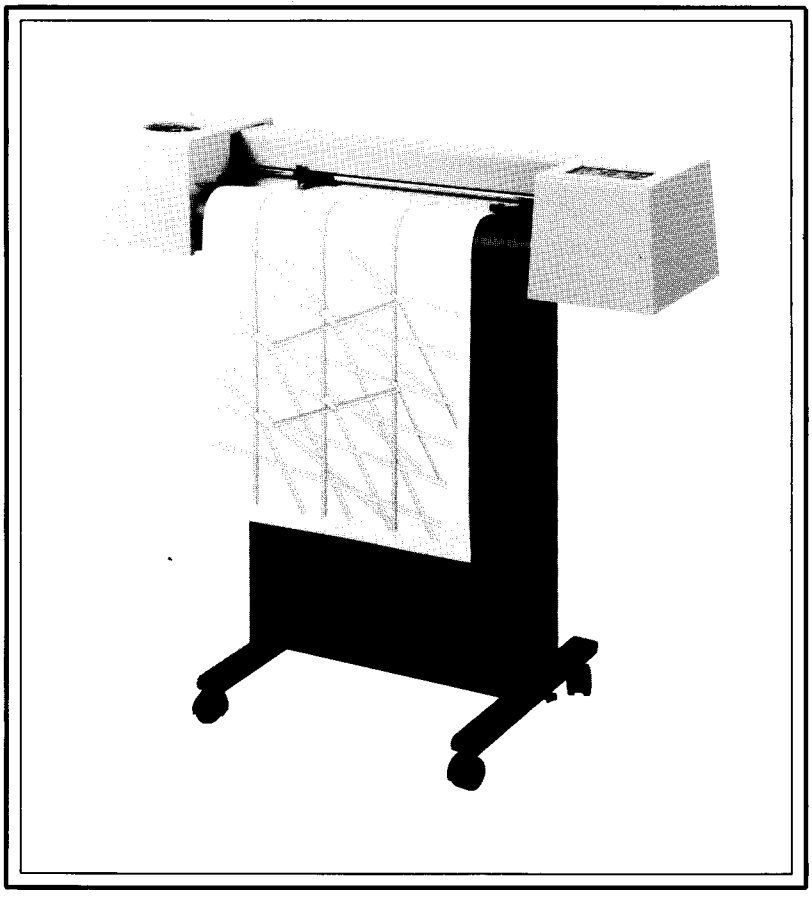

7570

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TABLES

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SECTION I

PRODUCT INFORMATION

1-1. INTRODUCTION

1-2. This handbook contains information necessary to test and service the Hewlett-Packard Model 7570 DraftPro Plotter. This manual is divided into eleven sections as follows:

I PRODUCT INFORMATION
II ENVIRONMENTAL/INSTALLATION/PM
III CONFIGURATION
IV TROUBLESHOOTING
V DIAGNOSTICS
VI ADJUSTMENTS
VII PERIPHERALS
VIII REPLACEMENT PARTS
IX DIAGRAMS
X REFERENCE
XI SERVICE NOTES/IOSMs

1-3. PRODUCT DESCRIPTION

1-4. The Hewlett-Packard Model 7570 DraftPro Plotter is a dual microprocessor controlled plotter providing graphic displays of computer program output data. An expansion connection is provided for additional interface modules and for expansion ROMs.

1-5. The HP 7570 will accommodate ISO A2 (ANSI C) or A1 (ANSI D) size media, either paper, polyester film, or vellum. The plotter will also accommodate expanded versions of the media which allows the pen to access the entire nominal sheet size. The preferred media thickness is 0.0762 mm (0.003 in.) with a recommended thickness of 0.0508 to 0.1016 mm (0.002 to 0.004 in.). The media is driven by grit covered drums and held in place by pinch wheels which are raised and lowered manually. The left-hand pinch wheel is in a fixed position, while the right-hand pinch wheel may be manually moved by the operator to accommodate the different media sizes. A vacuum fan system holds the media to the platen preventing the possibility of high spots on the media and resultant erroneous pen marking.

1-6. There is an eight pen rotary carousel located at the left hand end of the plotter from which pens may be selected by program control or operator selected by using front panel pushbutton switches. Pens will be automatically stored and capped when not in use. The HP Model 7570 is capable of using fiber tip, or liquid ink pens. The carousels are manually interchanged.

1-7. The standard interface for the HP Model 7570 is the serial RS-232-C interface capable of either direct or "eavesdrop" connection with the "Y" cable. The IEEE-488 interface (HP-IB) may be ordered as a plug-in unit.

1-8. OPTIONS

1-9. Currently there are no options available for use with the HP 7570.

1-10. INTERFACE CARTRIDGES

1-11. Specialized interface cartridges may be obtained for use with the HP 7570. The descriptions and part numbers are are listed in Table 1-1.

Table 1-1. Interface Cartridges

DESCRIPTION	HP PART NUMBERS
HP-IB Interface	17570A
HP-IB Interface + Kanji	17571A

1-12. PERFORMANCE SPECIFICATIONS

1-13. Table 1-2 lists the specifications for the HP 7570. These specifications include the performance standards against which the plotter is tested. Also included in Table 1-3 are supplemental characteristics. Supplemental characteristics are not specifications but are typical characteristics included as additional information for the user.

Table 1-2. Performance Specifications

Repeatability*
With the same pen: 100 micrometres (0.004 in.)
Pen to Pen: 200 micrometres (0.008 in.)

Accuracy: (Ability to position a pen relative to an absolute scale.) 0.5 mm (0.02 in.) or 0.2% of the move, which ever is greater.*

*With 0.08 mm (0.003 in.) polyester film from 10°C to 30°C.

Table 1-3. Supplemental Characteristics

Maximum plotting area:
C 457 mm × 610 mm*
D 610 mm × 914 mm*
*subtract margins of 5 mm (0.2 in.) on three sides and 31 mm (1.2 in.) on the fourth.

Pen velocity
Pen down: programmable: 1 to 40 cm/s (0.4 to 15.74 in./s)
Pen up: 51 cm/s (20 in./s) (regardless of pen down speed)

Addressable step size: 25 micrometres (0.001 in.)

Mechanical Resolution: 13 micrometres (0.0005 in.)

Acceleration: 2000 cm/s^2 (2g)

Buffer size: 7423 bytes (Shared between user definable, polygon, and pen sort buffers.)

Power requirements
Source: 100, 120, 220, or 240 Vac ±10%
Frequency: 47.5 to 66 Hz
Consumption: 80 W maximum

Size
Height: 1030 mm (40.6 in.)
Width: 1140 mm (44.9 in.)
Depth: 520 mm (20.5 in.)

Weight Net: 30 kg (66 lb)
Shipping: 52.2 kg (115 lb)

1-14. RECOMMENDED TOOLS AND TEST EQUIPMENT

1-15. The tools required to maintain the Model HP 7570 are listed in Table 1-4. The HP Tool Kit, Part Number JTK-536 is recommended. Test equipment recommended to maintain the Model 7570 is listed in Table 1-5.

Table 1-4. Tools Required

Pliers, needle nose

Screwdriver, Pozidriv #2
Screwdriver, Pozidriv #1
Screwdriver, common

Torx driver T 20W

Nut driver, 5/16 in.

Spring Tool, combination

Table 1-5. Recommended Test Equipment

TYPE	RECOMMENDED MODEL
Computer/Controller	HP-85 Personal Computer with appropriate interface
	HP 82937A HP-IB Parallel Interface
	HP 82939A RS-232-C Interface
	HP 8120-3258 RS-232-C Interface Cable
ROM Drawer	HP 82936A
I/O ROM	HP 00085-15003
HP-85 Plotter Service Tape	5010-2585
Digital Multimeter	HP 3465A
Oscilloscope	HP 1741A 100 MHz or better
Optical Comparator	B&L 81-34-35
I/O Loopback Connector	HP 07440-60302
HP-85 Plotter Service Tape	HP 5010-2585
Metric Scale 0-1000 mm	

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SECTION II

ENVIRONMENTAL/INSTALLATION/PM

2-1. ELECTRICAL SPECIFICATIONS

2-2. POWER REQUIREMENTS

2-3. The HP 7570 requires a power source of:

100, 120, 220, or 240 Vac ±10%; 50 to 60 Hz; 80 W max.

2-4. LINE CORD SET

2-5. The ac line cord set required for use with the HP 7570 is determined by the destination of the plotter.

2-6. ENVIRONMENTAL SPECIFICATIONS

2-7. The HP 7570 complies with HP requirements for Class B products. The environmental limits are as follows:

OPERATING

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

STORAGE

Temperature:	−40 to +75°C
Humidity:	to 90% RH at 65°C
Altitude:	to 15 250 m (50 000 ft) at 0°C

2-8. CABLE RESTRICTIONS

2-9. Cable restrictions for the plotter are determined by the type of interface installed.

RS-232-C	15.24 m (50 ft)
HP-IB	20 m (65.8 ft) or 2 m (6.6 ft) per device whichever is less

2-10. UNPACKING

WARNING

Do not attempt to set up the HP 7570 plotter alone. This procedure requires two persons. Attempting the procedure alone may lead to serious injury or possible damage to the plotter.

NOTE

The plotter will not operate properly unless it is mounted on the stand.

2-11. Use the following procedure to unpack and set up the HP 7570: (Steps are illustrated in Figure 2-1.)

a. Grasp the loose end of the strapping material and pull to remove the banding (1).

b. Remove the outer carton (2).

c. Remove the packing material and the package of cables and documentation (3).

d. Remove the media sampler and base (4).

e. Remove the legs, hardware, and pens from the packing material (5).

f. Attach the legs to the base with lockwashers and wing nuts (6).

g. Remove the foam packing material (7).

h. Remove the two pen carousels and set them aside. Open the plastic covering around the plotter (8).

i. Invert the stand and place it over the lugs on the bottom of the plotter (9).

