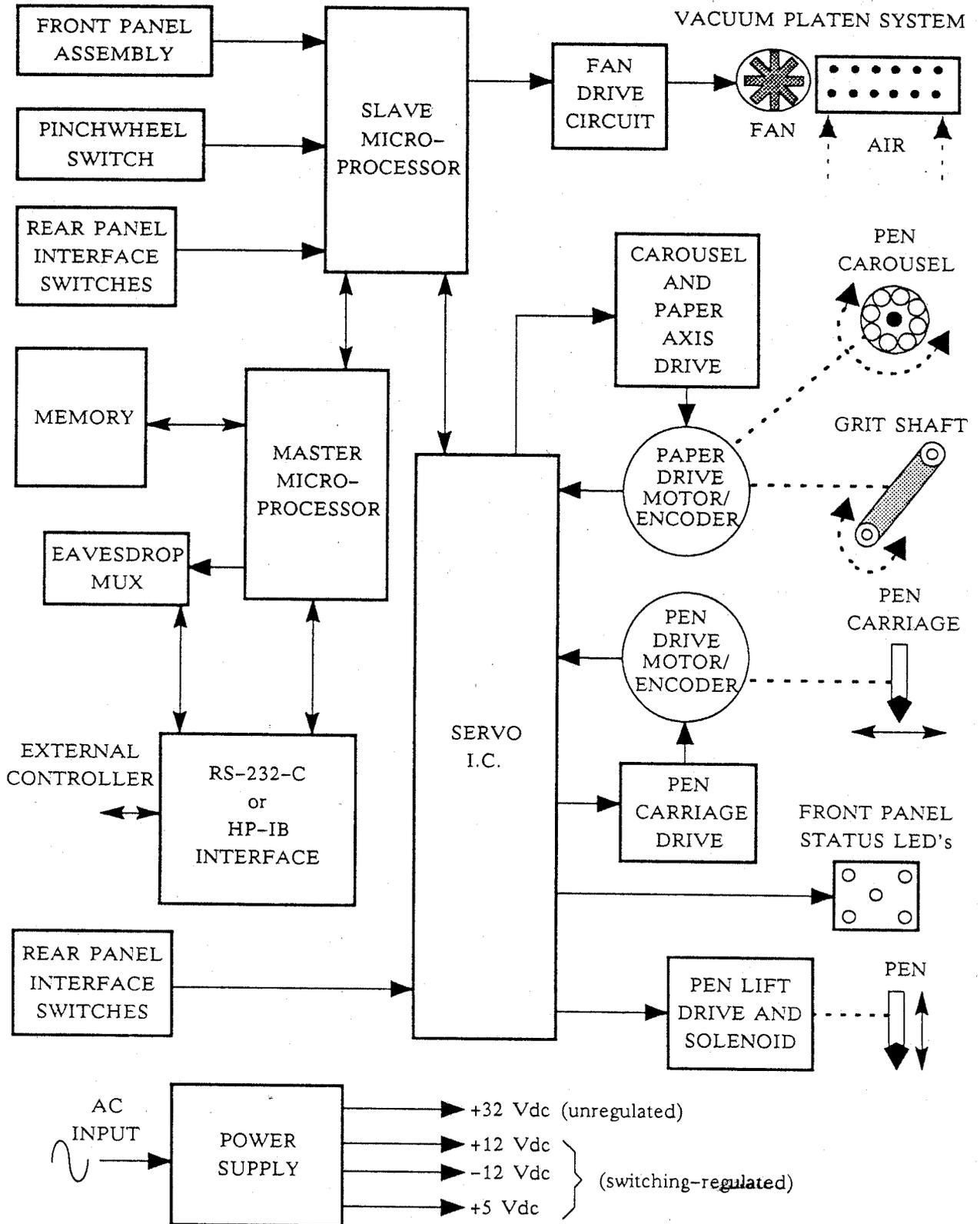
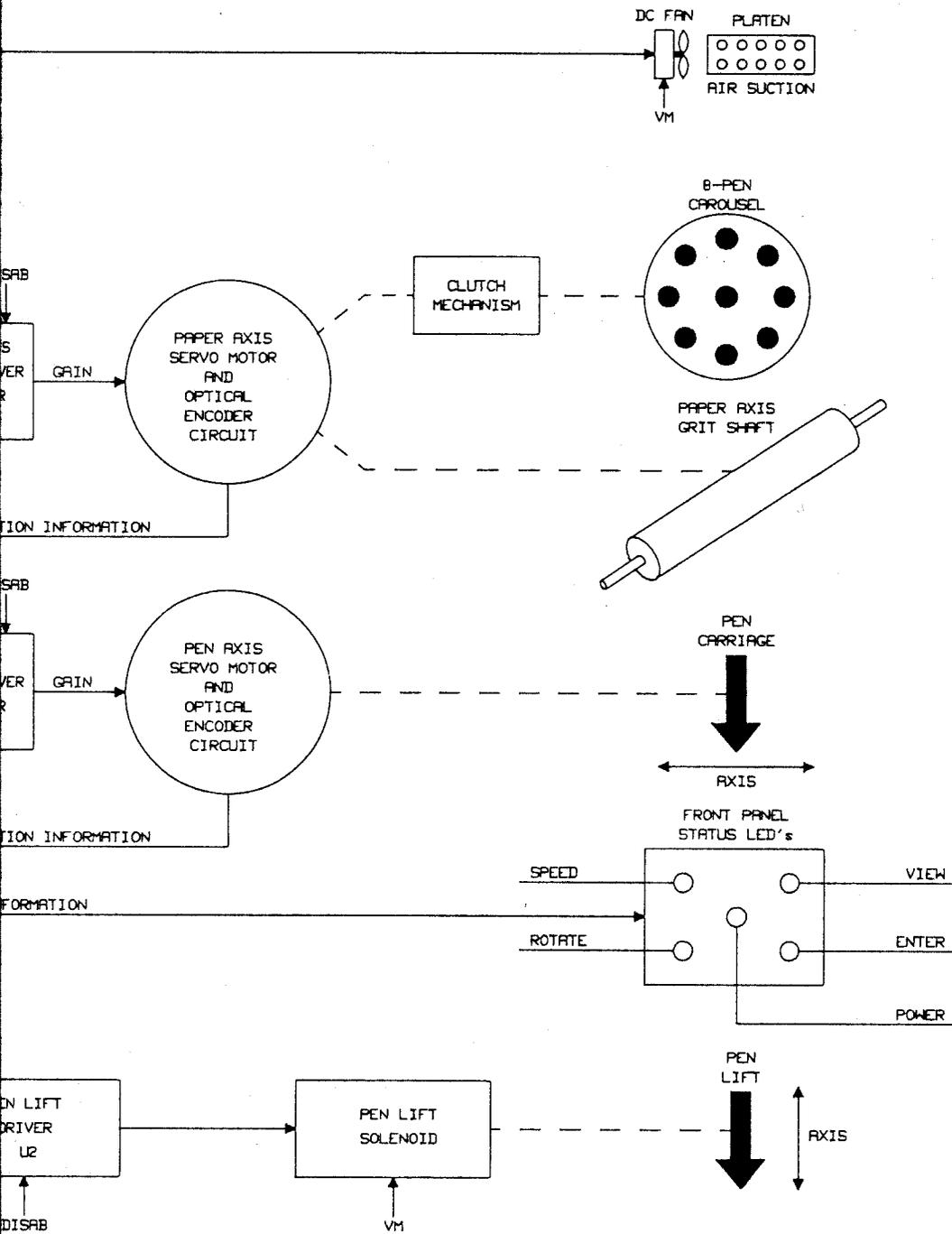


Figure 12-1. Simplified Block Diagram



PEN LIFT DRIVER U2

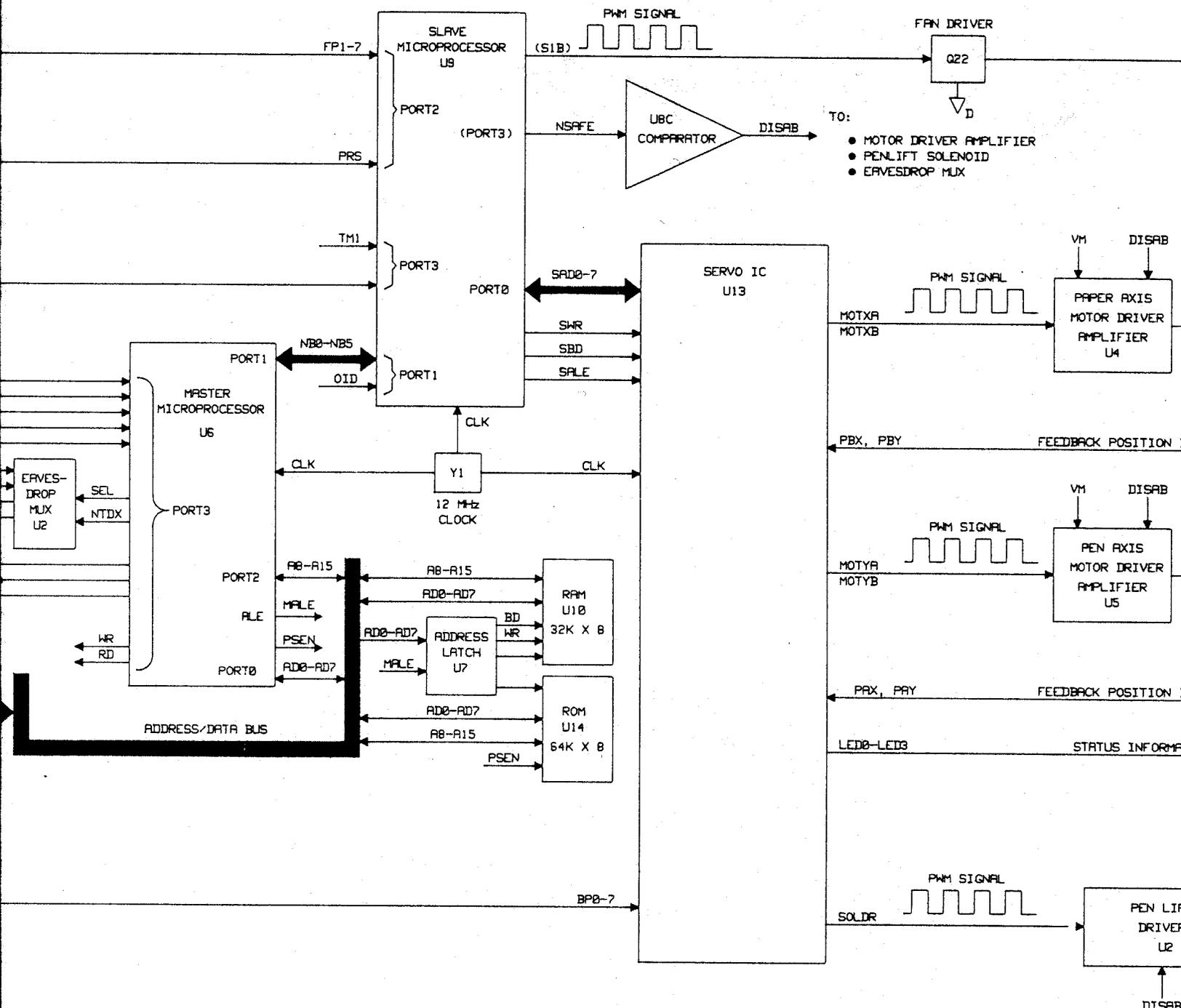
PEN LIFT SOLENOID

Vdc

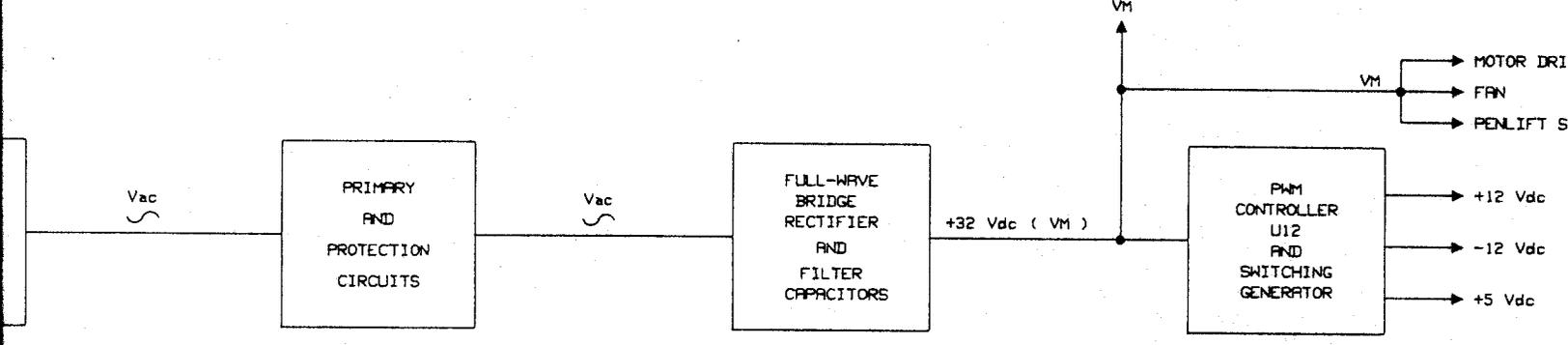
Vdc

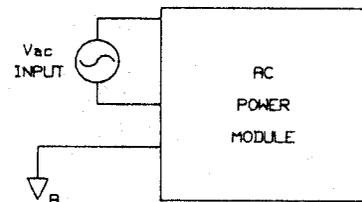
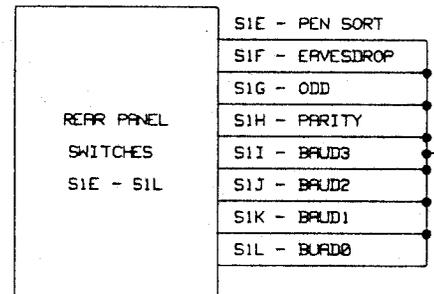
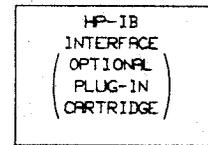
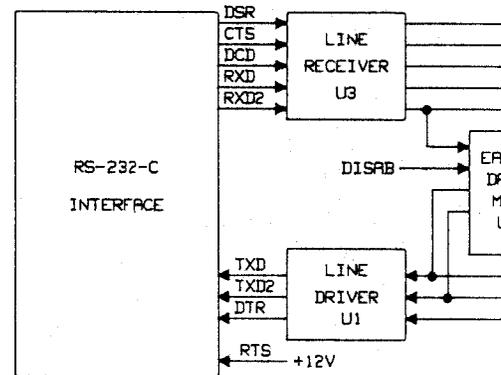
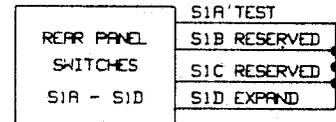
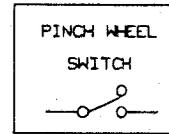
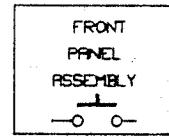
Vdc