CAUTION

Be certain that the hex nuts on the plotter lugs are centered over the holes in the stand when mounting the plotter. Failure to properly center the nuts over the holes will defeat the vibration isolation, necessary for proper operation of the plotter.

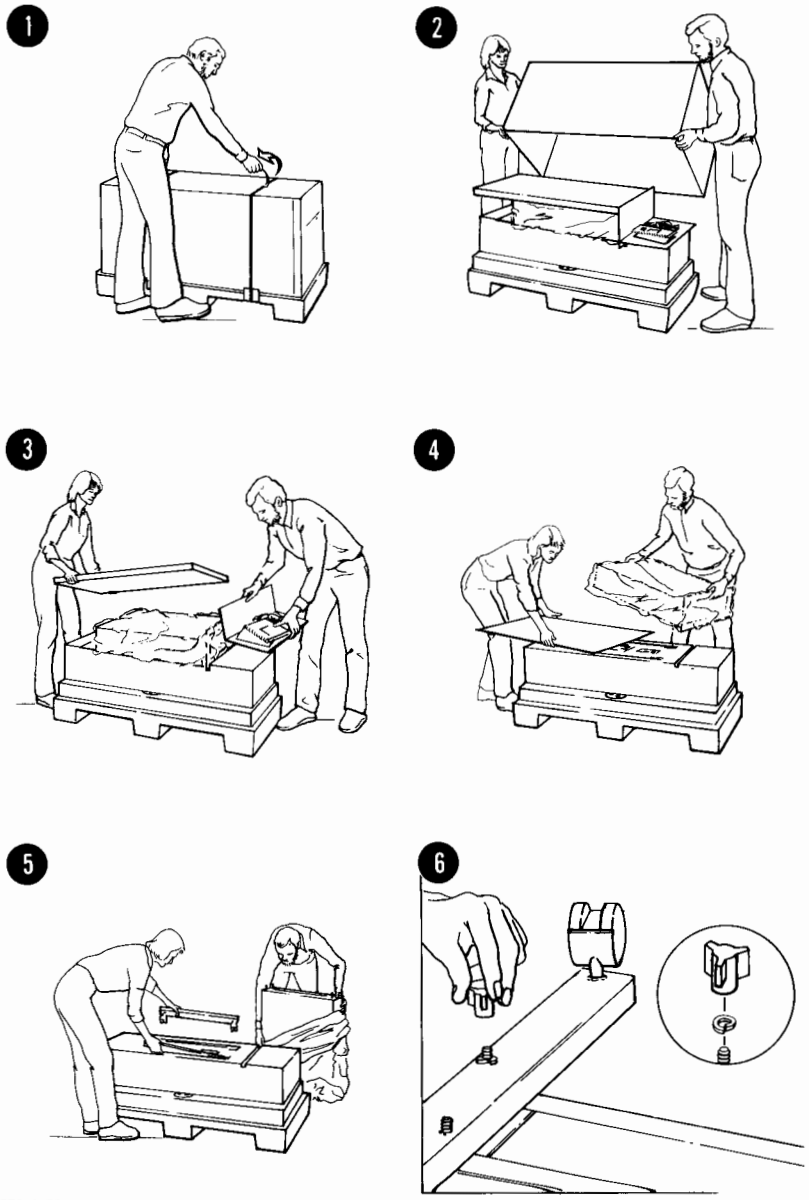

Figure 2-1. Unpacking the HP 7570

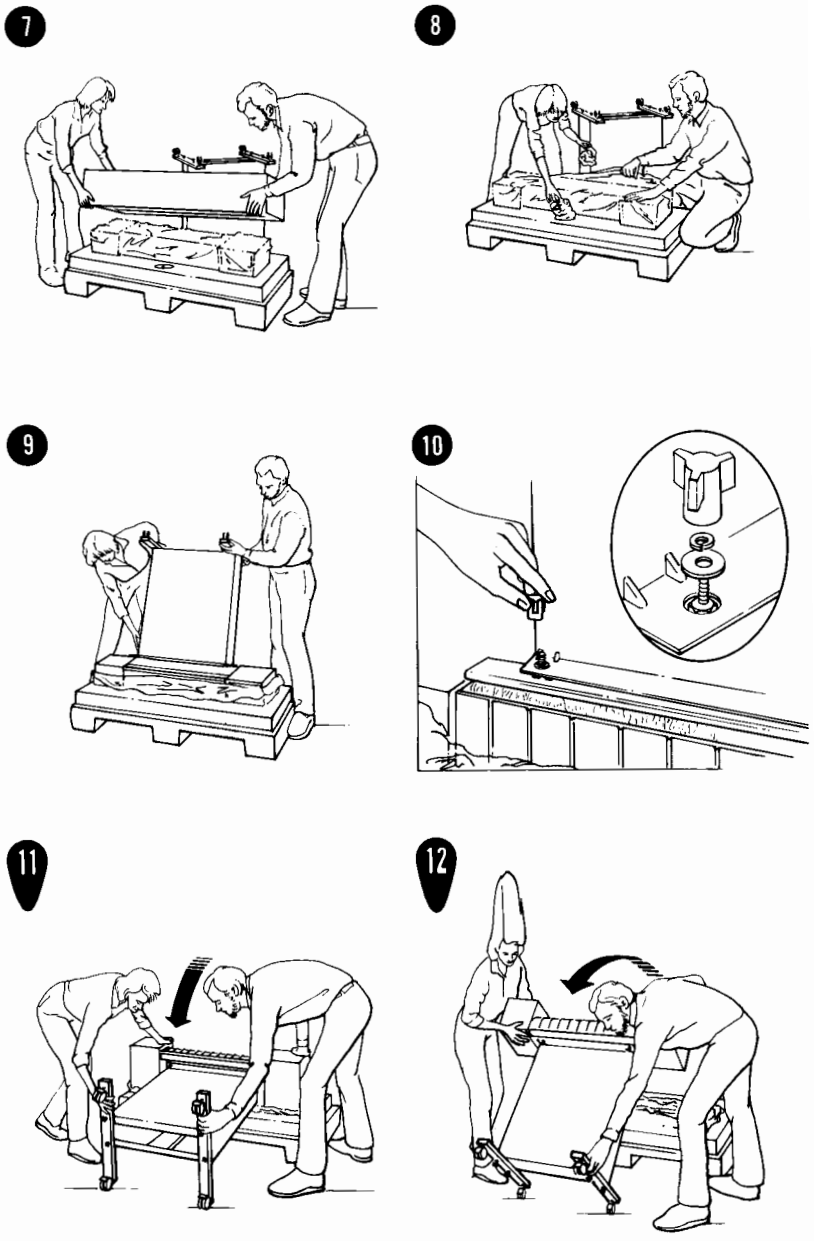

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Figure 2-1. Unpacking the HP 7570 (Continued)

j. Secure the stand to the plotter with a wing nut on each lug (10).

k. Carefully tip the plotter and stand, placing the end of the leg on the floor (11).

l. Get a secure grasp on the plotter and place the unit upright on its wheels (12).

2-12. STORAGE

2-13. If the drafting plotter is to be stored for an extended period of time, the following general procedures should be followed.

a. Remove the power cable and interface cable from the plotter.

b. Remove all pens from the carousel and clean any ink residue from the carousel with a mild soap solution.

c. Clean any ink residue or stains from the plotter.

d. Cover the plotter to protect it from dust.

2-14. INSTALLATION

2-15. LINE VOLTAGE AND FUSING

CAUTION

To prevent damage to the plotter, make sure the line voltage and fuse selection is correct before connecting line power.

WARNING

The line power cord and power outlet must have a protective earth (ground) terminal. Serious shock hazard leading to injury or death may result if the plotter is not properly grounded.

2-16. The HP 7570 primary power circuit can be configured to operate from any one of the following power sources at a line

frequency of 50 to 60 Hz, single phase. Maximum power consumption is:

100 Vac ±10%, 0.85 A
120 Vac ±10%, 0.7 A
220 Vac ±10%, 0.4 A
240 Vac ±10%, 0.35 A

2-17. The selected line voltage rating is visible through the small opening in the ac power receptacle cover.

CAUTION

Applying a line voltage of 220V or 240V to the plotter while the line voltage selection is set for 100V or 120V operation may damage the plotter circuits.

2-18. LINE VOLTAGE SELECTION. The line voltage selection may be changed to conform to the line voltage available in a particular area. Use the following procedure.

a. Set the plotter LINE switch to OFF (0) and disconnect the line cord from the plotter.

b. Line voltage selection is determined by the plastic insert in the ac power receptacle.

c. Use a small screwdriver to snap open the lid of the power receptacle housing. See Figure 2-2 Detail a.

d. Remove the ac line fuse holder and fuse from the housing. Note the orientation of the clip before removal. Figure 2-2 Detail b.

e. Remove the voltage selector block from the housing. Figure 2-2 Detail c.

f. 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. Figure 2-2 Detail d.

g. Rotate the block until the desired voltage range is directly at the front of the selector block.

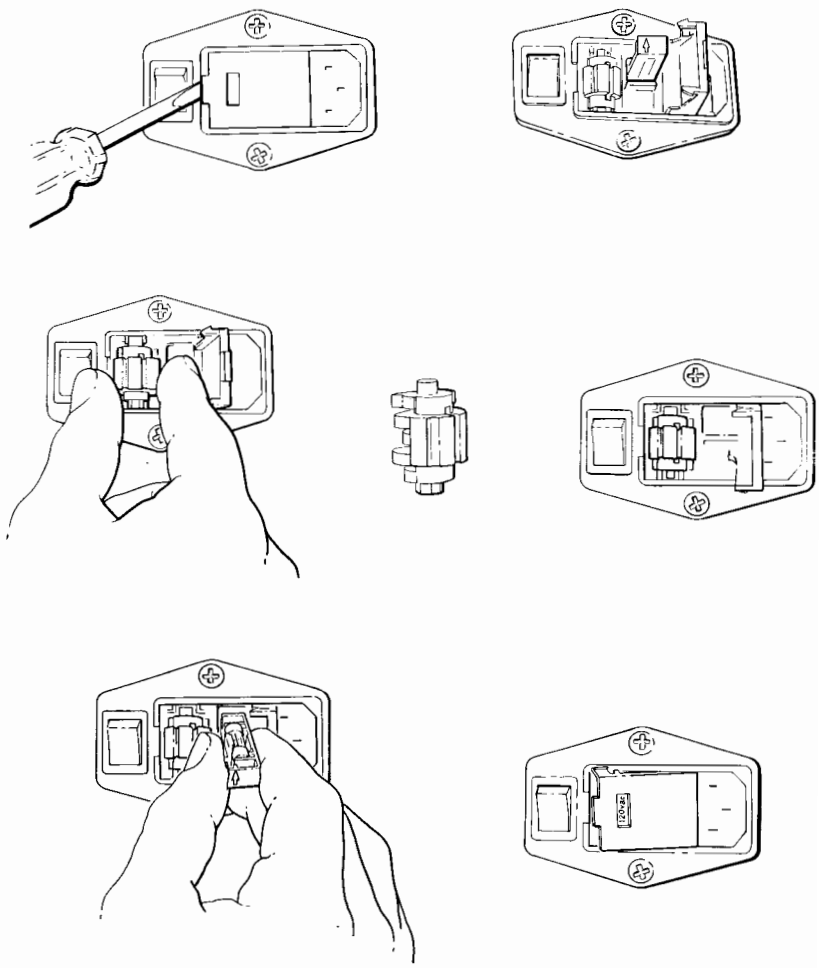

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Figure 2-2. Line Voltage Selection

h. Insert the block into the ac power receptacle, assuring that the block does not become turned during insertion. Figure 2-2 Detail e.

i. Remove the ac line fuse from the fuse holder clip.

j. Install a fuse with the the correct amperage and voltage rating for the selected operating voltage. Figure 2-2 Detail f.

k. Insert the clip and fuse into the ac power receptacle. Do not force the clip. If properly aligned the clip will go in easily.

l. Partially close the receptacle cover. Assure that the desired voltage rating is visible through the small opening in the cover. Figure 2-2 Detail g.

m. If correct, snap the cover tightly closed.

n. Install the correct ac line cord set for the selected voltage range.

CAUTION

Make sure the line fuse is correct according to Table 2-1.

2-19. FUSE SELECTION. Assure that the correct ac line fuse is installed for the voltage range which has been selected. Refer to Table 2-1 for fuse ratings and part numbers.

Table 2-1. AC Line Fuse Selection

LINE VOLTAGE	FUSE RATING	HP PART NUMBER
100/120V 220/240V	1AT 250V 0.5AT 250V	2110-0457 2110-0458

2-20. GROUNDING REQUIREMENTS

WARNING

The line power cord and power outlet must have a protective earth (ground) terminal. Serious shock hazard leading to injury or death may result if the plotter is not properly grounded.

2-21. 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. To preserve this protection feature, do not operate the plotter from a power outlet which has no grounded connection.

2-22. USER INFORMATION/OPERATION

2-23. PEN LOADING

2-24. Two pen carousels are available for use with the HP 7570. They are designed for either fiber tip or drafting pens, but differ in the type of rubber capping boot. Since the plotter cannot distinguish between the two types of carousel , either type of pen may be stored in the carousel without damage. However the pens will not be tightly capped if in the incorrect carousel and will dry out quickly. Each carousel is capable of holding and automatically capping up to eight pens. A selected pen will be automatically returned to the carousel and capped if it has been left in the pen holder for a period of time. This feature may be disabled by program control.

2-25. Pens are loaded 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 metal disc at the top of the carousel.

b. Locate pen position "1" on the carousel.

c. Select the pen to be loaded in position "1" and remove the storage cap.

d. Press down on the pen capper arm and insert the pen. See Figure 2-3.

e. Repeat the procedure for each of desired positions on the carousel.

2-26. The carousel is loaded into the plotter as follows:

a. Lower the carousel into the opening in the left-hand chassis.

b. Manually rotate the carousel until in fully seats on the alignment lugs on the crousel turntable.

c. When power is applied to the plotter, the pen holder will move to the left and the carousel will rotate to locate pen 1.

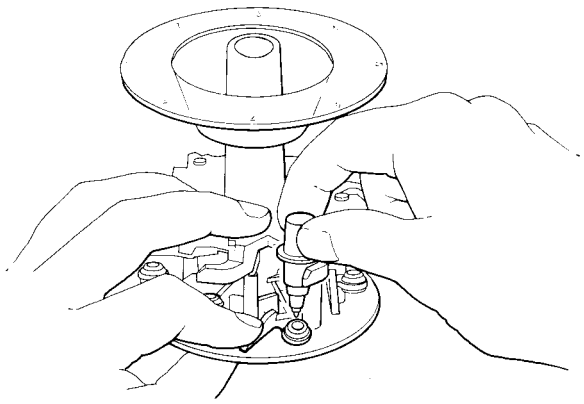


Figure 2-3. Loading Pens

2-27. PAPER LOADING

2-28. The HP 7570 is capable of drawing on either paper, mylar film, or on vellum. The media size may be either ISO A2 or A1, or ANSI C or D.

2-29. To load paper into the plotter proceed as follows:

a. Raise the pinch wheels with the paper load lever located at the left side of the plotting area. See Figure 2-4 detail A.

b. Insert the media under the pinch wheels and align it with the left-hand paper guide. See Figure 2-4 detail B.

c. Set the right-hand moveable pinch wheel to the proper location for the media to be loaded. See Figure 2-4 Detail C.

d. Lower the pinch wheels by use of the paper load lever.

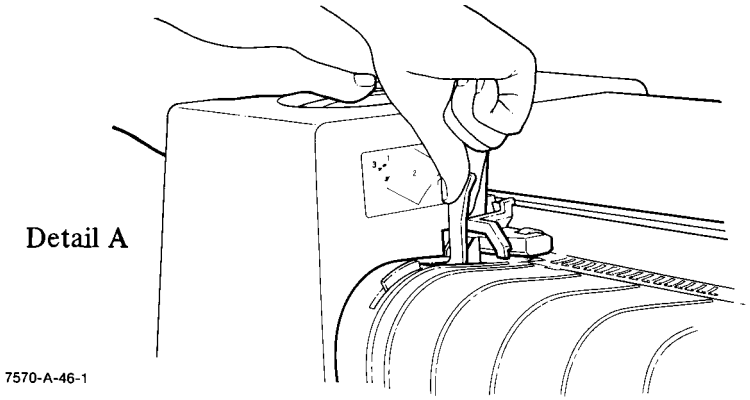
e. Assure that the interface cable and ac line cord are properly connected.

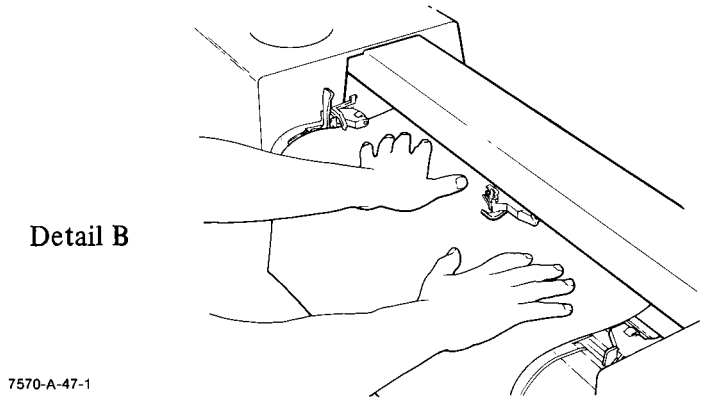
f. Set the ac line switch to the ON (I) position.

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

2-30. FRONT PANEL CONTROLS

2-31. The HP 7570 front panel consists of 22 pushbutton switches and 5 light emitting diodes. The front panel is illustrated in Figure 2-5.





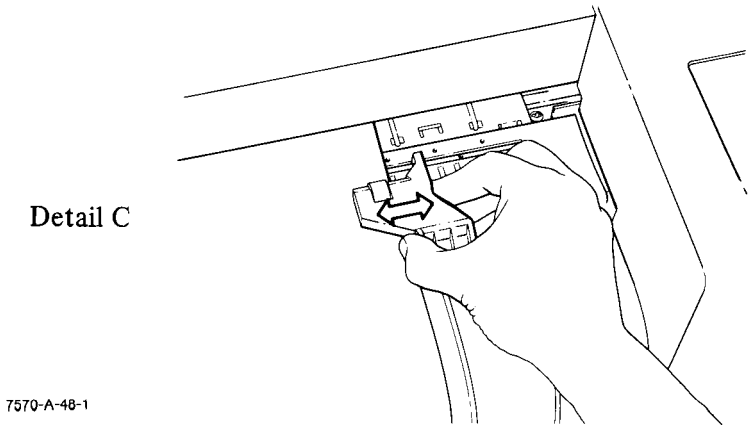


Figure 2-4. Loading Paper

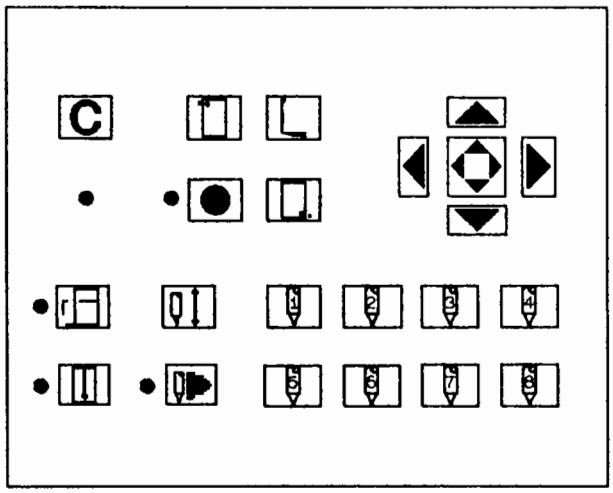


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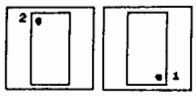
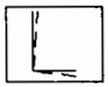
Figure 2-5. HP 7570 Front Panel