Figure 12-2. Functional Block Diagram



POWER SUPPLY





PROCEDURE PART	RH CHASSIS COVER	LH CHASSIS COVER	CEN CO VER
RH CHASSIS COVER	X		
LH CHASSIS COVER		X	
CENTER COVER	X	X	X
FRONT PLATEN	X	X	
REAR PLATEN	X	X	X
FRONT PANEL	X		
FRONT PANEL CABLE	X		
PCA REMOVAL	X		
GRIT SHAFT MOTOR/ENCODER	X		
PEN MOTOR/ENCODER	X		
PINCH WHEELS	X		
PEN CAROUSEL SHIELD		X	
CAROUSEL MOUNT		X	
WORM GEAR & ENGAGING LEVER		X	
FRONT & REAR PAPER SENSOR ARMS	X	X	X
FIXED PINCH WHEEL	X	X	X
PAPER ALIGNMENT ARMS	X	X	X
MOVABLE PINCH WHEEL	X	X	
Y-ARM & PEN CARRIAGE	X	X	X
CENTER PLATEN	X	X	X
GRIT SHAFT	X	X	X
TRANSFORMER	X	X	X
POWER MODULE	X		
LEFT CHASSIS	X	X	X
RIGHT CHASSIS	X	X	X
FAN AND MOUNT			
DATUM BAR	X	X	X
PINCH WHEEL SENSOR SWITCH	X	X	
PLOTTER STAND			

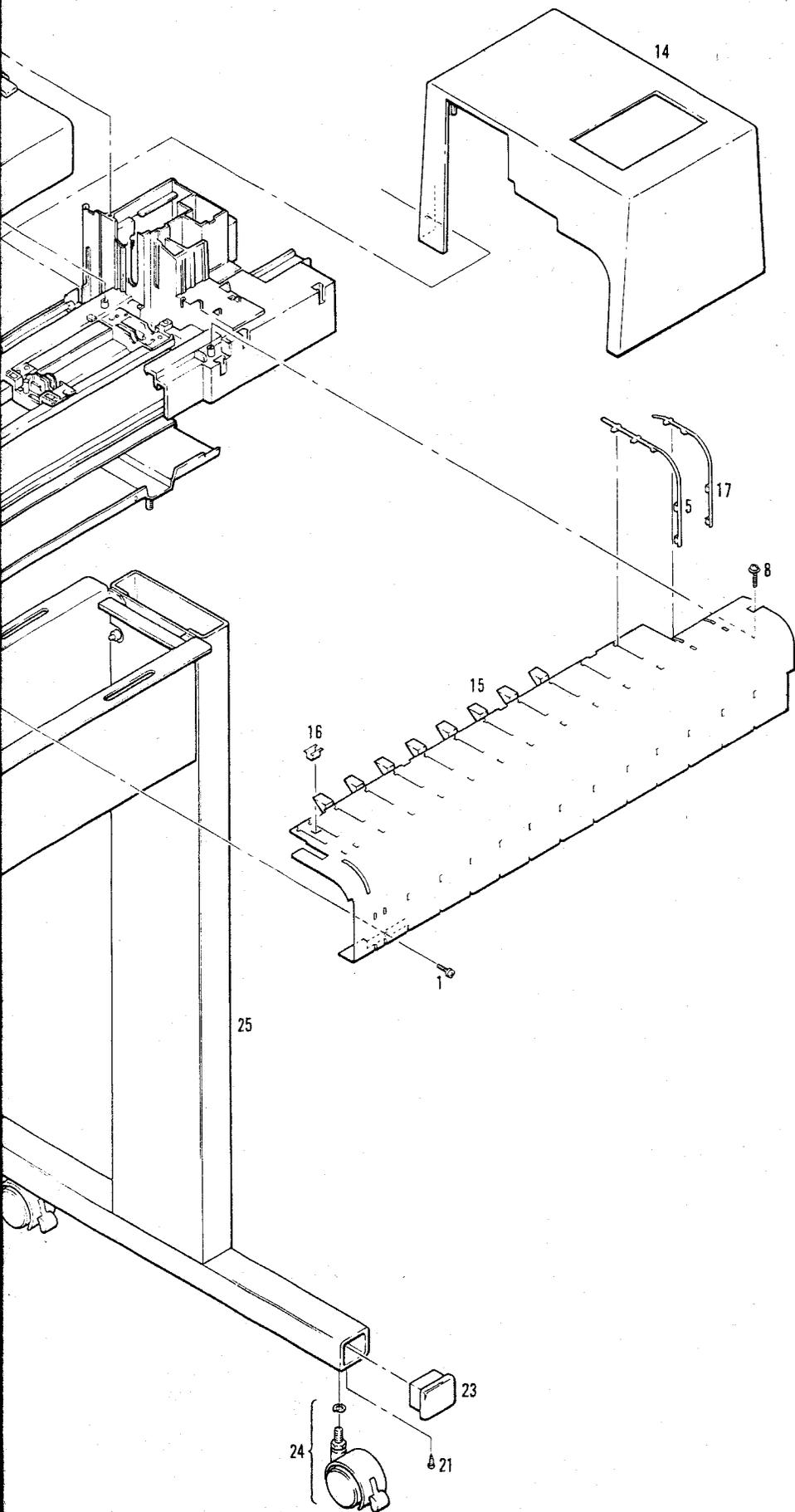
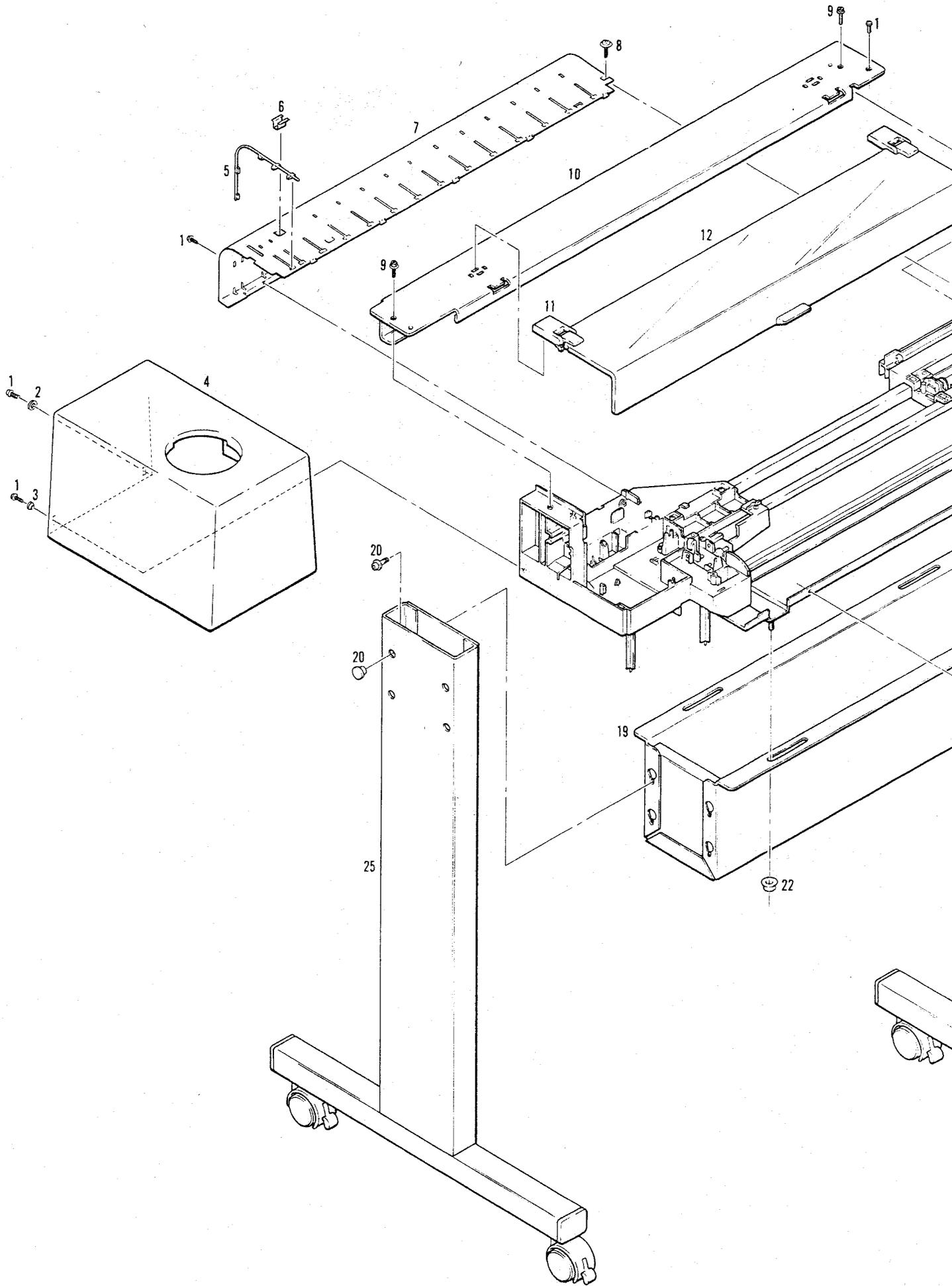


Figure 12-4. Covers and Stand Assembly, Illustrated Parts Breakdown



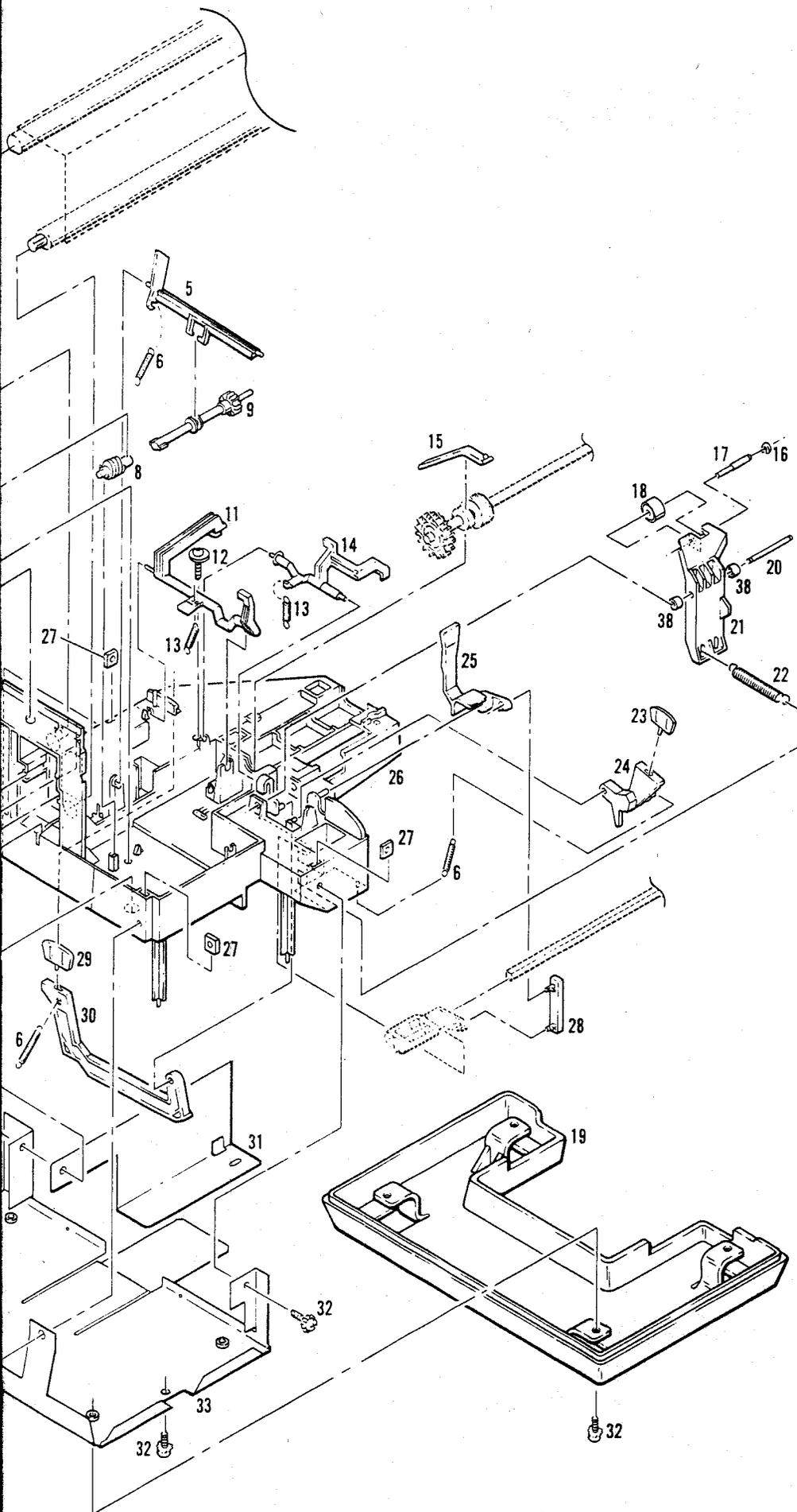
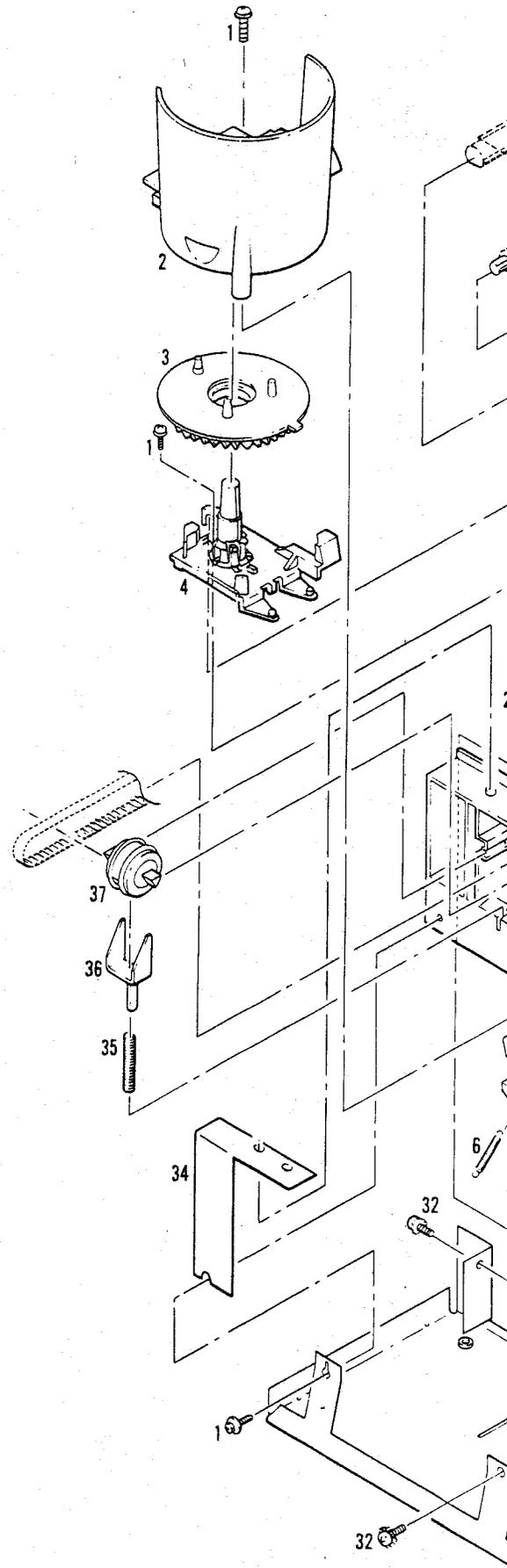