2-32. The function of the front panel controls is as follows:

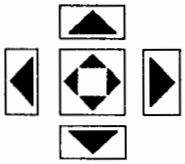
a. Clear — Pressing the CLEAR button clears the HP-GL buffer, cancels any pending output from the plotter and resets the parser. When pressed with the ENTER button a "RESET" function is performed. The plotter is set to a "power on" condition. This is equivalent to the HP-GL "IN" command.



b. P1/P2 — Pressing P1 or P2 causes the pen to be raised and moved to the current coordinates of the P1 or P2 point. At power-up the default location of P1 is as shown at the left. In all cases the P2 location is in the corner opposite P1. Pressing either P1 or P2 simultaneously with ENTER establishes the current pen location as the new location for that point.



c. Axis Align — The function of Axis Align is to allow 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.



d. Cursors and Fast — These five buttons are used to move the pen within the plotting area as follows:

1. Pressing any cursor pushbutton moves the pen in the indicated direction.

2. Pressing adjacent pushbuttons moves the pen at a 45 degree diagonal between the two directions.

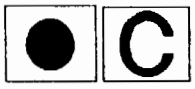
3. When Fast is pressed in conjunction with any of the cursor buttons, the pen moves approximately four times faster.

4. Pressing Fast by itself suspends plotting as long as the button is held down.

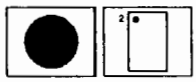
NOTE

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.

e. 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 pushbutton must be pressed before the appropriate function button is pressed.

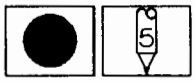


f. Enter + Clear — Resets the plotter. This is equivalent to an "IN" command.

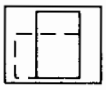


g. Enter + P1/P2 or Axis Align — Defines the current pen location as the new P1, P2 or Axis Align scaling point. Changing the position of P1 also changes the positions of P2 and AA so that the vector from P1 to P2 and to AA remain the same.

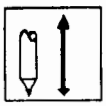
h. Enter + Axis Align has the restriction that the magnitude of the angle between the default X axis and the new X axis be less than 6 degrees. If a greater angle is attempted, the input will not be accepted, and the Enter LED will continue to blink.



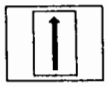
i. Enter + Pen# — Stores the pen currently held in the location specified by the number. If that location is not available the pen will be stored in the next lowest numbered empty location. Enter (digitizing) — When the plotter receives a "DP" command the Enter LED will blink. This indicates that the digitizing mode has been initiated. When Enter is pressed the actual X- and Y-coordinates and the pen status will be stored in the plotter output buffer. The data are transmitted to the computer when the OD command is received. Refer to the programming manual for complete details on digitizing.



j. Rotate — The Rotate pushbutton 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.

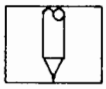


k. Pen Up/Down — This pushbutton toggles the current position of the pen holder. This pushbutton will override program control of the pen holder.

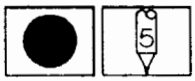


l. View — When the VIEW pushbutton is pressed, the current vector is completed, plotting is suspended, and the plotting media is moved forward to allowing the operator to view the plot. When pressed again plotting will be resumed from the point where suspended.

m. Pen Speed — This pushbutton is used with the Pen Select pushbuttons to set the plotting speed. To set the speed, press the Pen Speed pushbutton. This will cause the LED at the left of the button to flash. Press one of the eight Pen Select pushbuttons. The plotting speed, in cm/s, will be 5 times the number on the Pen Select pushbutton. The Pen Speed LED will be OFF after the Pen select button is pressed. The default pen speed is 40 cm/s. The speed can be selected from 5 cm/s to 40 cm/s in increments of 5.



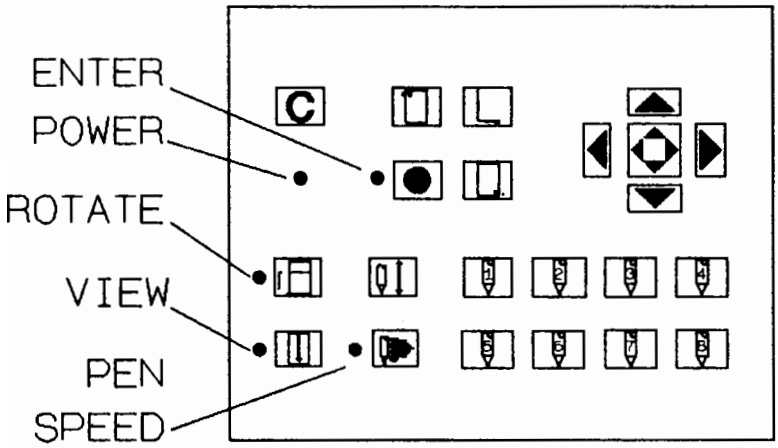
n. Pen Select (1-8) — Pressing any Pen Select button causes the plotter to pick the corresponding numbered pen from the carousel, if that pen is loaded. The plotter stores any pen currently held in the pen holder before it picks the the newly selected pen. The old pen is stored in the carousel in the position from which it came, or into the next lowest- numbered empty position if its original position is not available. After the pen is picked, the pen holder returns to its previous position on the platen. If a plot is in progress when a PEN pushbutton is pressed, plotting is suspended until the new pen is selected and the pen holder returns to its previous location. The first pen pick after power is applied to the plotter will cause the carousel to perform an initialization operation. It will rotate to the PEN 1 position and then to the selected pen. The Pen Select pushbuttons are also used with the Pen Speed pushbutton to set the plotting speed.



o. Pressing Enter with any Pen Select button causes the plotter to store the present pen in that numbered position in the carousel, if that position is available. If the selected position is not available the pen will be stored in the next lowest-numbered empty position. The pen holder will then return to its previous position on the platen.

2-33. FRONT PANEL INDICATORS

2-34. There are five LEDS on the front panel to indicate various conditions to the operator. See Figure 2-6 for the indicator locations. The indicators are:



7570-A-84-1

Figure 2-6. Front Panel LEDs

a. Line LED — The Line LED is controlled directly by the power supply, and indicates that the LINE switch is in the ON (I) position.

b. Enter LED — A multi-function indicator. May be ON, BLINKING, or OFF.

1. On — Indicates that the plotter is in the digitize state. The plotter has received a "DP" command. When the Enter button is pressed the actual X- Y- coordinates and the pen UP/DOWN status will be stored for transmission to the controller.

2. Blinking — When the Enter LED is blinking, it indicates that the Enter pushbutton has been pressed. This is the first step in a two button sequence. These sequences are explained above with the Enter pushbutton. If the Enter pushbutton is pressed a second time, the LED will turn OFF and the sequence canceled.

c. 90 Degree Rotate LED — When ON this LED indicates that the plot axes have been rotated 90 degrees, either by front panel pushbutton control or by command from the controller.

d. View LED — A dual purpose indicator. When on steady it indicates that the plotter is in the View state. When flashing, the LED indicates that an I/O error or an unmasked HP-GL error has occurred. Error signaling cannot occur when the plotter is in the View state.

e. Low Speed LED — When ON this LED indicates that Low Speed has been selected by the front panel pushbutton control. Low Speed, 8 cm/s or less, is selected for use with the liquid ink drafting pens.

2-35. PREVENTIVE MAINTENANCE

2-36. To maintain the plotter in the best operating condition it is recommended that the plotter be kept free of dust accumulation, ink and other contamination. The cleaning intervals will be determined by the local conditions where the plotter is operated and by the types of plotter supplies used. While accumulations of dust or ink on the plotter will probably not degrade the performance, dust or lint on the grit wheels will affect plotter operation. A build-up of lint or paper fibers on the grit wheels will allow the media to slip and to degrade the accuracy of the plot. As with any precision electronics equipment proper, maintenance will help to prolong the product life and create quality output.

2-37. CLEANING

WARNING

To prevent possible electrical shock or physical injury from moving mechanical parts, always turn the plotter OFF (O) and remove the ac line cord and the interface cable before performing any maintenance procedures.

Never allow water or other cleaning materials to come in contact will the electrical parts of the plotter.

2-38. USER PROCEDURES

2-39. The following cleaning procedures may be performed by the plotter user. Follow normal safety precautions, and prevent water or other cleaning materials from entering the electronics enclosure of the plotter. If in doubt about any procedure, contact your local Hewlett-Packard sales representative or service personnel.

2-40. Cleaning of the exterior surfaces of the plotter may be done with a soft clean cloth, dampened with warm water. A bit of mild soap may be used if necessary. Wipe the surface dry after cleaning.

2-41. The plotter grit wheels should be cleaned by brushing the surface with a clean dry brush. The brush from the service kit or a tooth brush may be used to remove the paper fibers from the grit wheels.

2-42. 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. Use caution not to tear the soft rubber pen cappers. Cleaning the capping mechanism will prevent ink colors from transferring when pens are changed.

2-43. SERVICE PERSONNEL PROCEDURES

CAUTION

The following cleaning procedures should be performed only by trained service personnel.

2-44. Accumulations of dust or contamination on the interior of the electronics enclosure may be removed by opening the enclosure and blowing the dust away with compressed air, or vacuumed away with a small hand-held vacuum.

2-45. Any accumulation of contamination on the moving parts of the plotter may be removed by wiping with a soft dry cloth.

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3-1. SWITCH SETTINGS

3-2. For the HP 7570 to properly communicate with the controller, rear panel switches must be set according to the interface option installed. Refer to the appropriate interface information.

3-3. RS-232-C INTERFACE

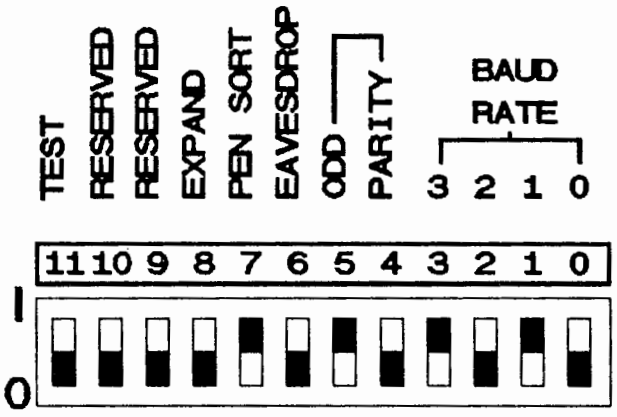
3-4. The switches 0 through 5 must be set to match the data transmission characteristics of the controller. Refer to the controller documentation or contact operations personnel for the system. Switch 6 is set for the type of installation. This may be "End Line", in which case the switch is set to 0, or between a mainframe and terminal "Eavesdrop", in which case the switch is set to I. Switches 7 and 8 may be set for particular operating modes. Refer to the Operating and Programming manual for details. Switch 11 is used to set the plotter to a test mode. Refer to Section V for complete test information. The factory settings for the switches are illustrated in Figure 3-1.

3-5. HP-IB INTERFACE

3-6. With the alternate interface module installed, the HP-IB address switch must be set. The switches 0 through 4 may be set to any of 32 possible combinations. Switch 5 must be in the OFF (down) position. The switches 7 through 10 on the RS-232-C interface switch panel are still active when using the HP-IB interface. See Figure 3-2.

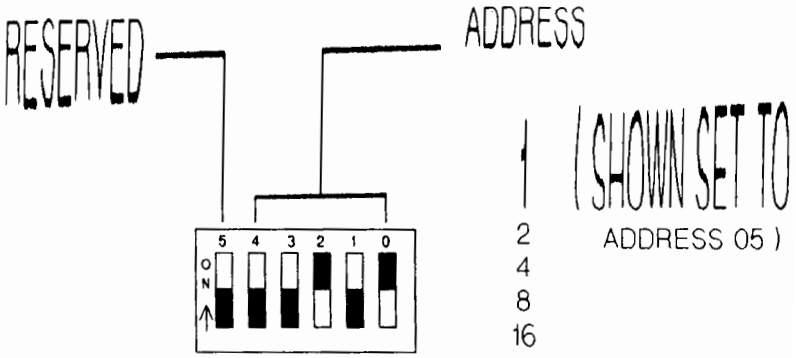
3-7. INTERCONNECTION

3-8. The interface cable required to connect the plotter to the controller is determined by the type of interface installed in the plotter and the type of controller being used. The standard interface is the RS-232-C/CCITT V.24 serial interface with an optional HP-IB (IEEE-488) interface. Refer to Table 3-1 for available cables.



7570-A-85-1

Figure 3-1. Rear Panel Switches, RS-232-C



7570-A-86-1

Figure 3-2. Rear Panel Switches, HP-IB (IEEE-488)

Table 3-1. Interface Cables

INTERFACE	PART NUMBER	DESCRIPTION
RS-232-C	HP 17355M	Male to male - DCE - 3 metres - straight through
	HP 17355D	Male to female - DCE - 5 metres - straight through
	HP 17255D	Male to female - DTE - 1 metre - modem eliminator type
	HP 17255M/ HP 13242G	Male to male - DTE - 5 metres - modem eliminator type
	HP 17455A	Male to M/F - Eavesdrop 1 metre - Y cable
	HP 24542G	Male to female - DTE - 3 metres - 25-pin to 9-pin
HP-IB	HP 10833A/B/C	HP-IB IEEE-488 A is 1 metre, B is 2 metres, C is 3 metres

CAUTION

Turn the plotter line switch OFF (O) and remove the ac line cord before connecting the plotter interface cable.

3-9. To connect the interface cable, proceed as follows:

a. Turn OFF (O) the plotter and remove the ac line cord.

b. Carefully align the cable connector with the connector on the plotter, and insert the connector.

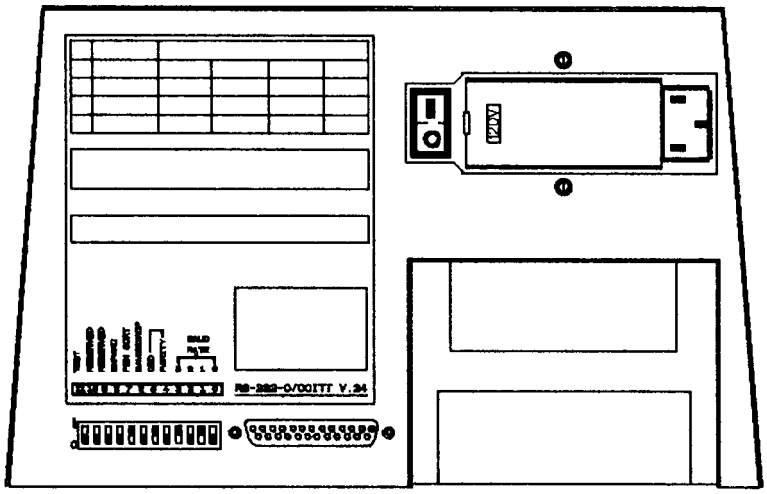
c. Tighten the locking screws to secure the connector.

d. Connect the ac line cord and switch the plotter ON (I).

3-10. The rear panel switches and connectors on the HP 7570 are configured for the RS-232-C (CCITT V.24) Serial Interface. An HP-IB Interface (IEEE-488) is also available for the plotter, and the rear panel features for that interface will also be covered.

3-11. RS-232-C SWITCH SETTINGS

3-12. The following features are found on the plotter rear panel: See Figure 3-3.



7570-A-87-1

Figure 3-3. HP 7570 Rear Panel

a. The RS-232-C/CCITT V.24 compatible, 25 pin, female connector is used to connect the plotter to the host computer.

b. Baud Rate 0-3 — These four switches are used to select the baud rate which corresponds with the data transmission rate. The baud rate is selected by setting switches 0 through 3 to the appropriate binary bit positions defined in Table 3-2.

Table 3-2. Baud Rate Switch Settings

RATE	0	1	2	3	STOP BITS
75	1	0	0	0	2
110	0	1	0	0	2
150	1	1	0	0	1
150	0	0	0	0	2
200	0	0	1	0	1
300	1	0	1	0	1
600	0	1	1	0	1
1200	1	1	1	0	1
2400	0	0	0	1	1
4800	1	0	0	1	1
9600	0	1	0	1	1

c. Parity — When ON this switch determines that bit 7 will be interpreted as a parity bit. When OFF bit 7 is read as data.

d. Odd — If parity is set ON, this switch determines if the checking will be ODD (switch ON) or EVEN (switch OFF).

e. Eavesdrop — This switch selects either DIRECT (end of line) or eavesdrop operation for the plotter.

1. Off position — This setting is used when the plotter is directly connected to a computer in an end line configuration. In this position the plotter is programmed ON at power-up.

2. On position — This setting is used when the plotter is connected between a computer and a terminal in an Eavesdrop configuration. The plotter powers-up in a programmed OFF state. In this state the plotter will pass information between the terminal and computer. After a PLOTTER ON instruction the plotter will respond to all known HP-GL instructions.

NOTE

The plotter ac LINE switch must be ON (I) to have communication between the terminal and computer.

f. Pen Sort — When ON (I) this switch enables the pen sort algorithm which minimizes pen picking by drawing all vectors of a given color, which are in the buffer, before changing pens. This feature may be enabled or disabled programmatically if the switch is OFF (O).

g. Expand — In the ON (I) position a fixed amount is added to the plotting area, enabling the plotter to draw under the pinch wheel positions.

h. Reserved — These two switches are used to select certain internal diagnostic features. For normal operation they must be in the OFF (O) position

i. Test — When set to the ON (I) position the internal diagnostic self-test is selected. When this function is selected, many of the front panel switch functions are changed to select diagnostic routines.

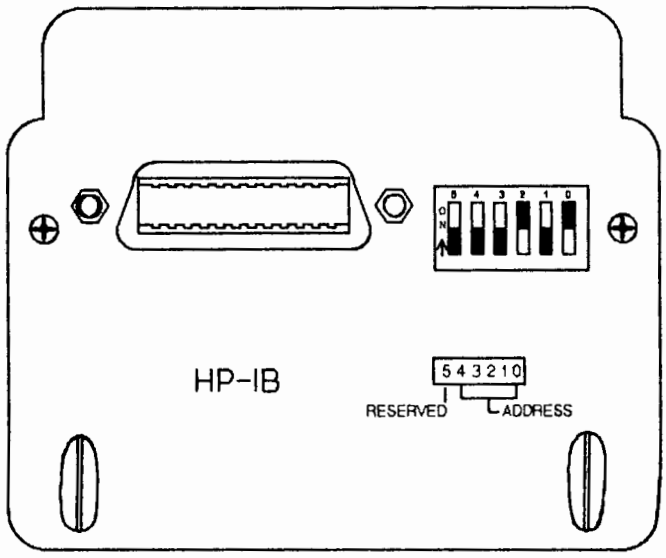
3-13. HP-IB (IEEE-488) REAR PANEL FEATURES

3-14. The following features are found on the HP-IB rear panel: See Figure 3-4.

a. The HP-IB interface uses a 24-pin connector to interconnect the plotter and the host computer.

b. 0-4 — These five switches are used to establish the plotter address. The address is selected by setting each switch to the appropriate binary bit position. The plotter is set to an address of 05 at the factory. This corresponds to a listen character of % and a talk character of E. The plotter is set in a listen-only mode when all five switches are set to I. In this mode the plotter does not have an address, but listens to all data transmitted on the bus. In this mode the plotter cannot be placed in a talk-active state and will not respond to a serial or parallel poll.

c. 5 — This switch is reserved and must remain in the down (OFF) position for normal plotter operation.