Figure 12-5. Left Chassis Assembly, Illustrated Parts Breakdown



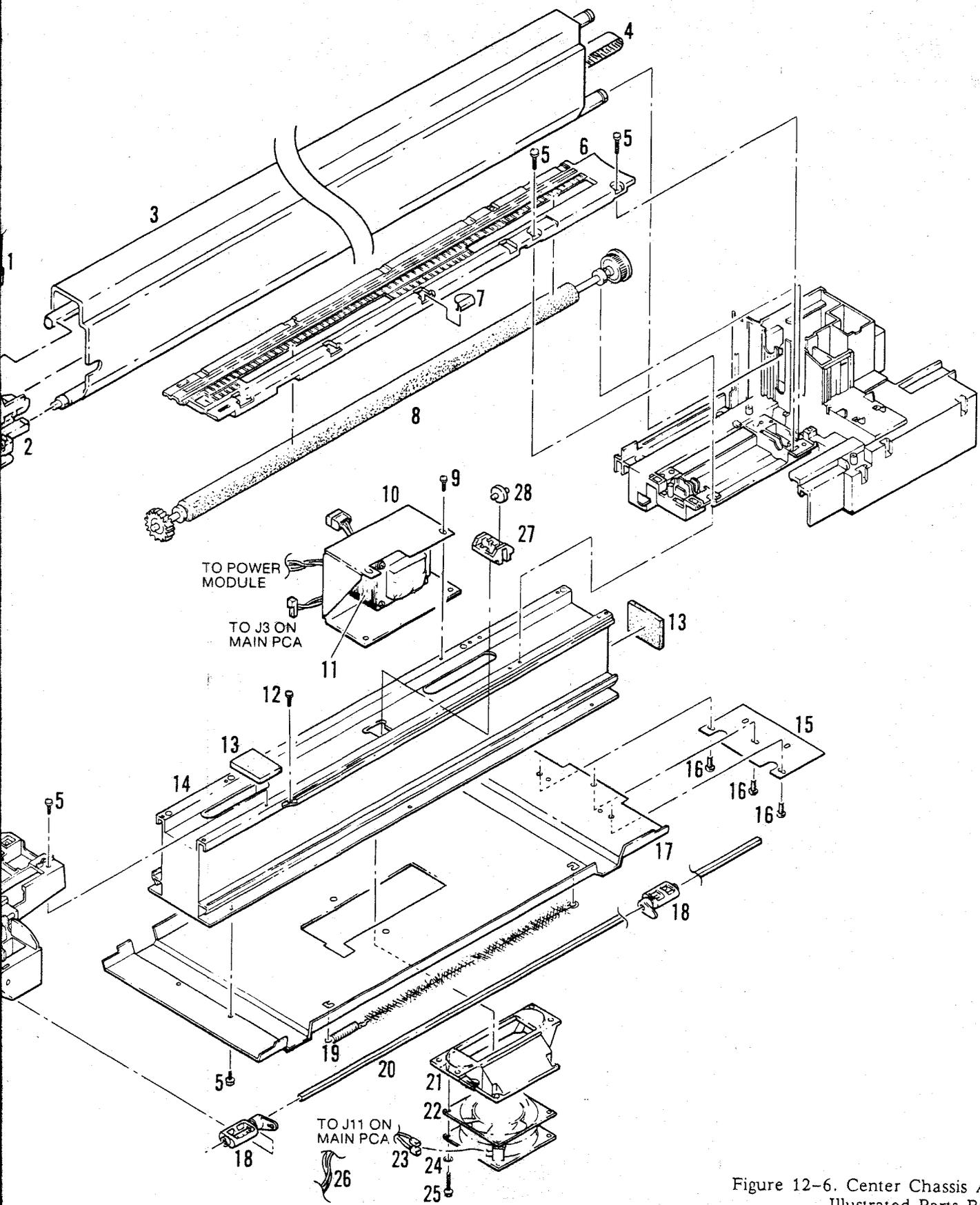
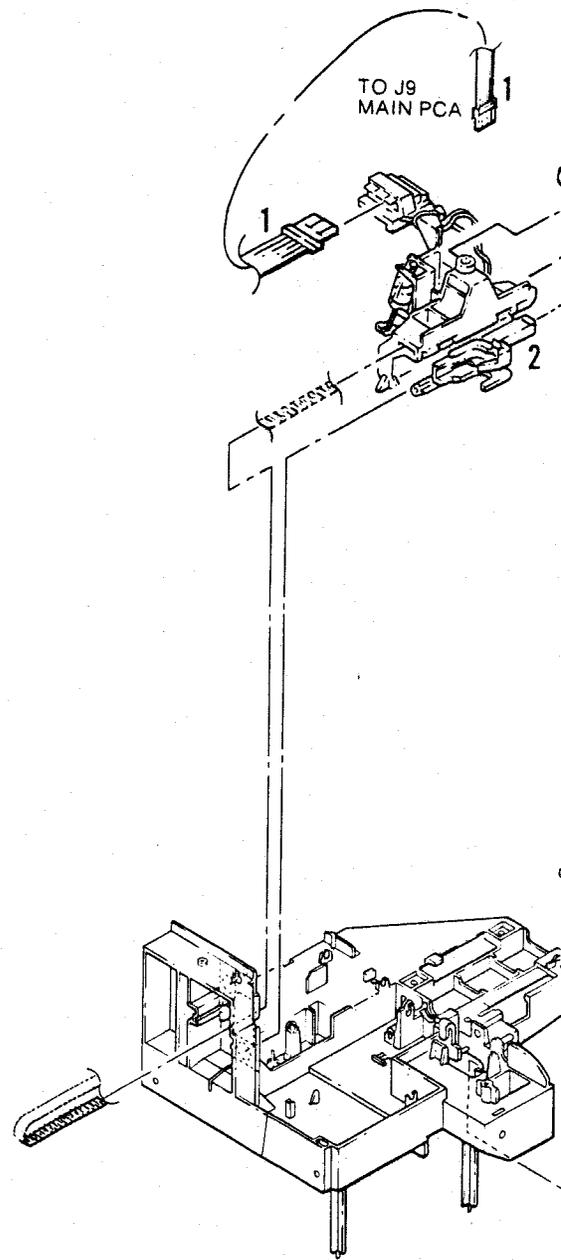