7570-A-88-1

Figure 3-4. HP 7570 HP-IB Rear Panel

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SECTION IV

TROUBLESHOOTING

4-1. INTRODUCTION

4-2. This chapter contains the information necessary to efficiently isolate a defect in the HP 7570. Several levels of troubleshooting information is presented to help isolate a problem either to an assembly level or to component level.

WARNING

To avoid personal injury, use extreme caution while performing any of the troubleshooting procedures. Removal of the top cover exposes live circuits.

Connecting the ac line cord with the rear panel removed will expose ac primary wiring. Line voltage is present even when the line switch is OFF. Contact with these hazardous voltages may lead to personal injury or death.

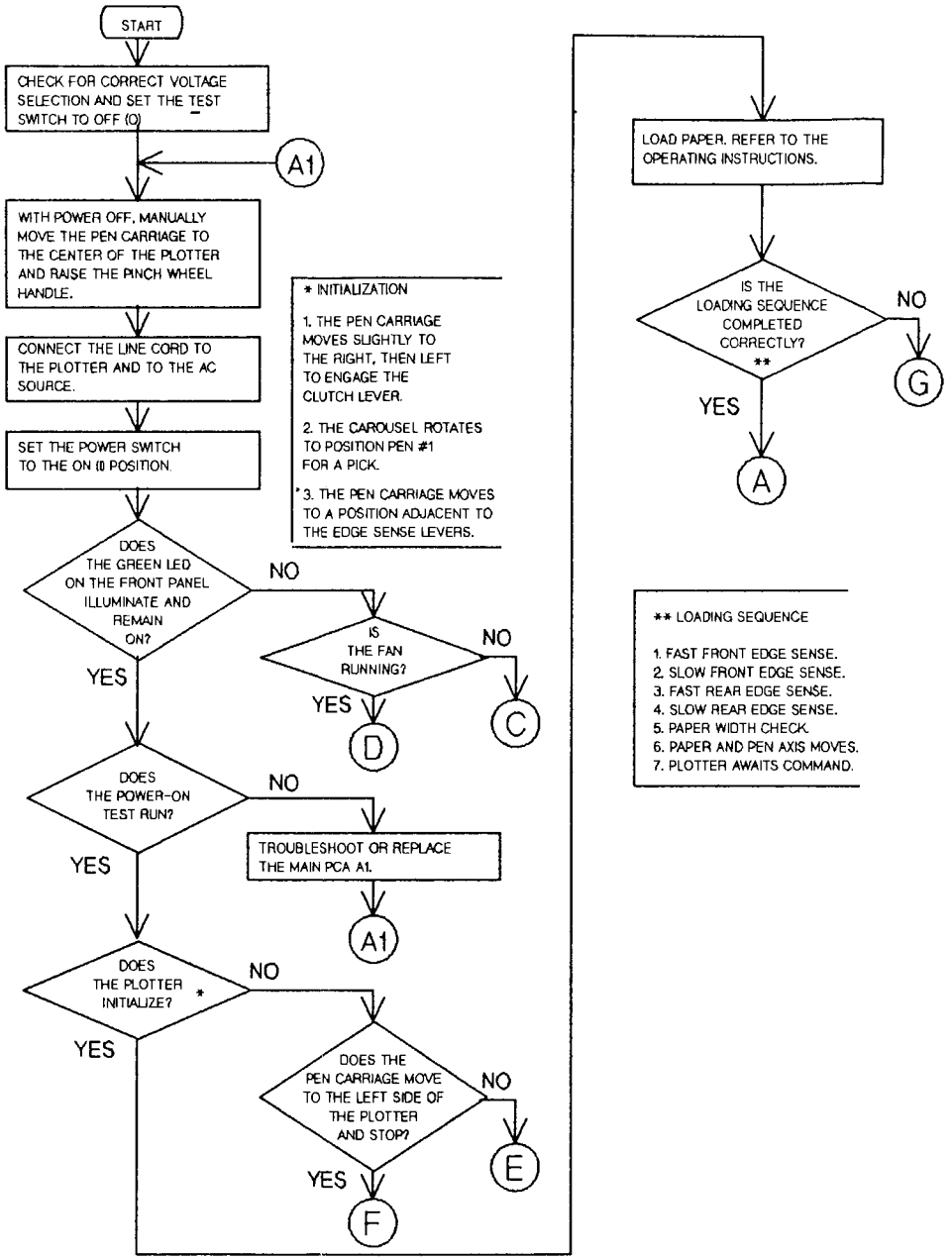
CAUTION

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

Component level repair on the PCA should be performed by qualified service personnel in a bench repair facility. to avoid possible permanent damage to the assembly.

4-3. TROUBLESHOOTING FLOWCHART

4-4. To aid in fault isolation, a troubleshooting flowchart is included here in Figure 4-1. 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.



7570-A-74-1

Figure 4-1. Troubleshooting Flowchart (sheet 1 of 7)

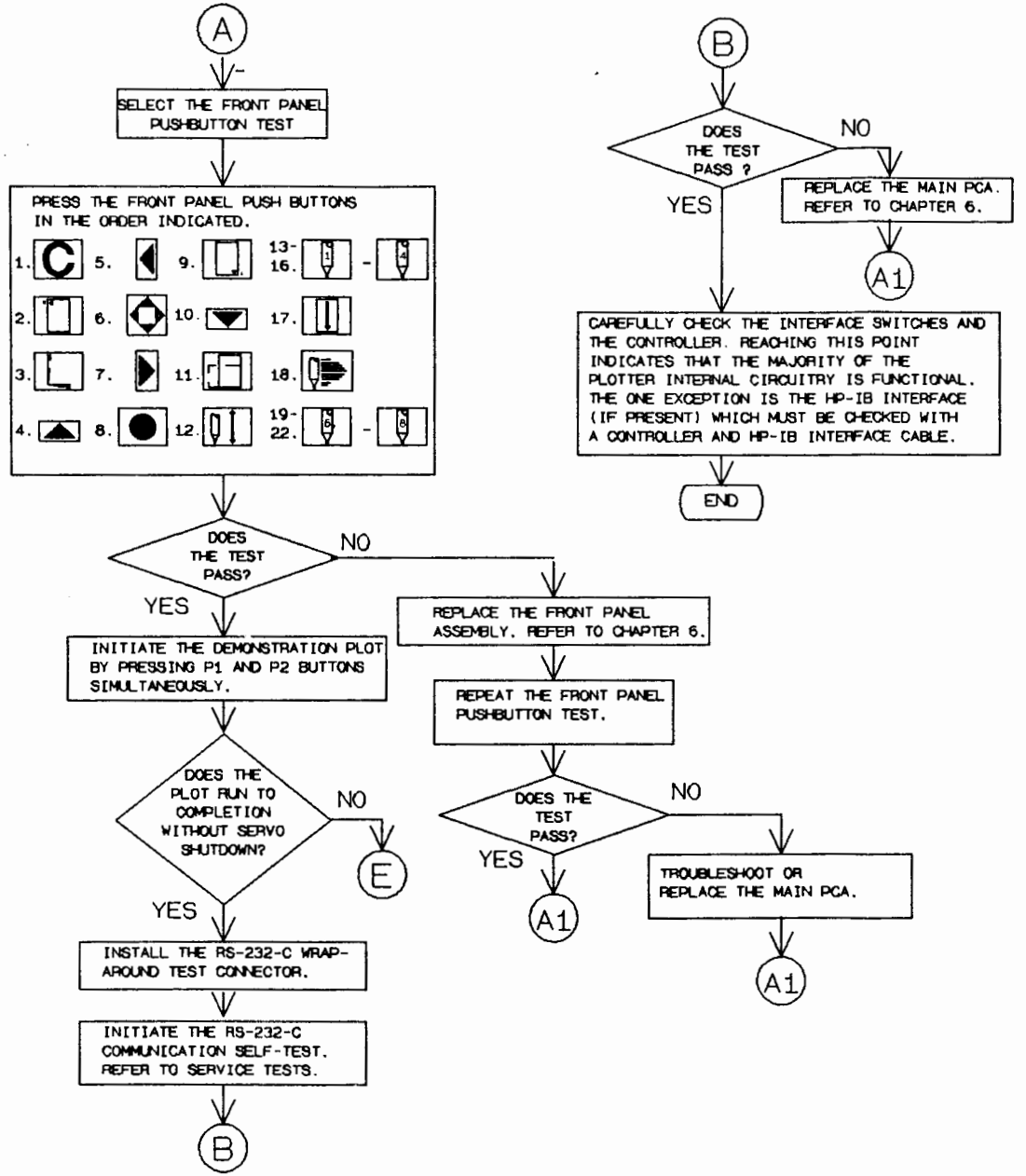


Figure 4-1. Troubleshooting Flowchart (sheet 2 of 7)