Figure 12-6. Center Chassis Assembly, Illustrated Parts Breakdown



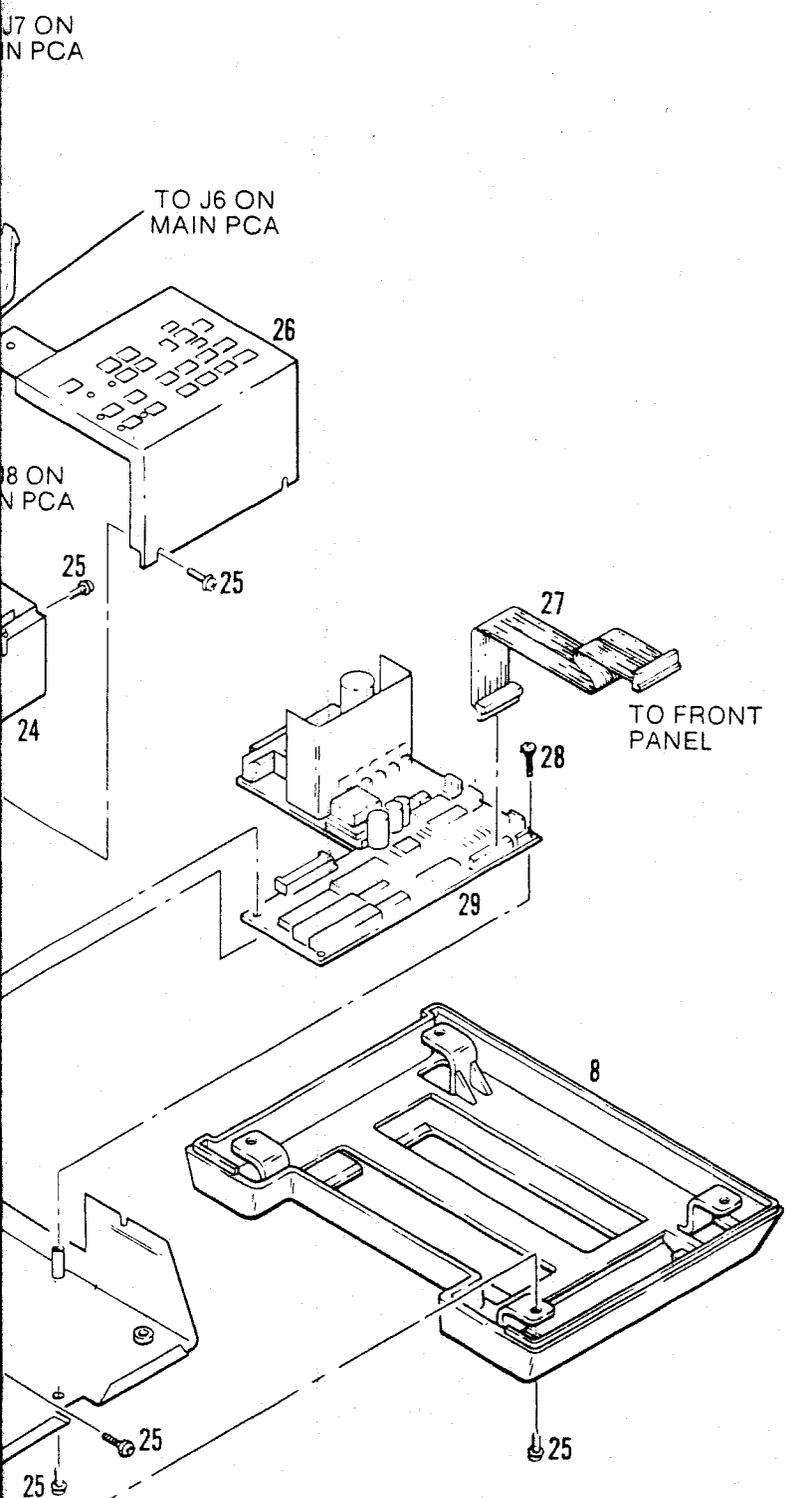
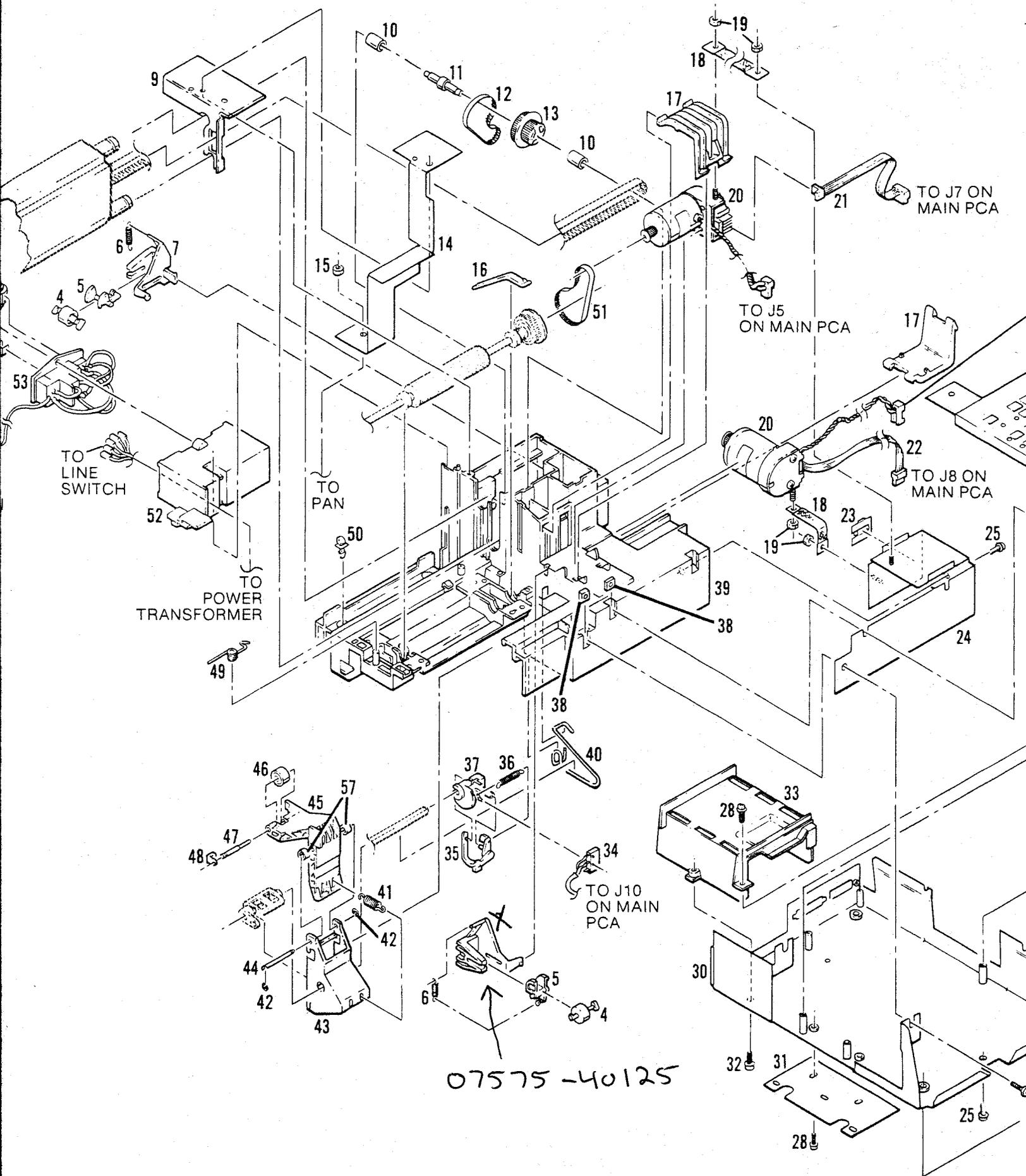
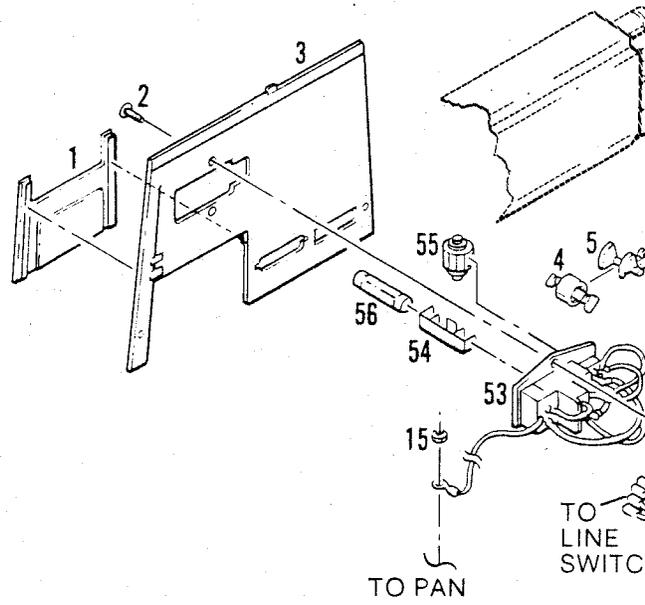


Figure 12-7. Right Chassis Assembly, Illustrated Parts Breakdown





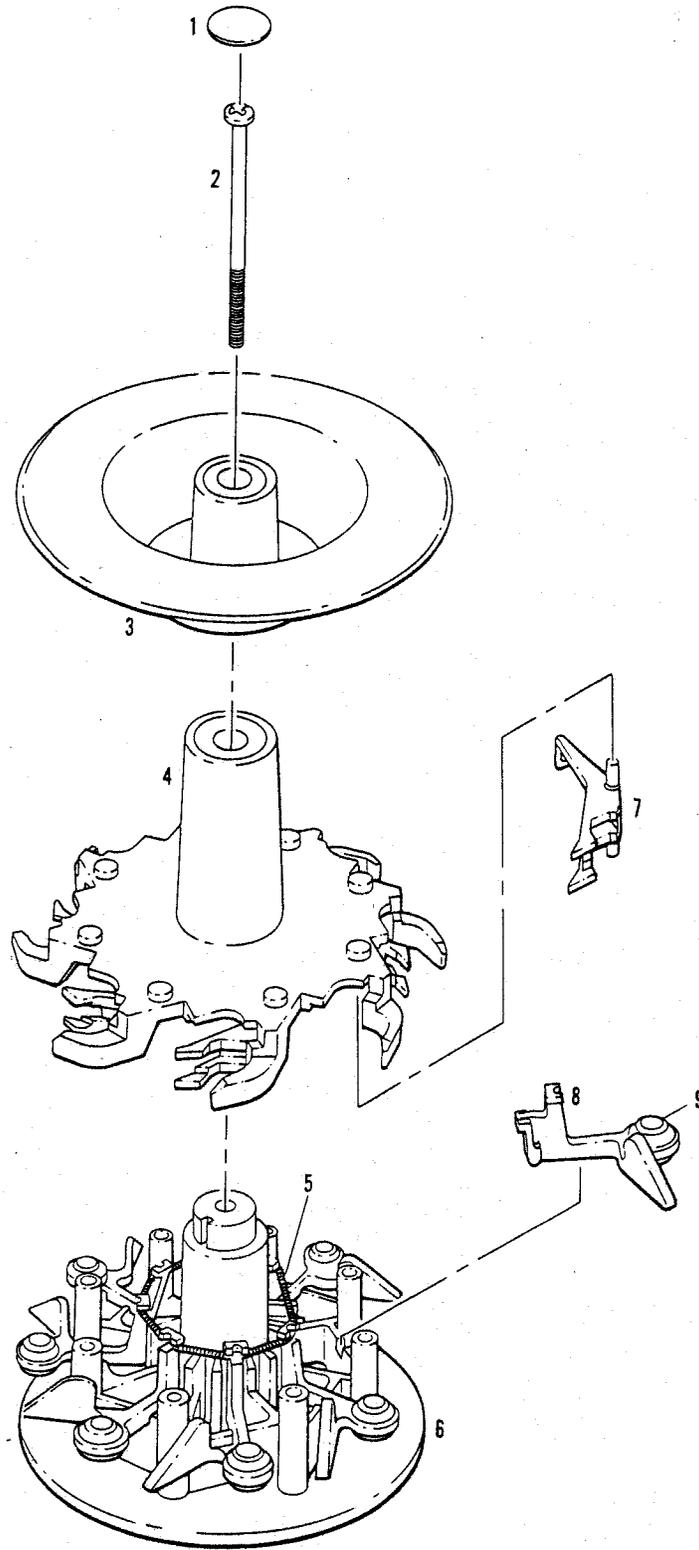


Figure 12-8. Pen Carousel Assembly,
Illustrated Parts Breakdown

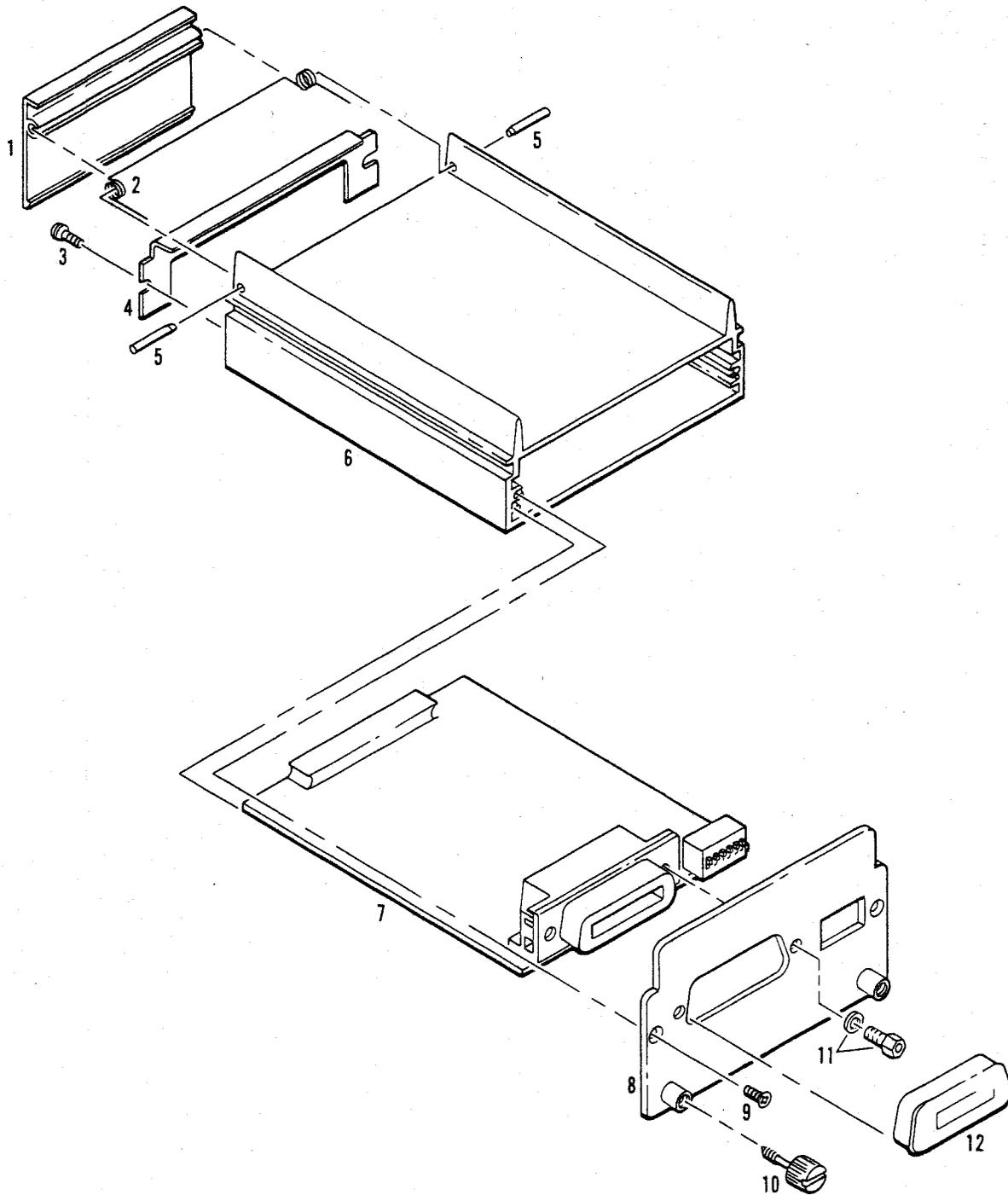


Figure 12-9. HP-IB Interface Module, Illustrated Parts Breakdown

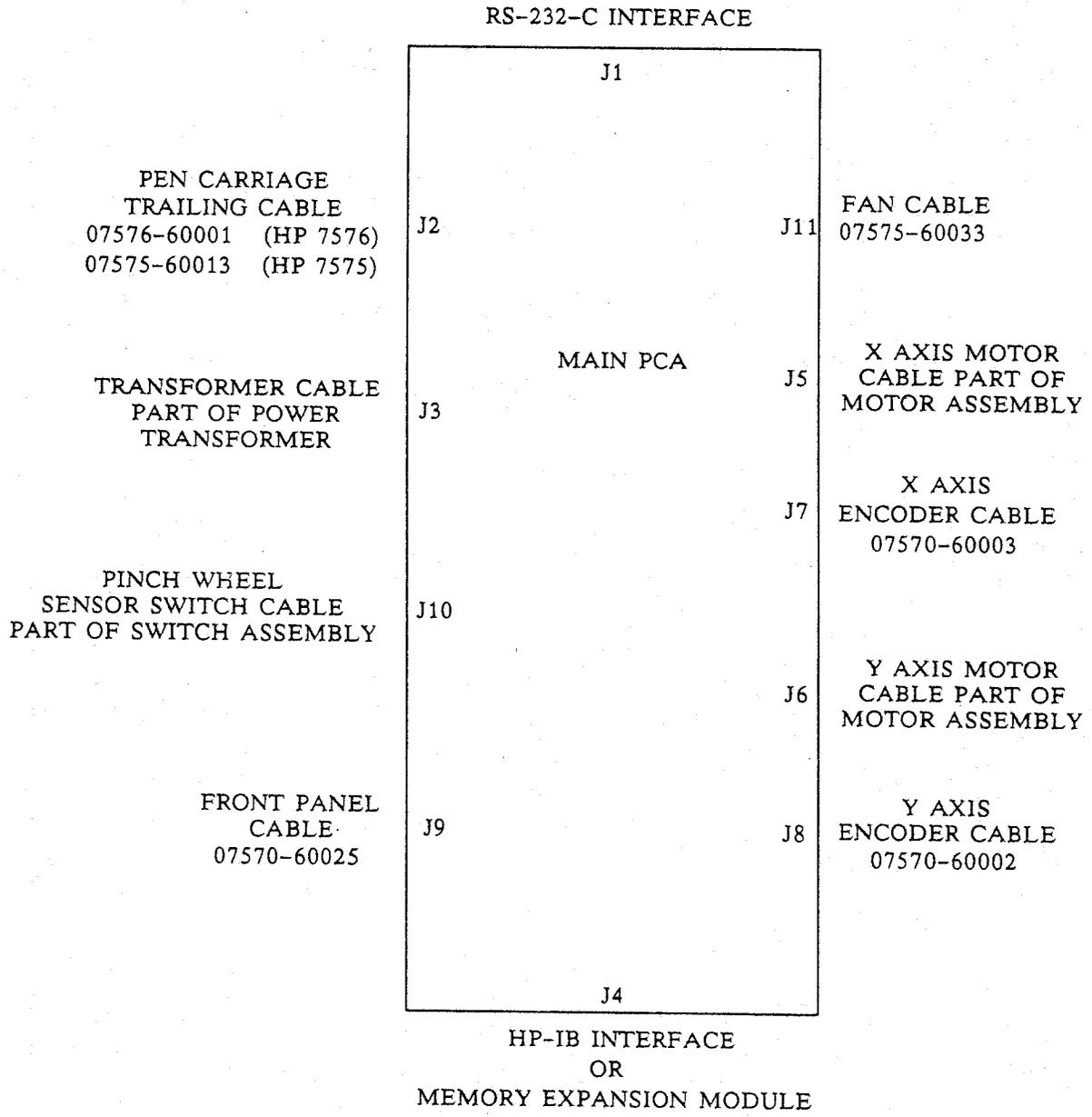
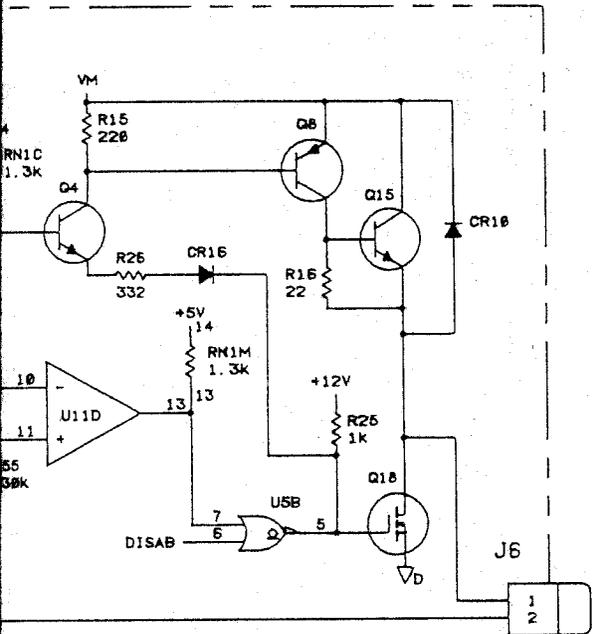


Figure 12-10. Cable and Connector Diagram

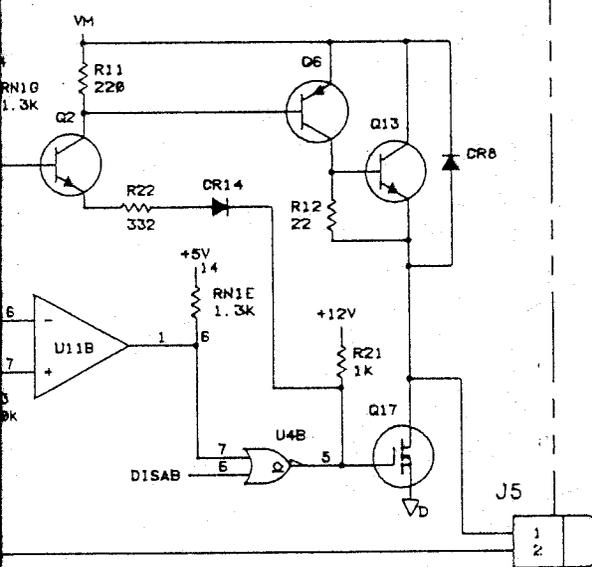
NOTE 1:

REAR PANEL SWITCH S1

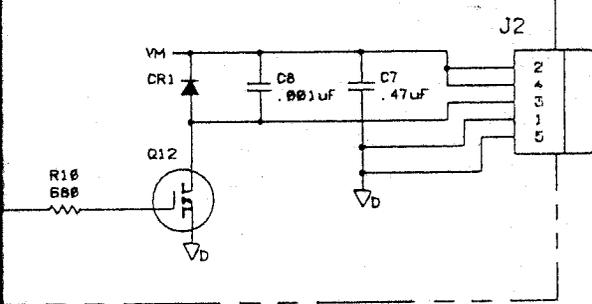
SWITCH	FUNCTION
S1A	TEST
S1B	RESERVED
S1C	RESERVED
S1D	EXPAND
S1E	PEN SORT
S1F	EAVESDROP
S1G	ODD
S1H	PARITY
S1I	BAUD 3
S1J	BAUD 2
S1K	BAUD 1
S1L	BAUD 0



PEN-AXIS DRIVE



PAPER-AXIS DRIVE



PEN LIFT SOLENOID

POWER AND COMMON CONNECTIONS:

REF. DES.	COMMON	POWER	BYPASS CAPS
U1	7 (DCOM)	1 (-12V), 14 (+12V)	NA
U2	8 (DCOM)	16 (+5V)	C11
U3	7 (DCOM)	14 (+5V)	NA
U4	4 (DCOM)	8 (+5V)	C18
U5	4 (DCOM)	8 (+5V)	NA
U6	20 (DCOM)	40 (+5V)	C27
U7	18 (DCOM)	20 (+5V)	C28
U8	12 (DCOM)	3 (+5V)	NA
U8	20 (DCOM)	40 (+5V)	C30, C31
U10	14 (DCOM)	28 (+5V)	C32
U11	12 (DCOM)	3 (+12V)	NA
U12	7 (DCOM)	12 (+5V)	NA
U13	1 (DCOM), 20 (DCOM)	21 (+5V), 40 (+5V)	C37, C38
U14	14 (DCOM)	28 (+5V)	C38

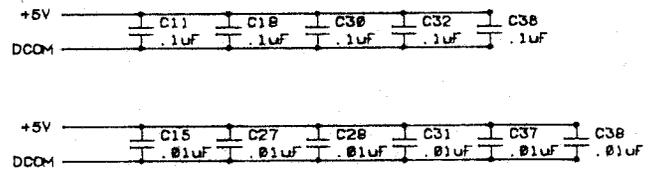
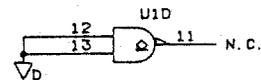
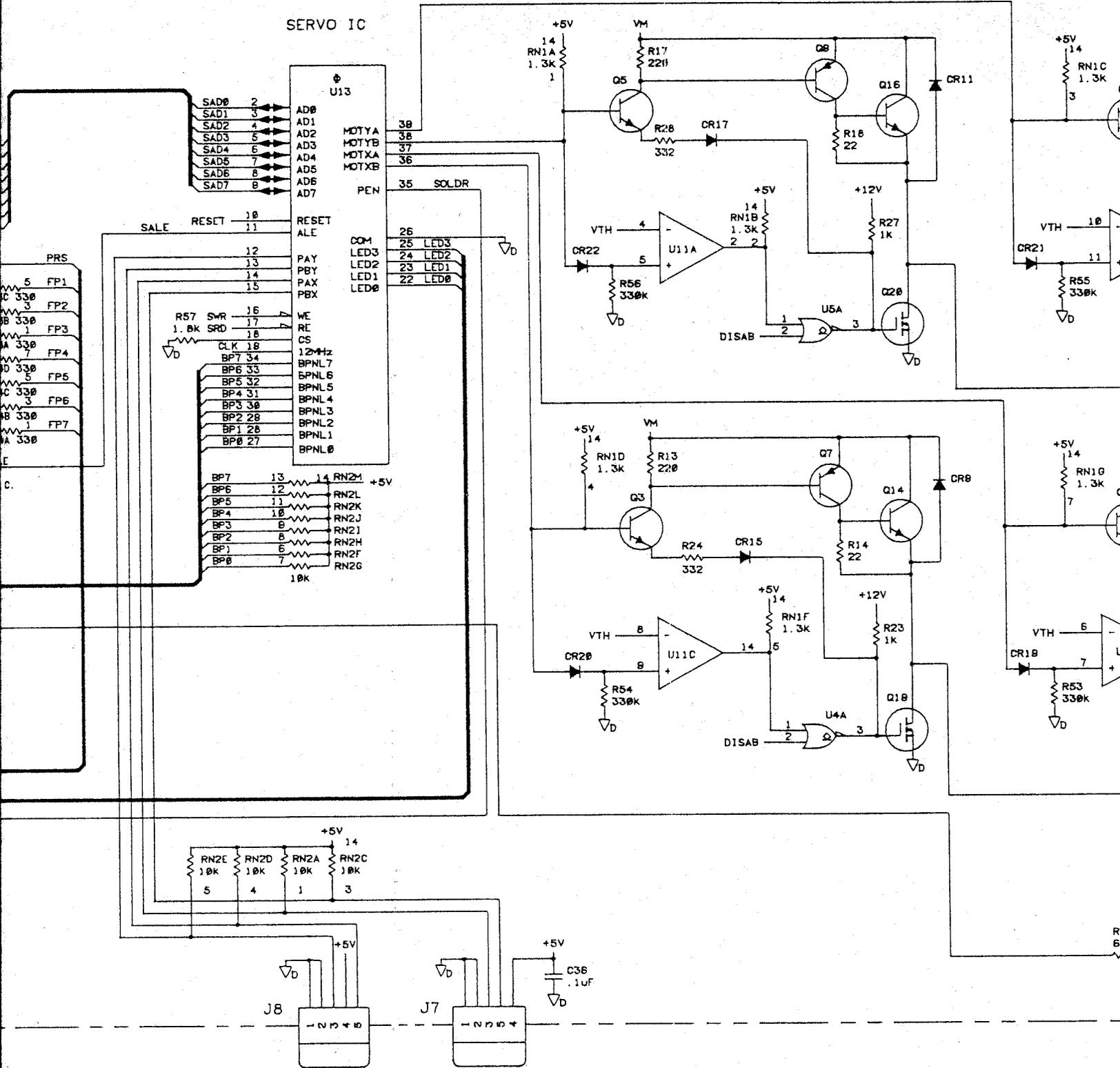