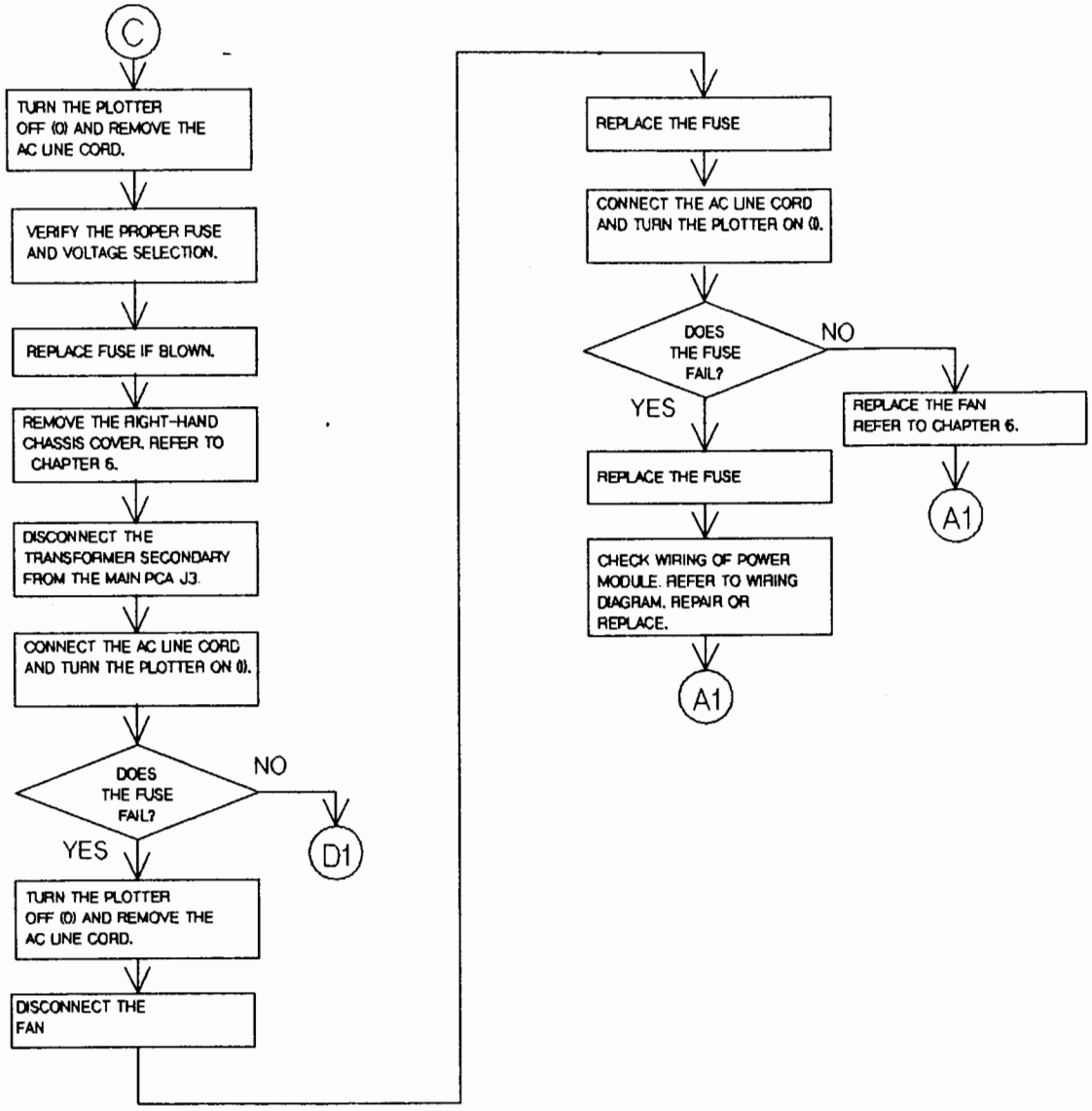


Figure 4-1. Troubleshooting Flowchart (sheet 3 of 7)

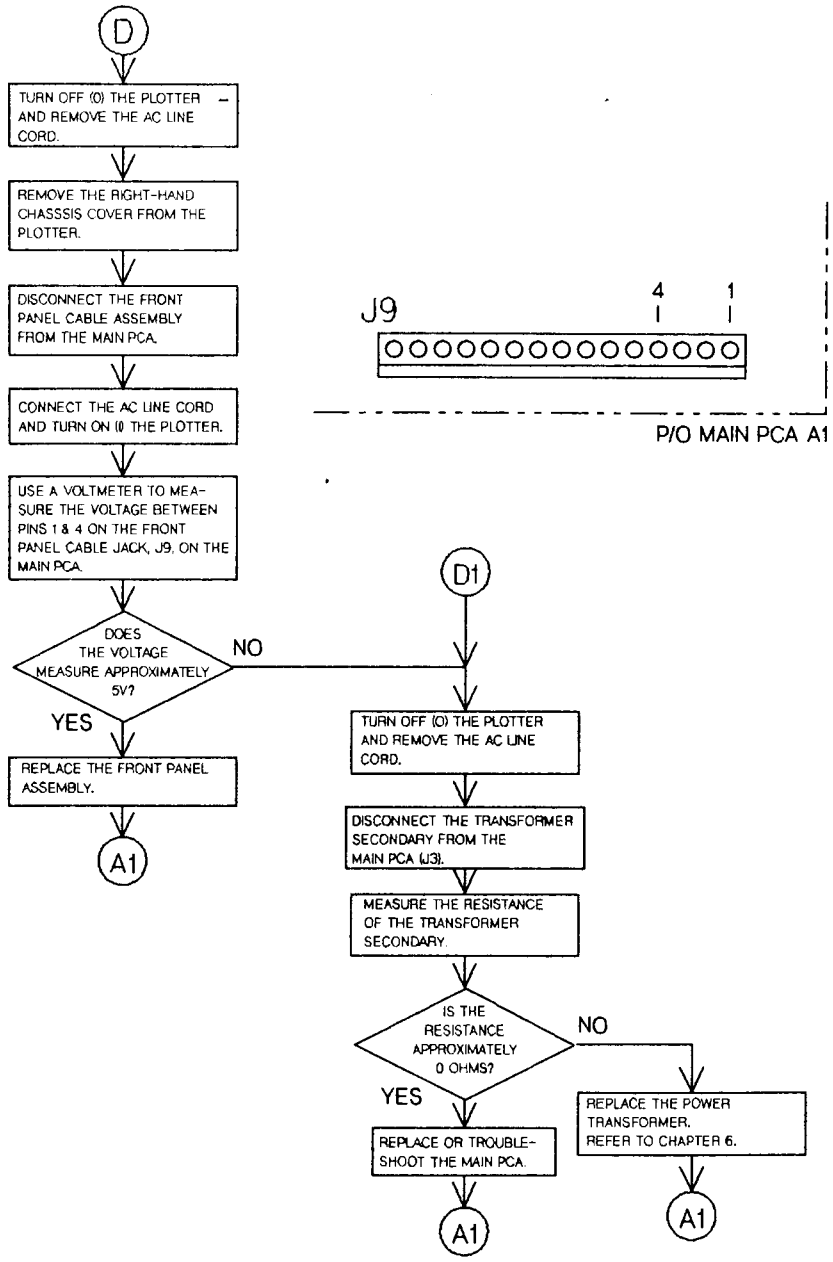


Figure 4-1. Troubleshooting Flowchart (sheet 4 of 7)

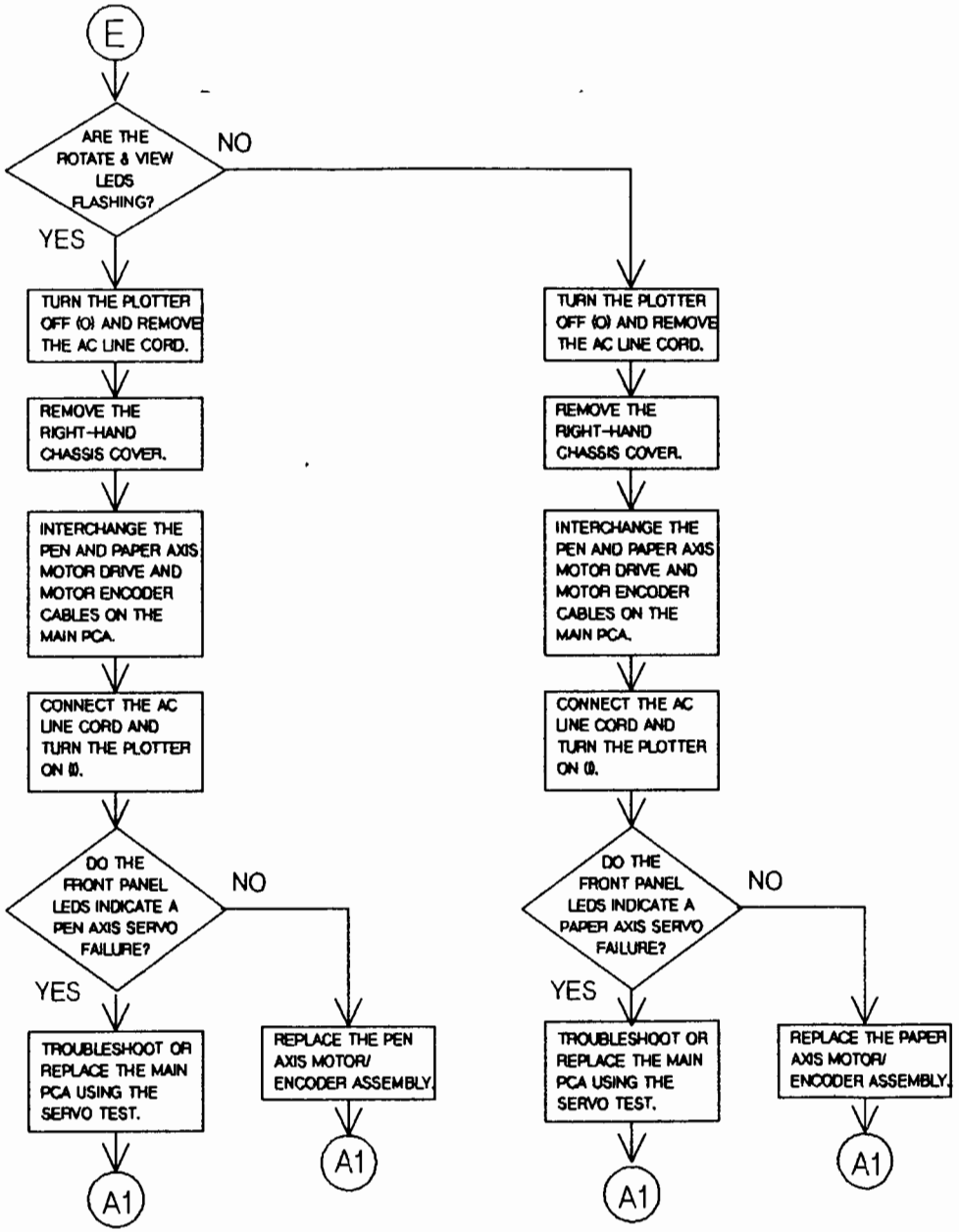


Figure 4-1. Troubleshooting Flowchart (sheet 5 of 7)