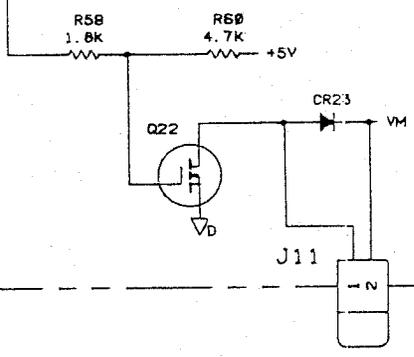
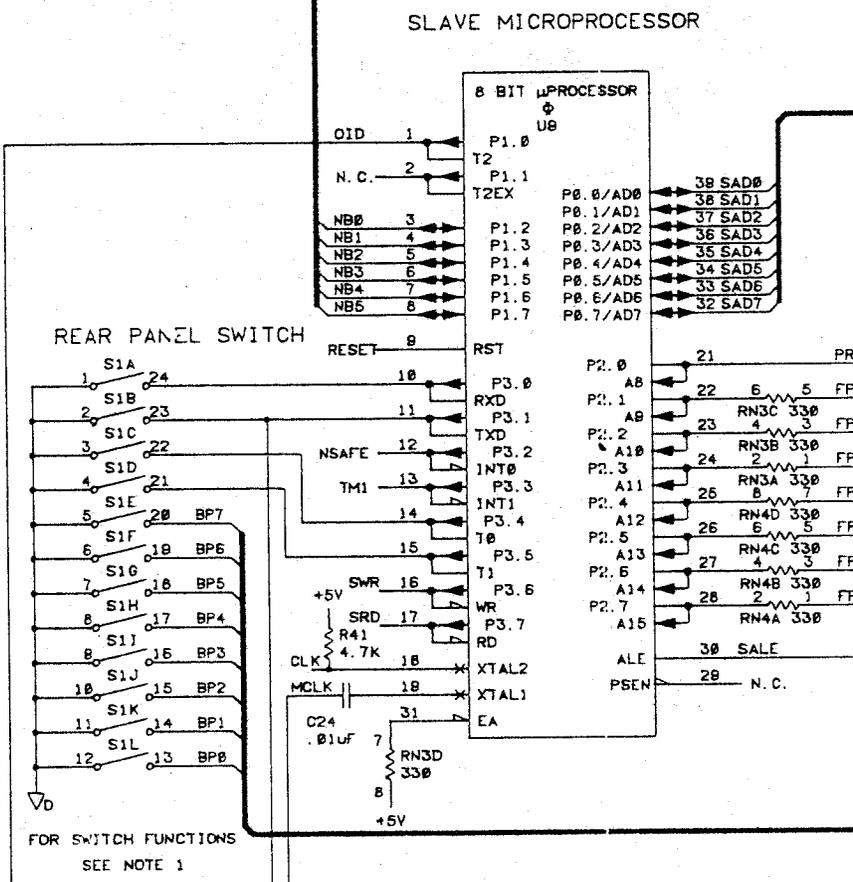
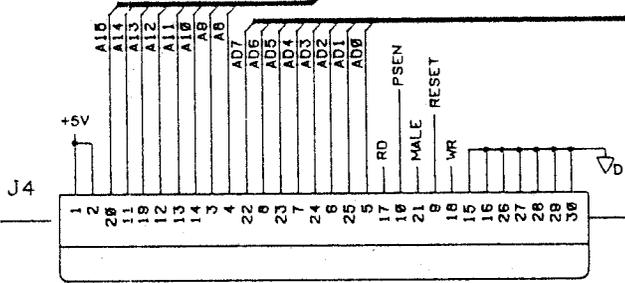
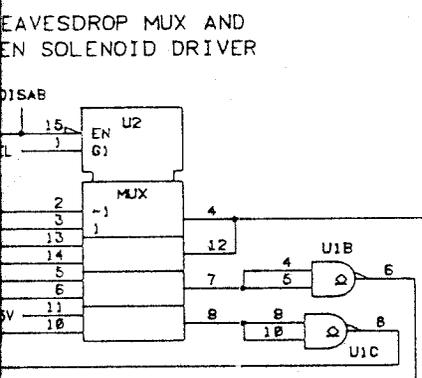
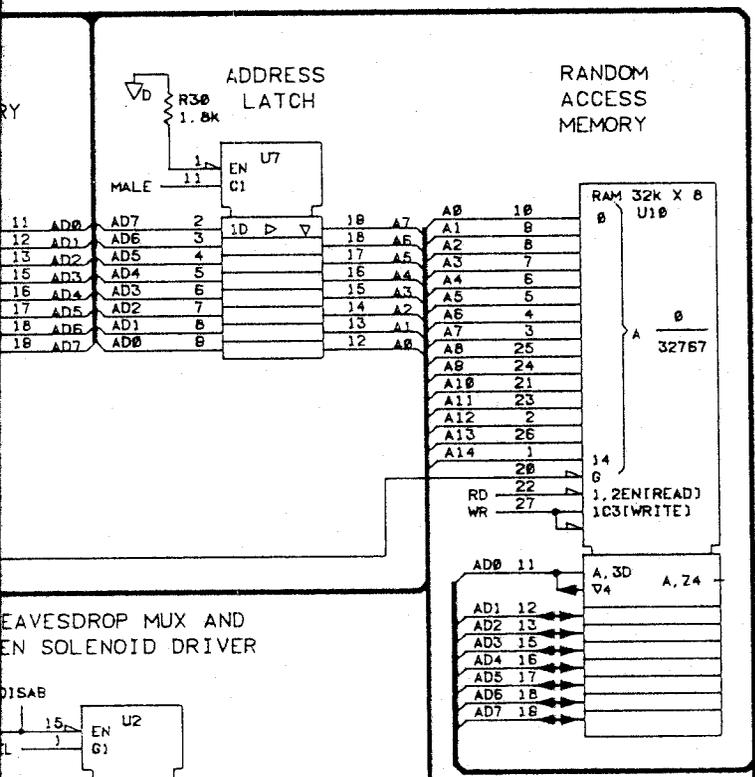
Figure 12-12. Main PCA A1, Schematic Diagram

MOTOR DRIVE CIRCUITS

SERVO IC

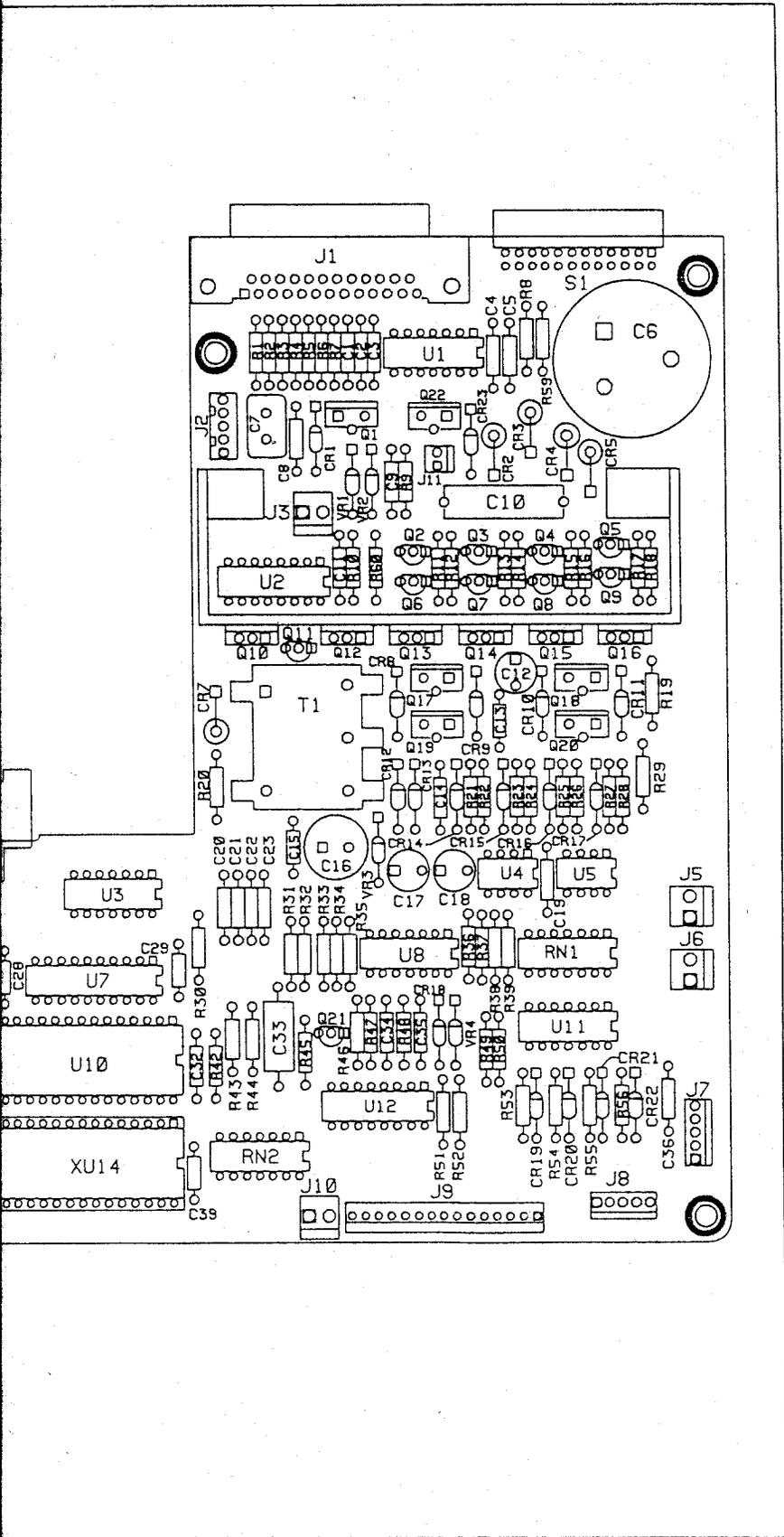


PEN AXIS ENCODER PAPER AXIS ENCODER



HP-IB I/O

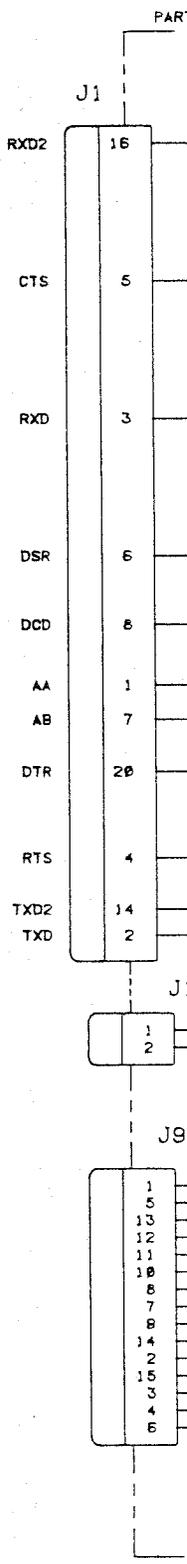
FAN



RS-232-C
I/O

PINCH WHEEL
SWITCH

FRONT PANEL



1. Main PCA A1, Component Location Diagram

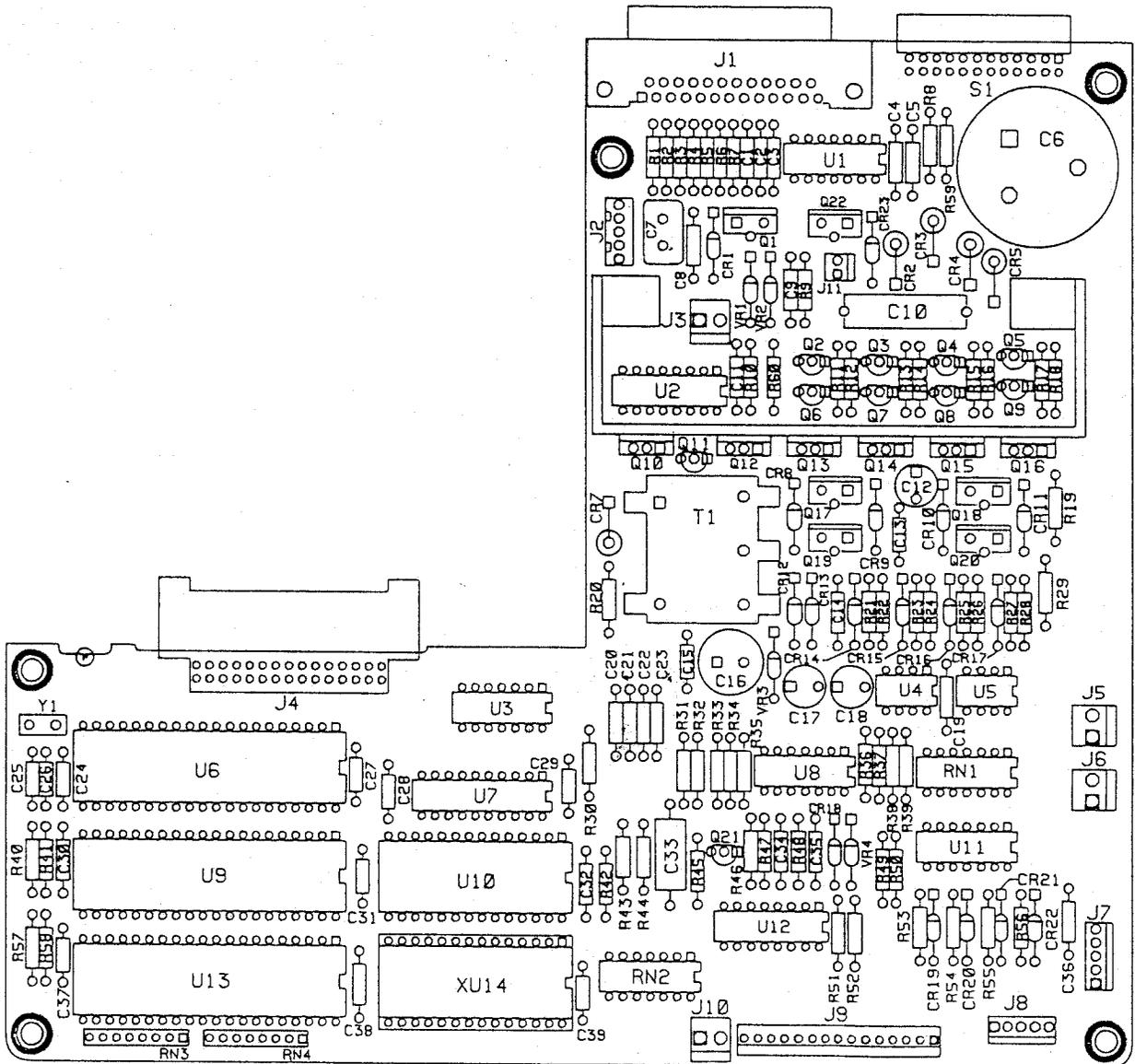
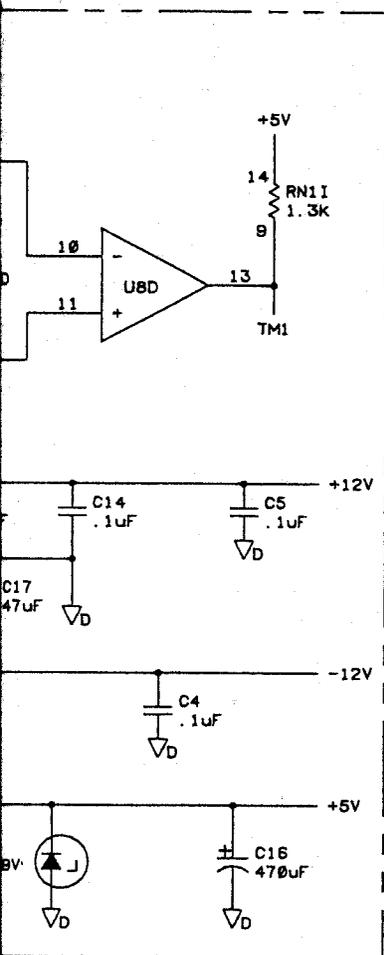


Figure 12-11. Main PCA A1, Component Location Diagram

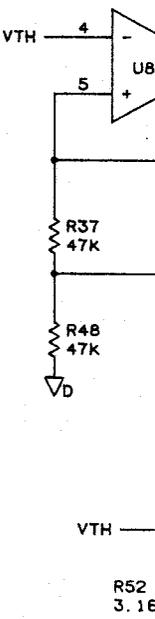
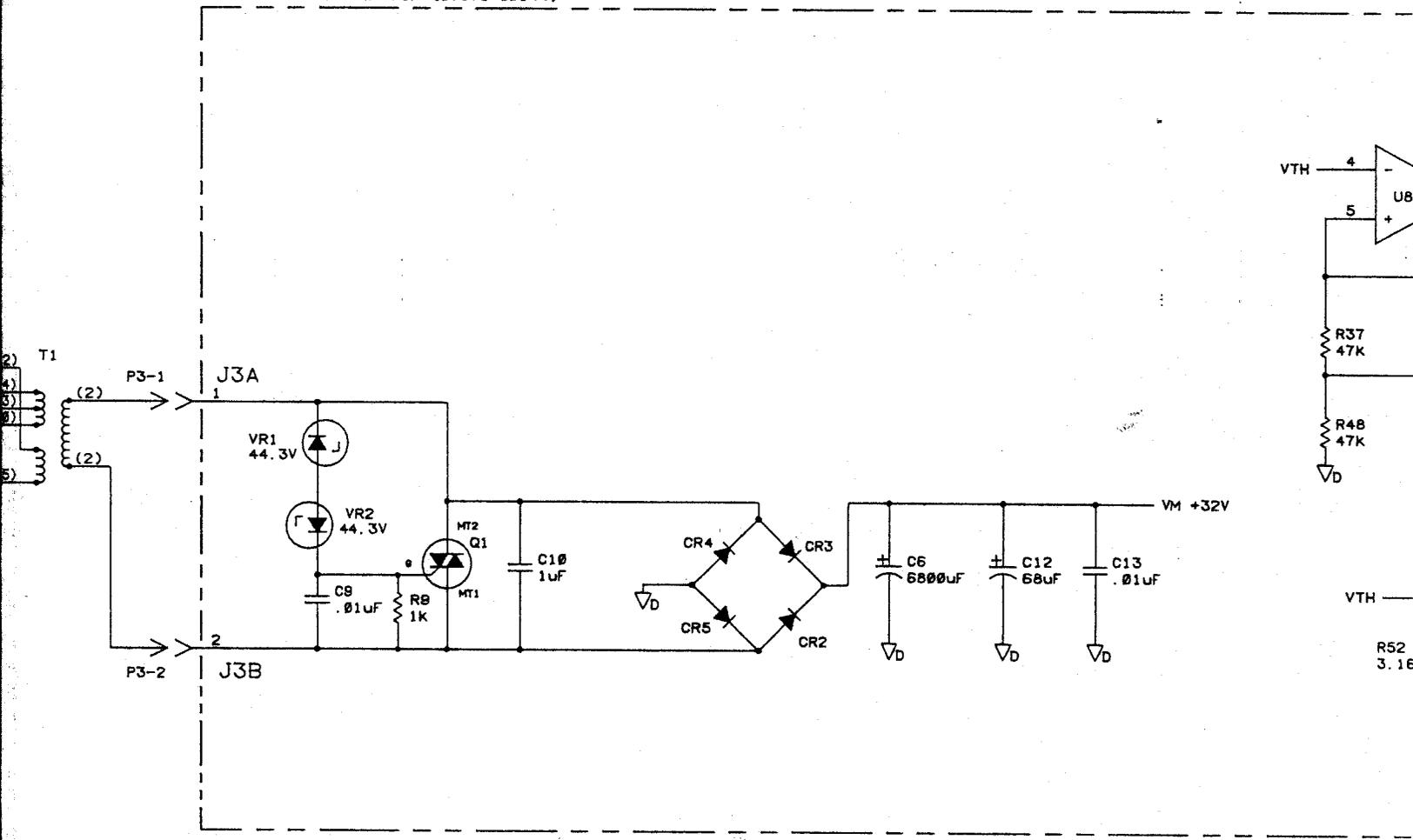


POWER AND COMMON CONNECTIONS:

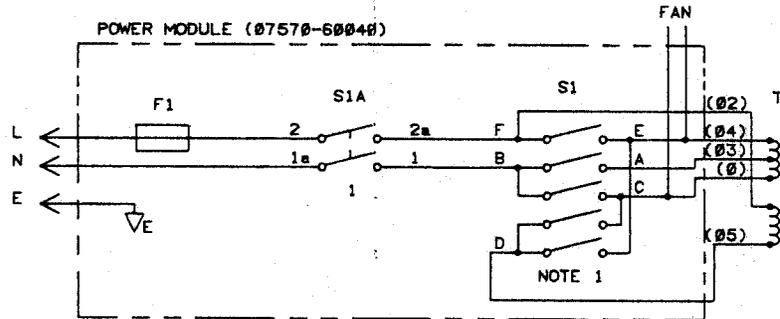
REF. DES.	COMMON	POWER	BYPASS CAPS
U12	7 (DCOM)	12 (+5V)	NA
U8	12 (DCOM)	3 (+5V)	NA

Figure 12-14. Main PCA A1 Power Supply Circuit, Schematic Diagram

PART OF A1 MAIN PCA (07575-60144)



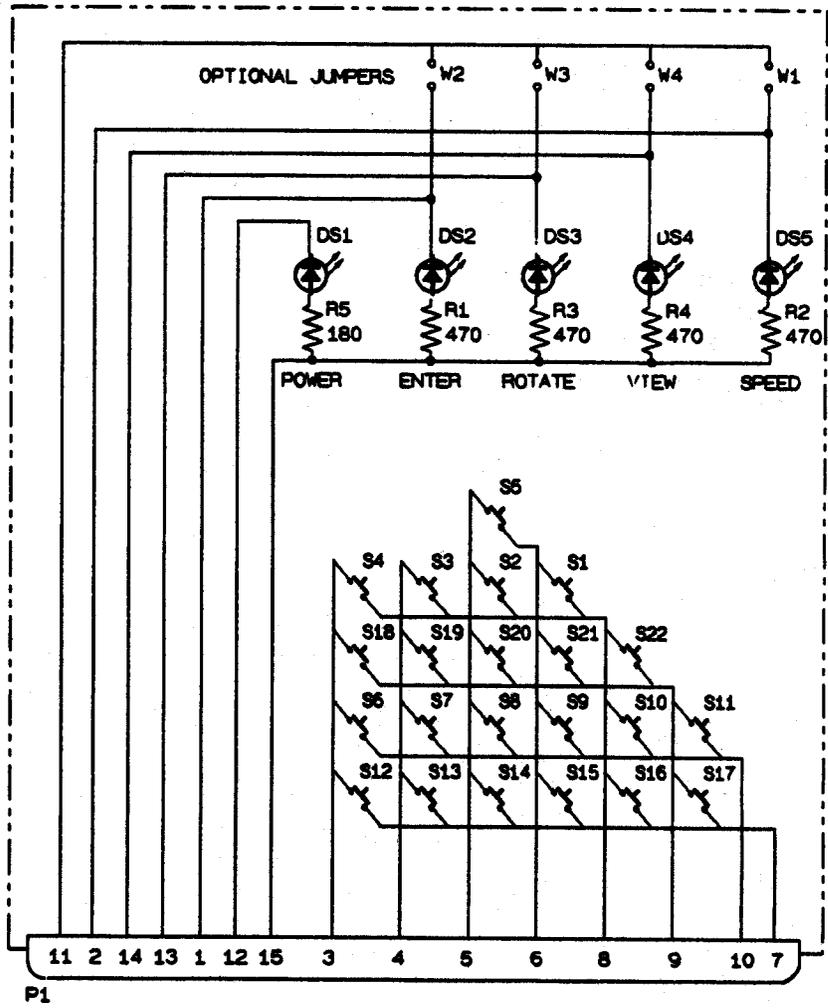
R52
3.16



LINE VOLTAGE	FUSE RATING
1ØØ/12ØV	1AT 25ØV
22Ø/24ØV	Ø.5AT 25ØV

NOTE 1:

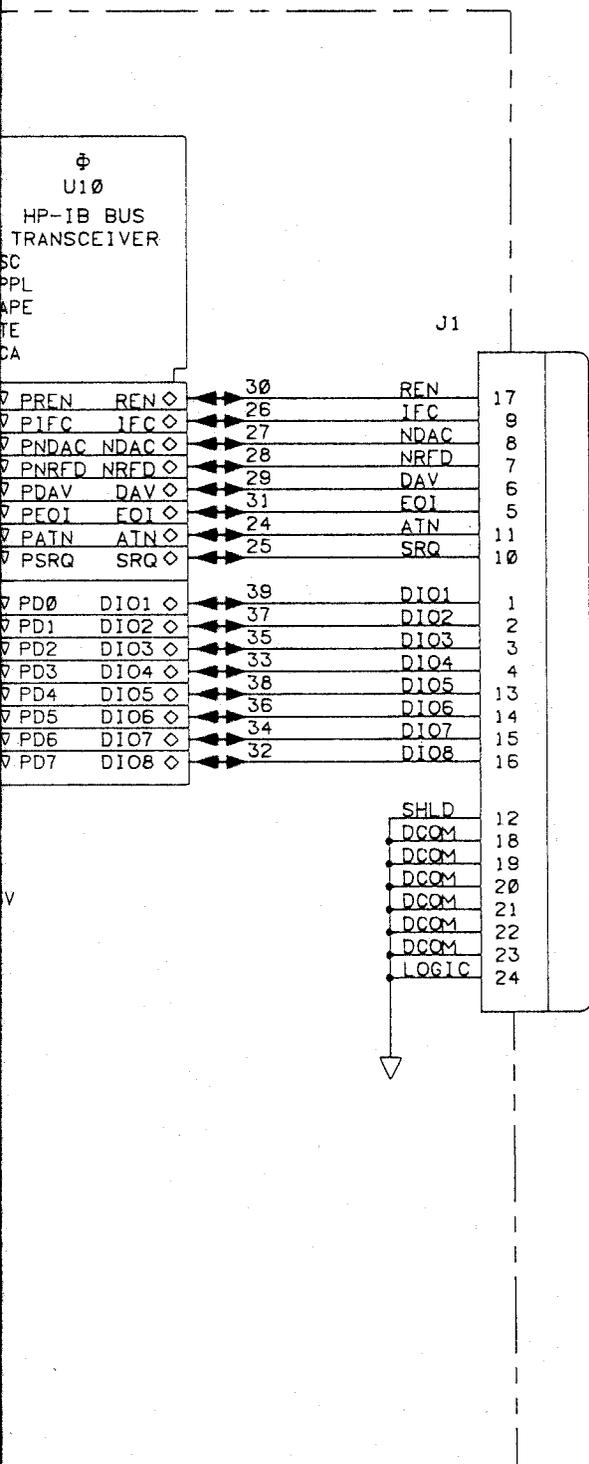
SWITCH	VOLTAGE
F E	1ØØ/12Ø
B A	1ØØ/22Ø
B C	12Ø/24Ø
D C	1ØØ/12Ø
D E	22Ø/24Ø



Switch Reference

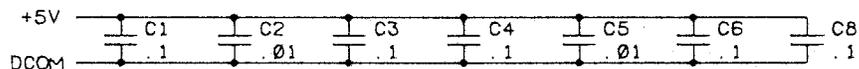
Switch	Panel Button	Switch	Panel Button	Switch	Panel Button
S1	Clear	S8	Pen 1	S15	Pen 6
S2	P2	S9	Pen 2	S16	Pen 7
S3	Axis Align	S10	Pen 3	S17	Pen 8
S4	Enter	S11	Pen 4	S18	Up
S5	P1	S12	View	S19	Left
S6	Rotate	S13	Speed	S20	Fast
S7	Pen Up/Down	S14	Pen 5	S21	Right
				S22	Down

Figure 12-15. Front Panel PCA, Schematic Diagram



POWER AND COMMON CONNECTIONS:

REF. DES.	COMMON	POWER	BYPASS CAPS
U1	14(DCOM)	28(+5V)	C1
U2	14(DCOM)	28(+5V)	C1
U3	20(DCOM)	40(+5V)	C2
U4	8(DCOM)	16(+5V)	NA
U5	7(DCOM)	14(+5V)	C6
U6	10(DCOM)	20(+5V)	C4
U7	14(DCOM)	28(+5V)	C5
U8	8(DCOM)	16(+5V)	NA
U9	8(DCOM)	16(+5V)	C8
U10	1(DCOM), 20(DCOM)	40(+5V)	C3

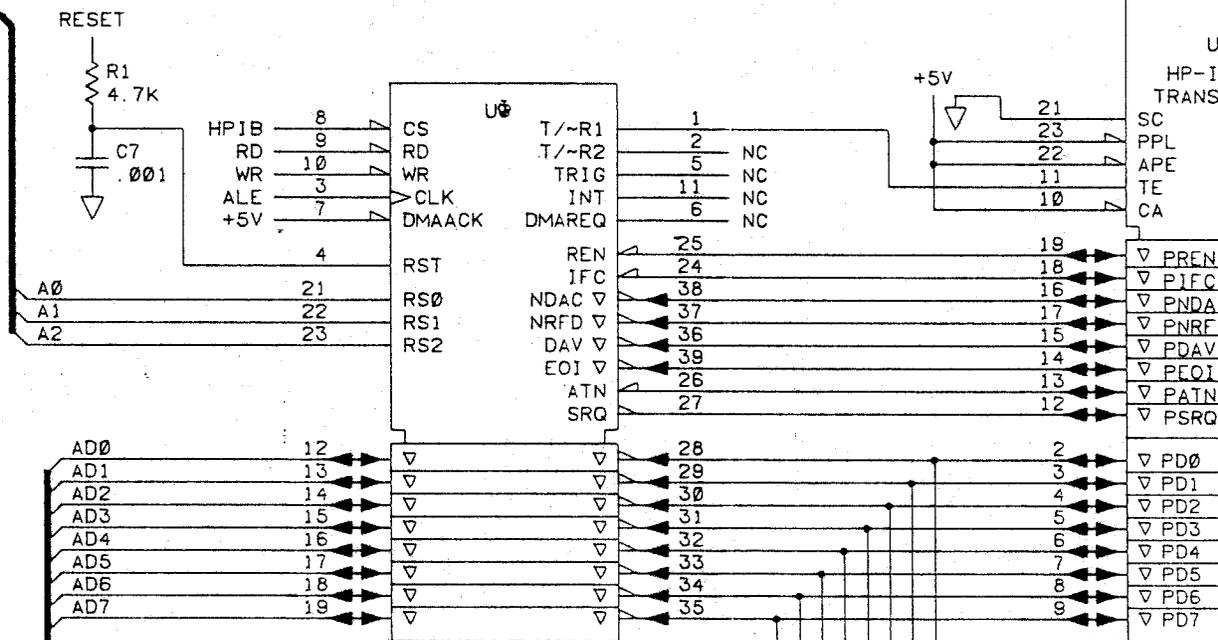
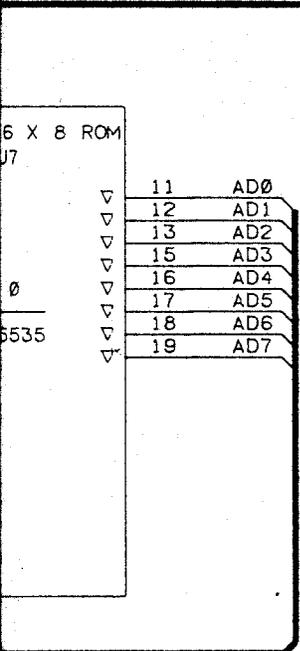


NOTES

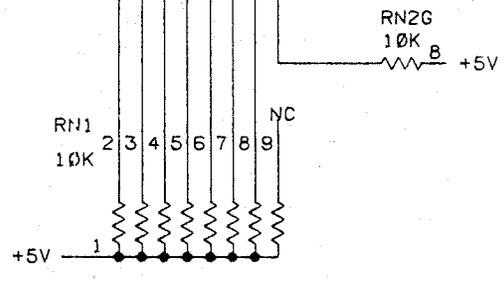
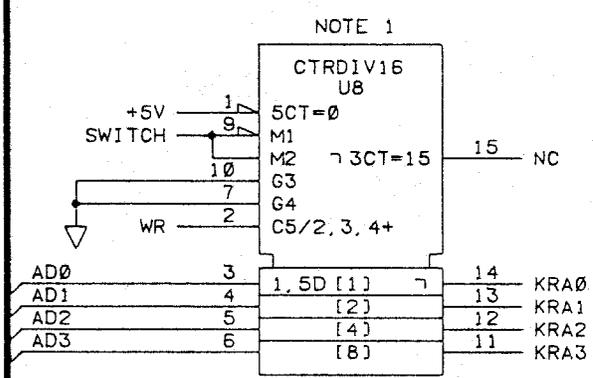
1. THIS IC NOT LOADED IN HP-IB VERSION, PCA (07570-60120)

Figure 12-17. HP-IB Interface Module PCA, Schematic Diagram

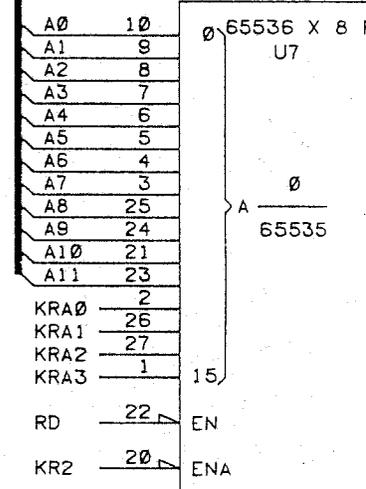
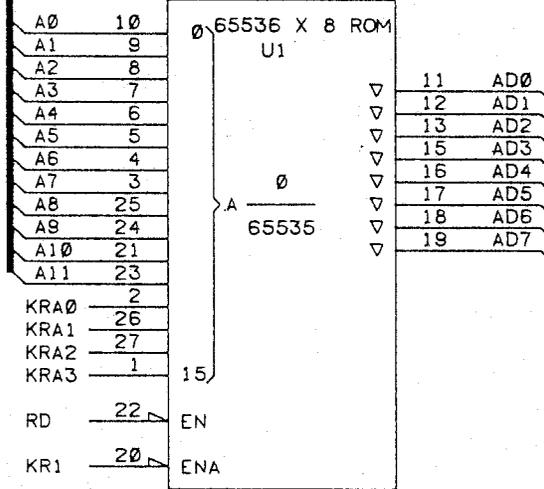
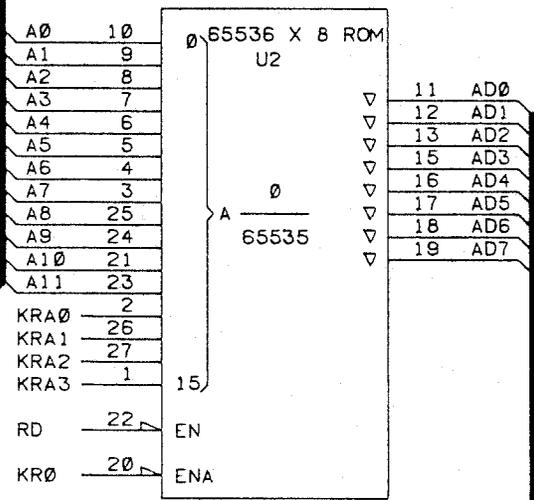
HP-IB INTERFACE



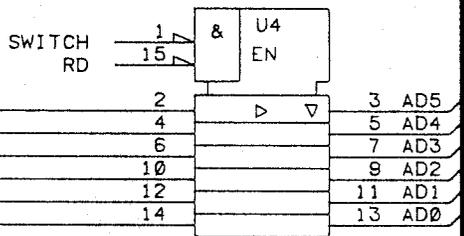
PART OF ADDRESS DECODER



READ ONLY MEMORY

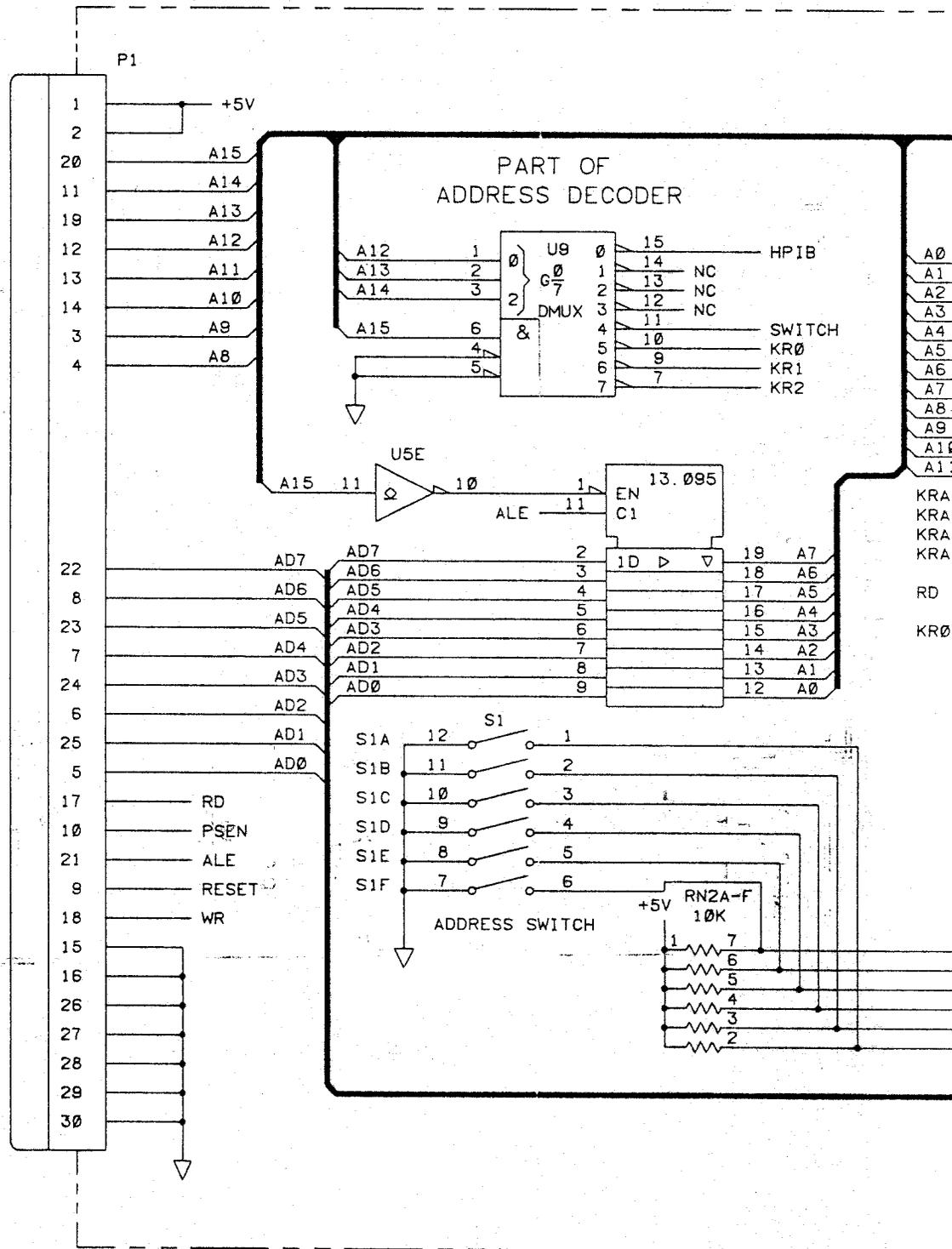


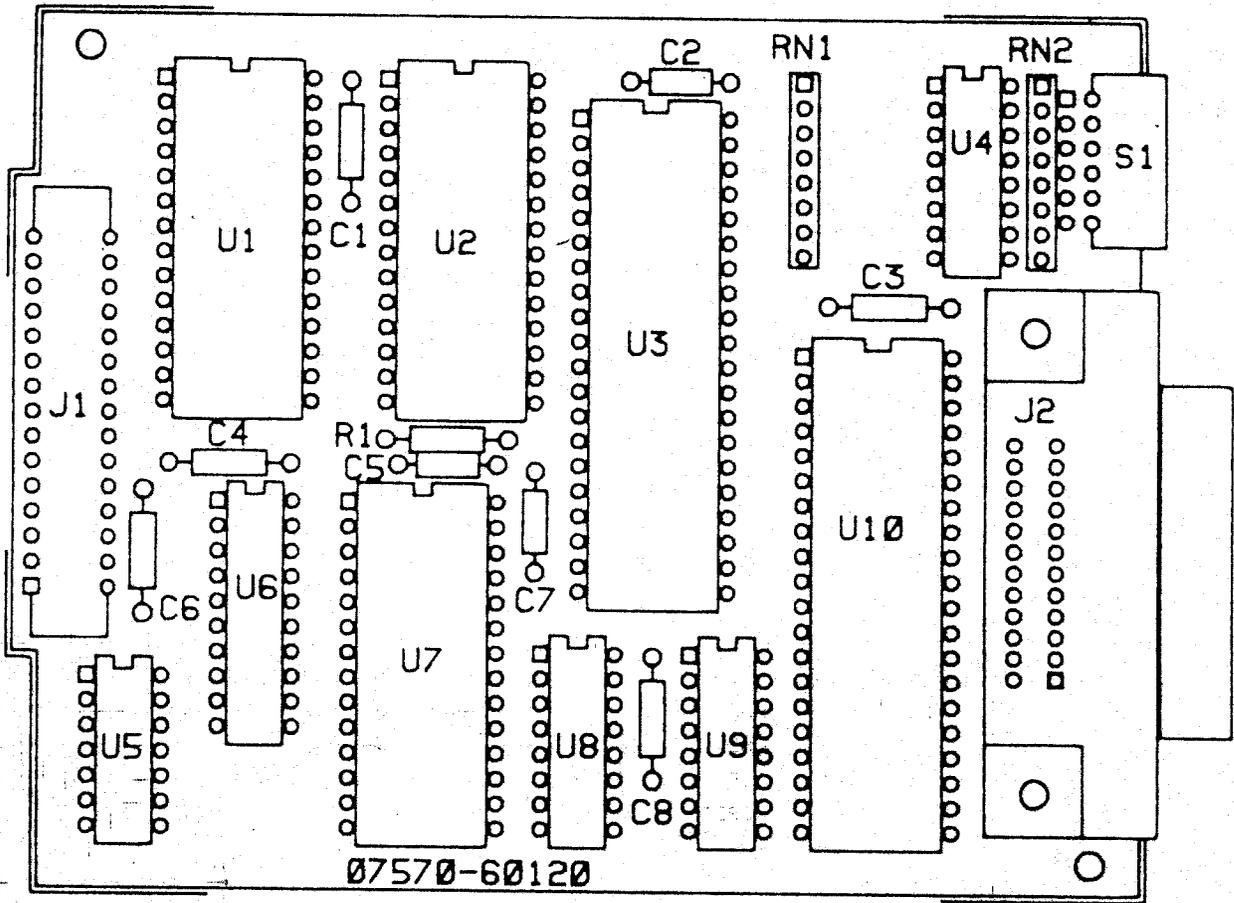
BUS DRIVER



HP-IB INTERFACE PCA (07570-60140)

PLOTTER INTERFACE CONNECTOR





7570-A-55-1

Figure 12-16. HP-IB Interface Module PCA, Component Location Diagram