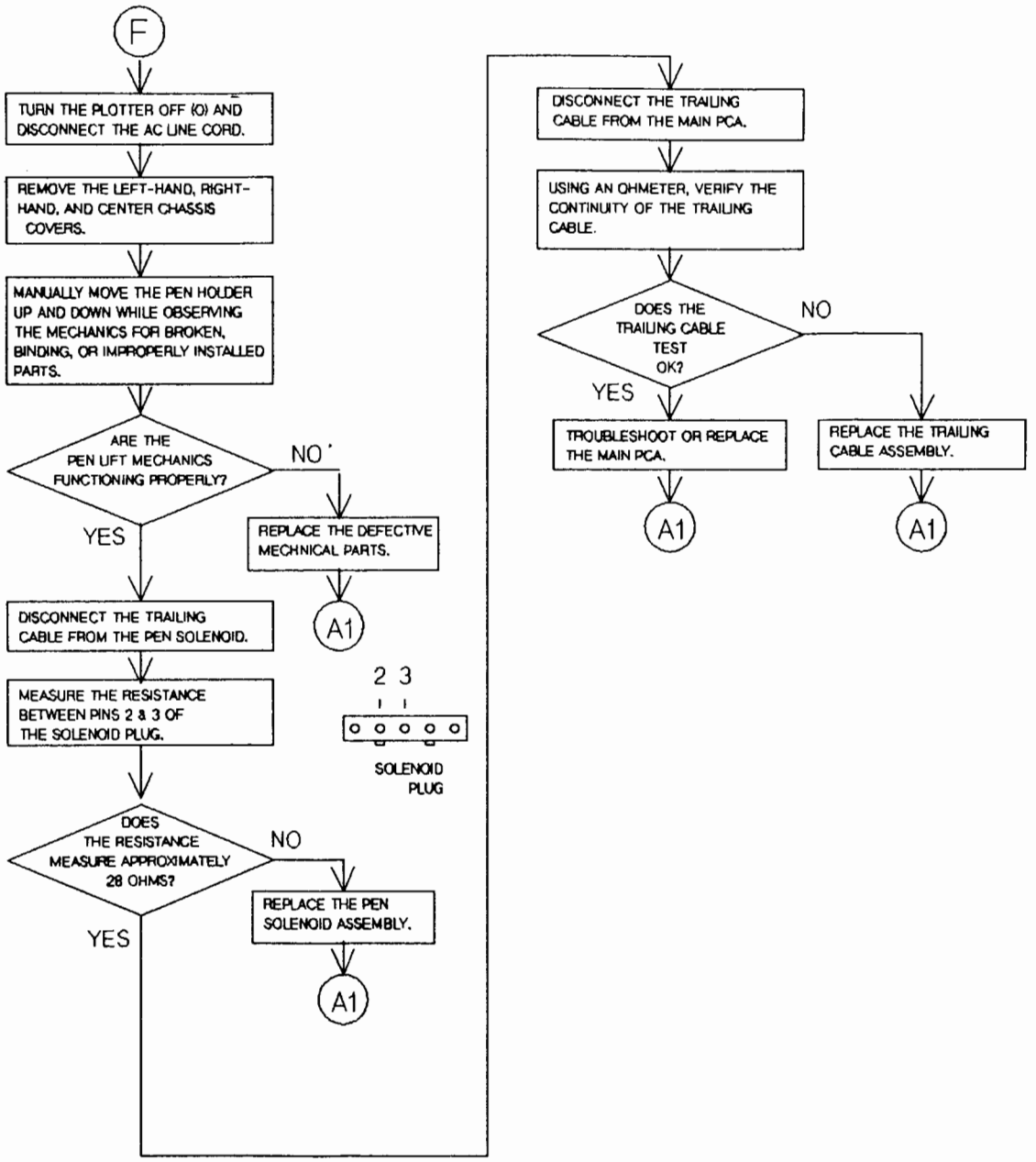


Figure 4-1. Troubleshooting Flowchart (sheet 6 of 7)

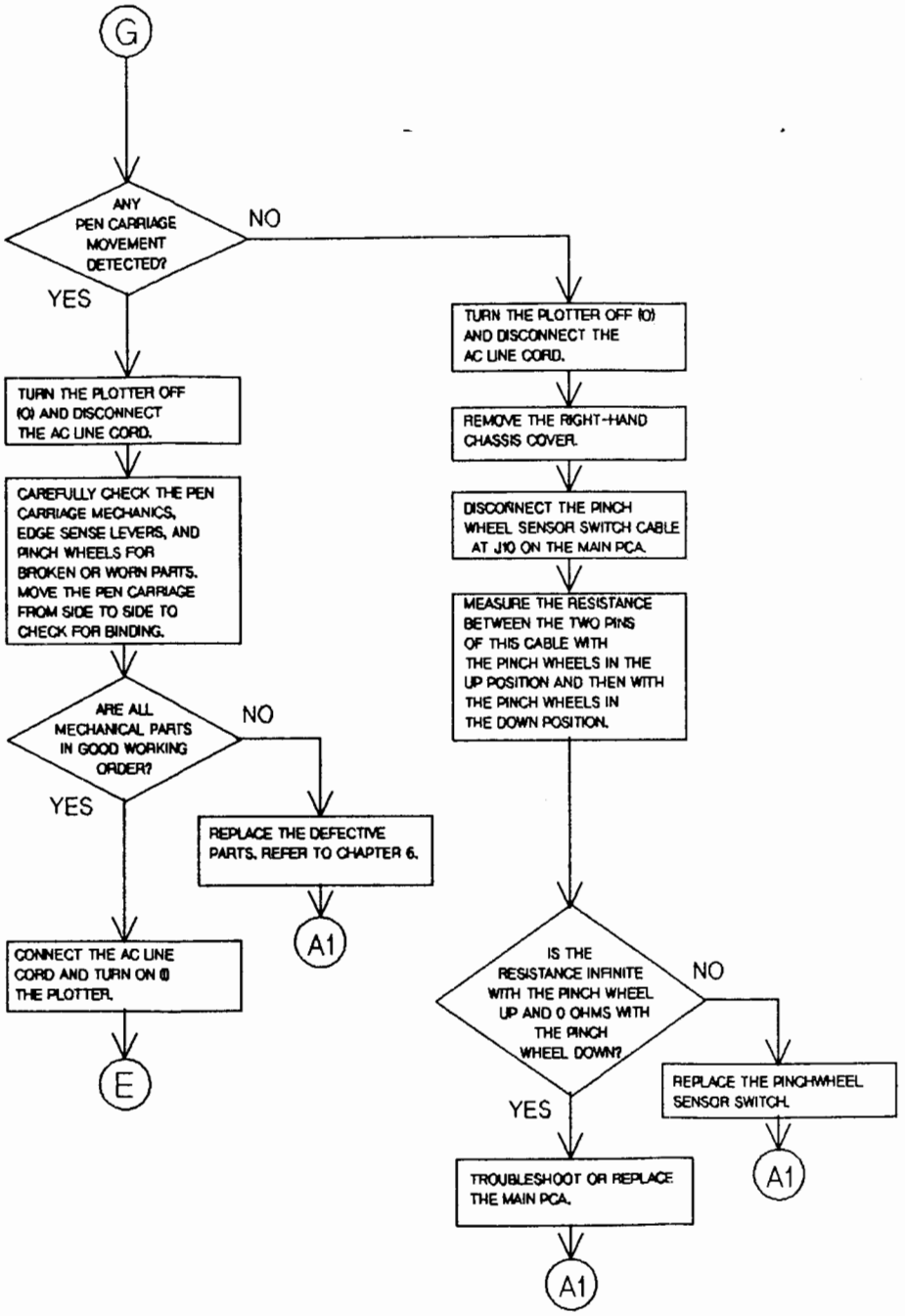


Figure 4-1. Troubleshooting Flowchart (sheet 7 of 7)

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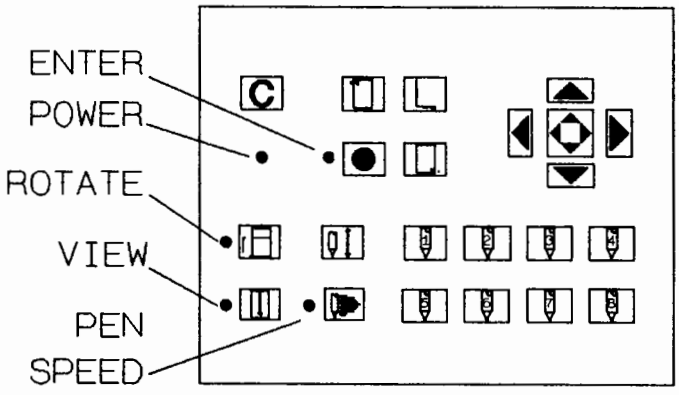
DIAGNOSTICS

5-1. PLOTTER SELF-TEST PROCEDURES

5-2. POWER-ON SELF-TEST

5-3. When ac line voltage to the plotter is turned ON (I) a series of built-in tests are automatically performed to verify 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. See Figure 5-1. Two possible error conditions may be displayed. In the first, the LED failure display will be flashing on and off. This indicates that the test circuitry received bad data from a particular portion of the circuitry. In the second condition, the LED error display will remain on steadily. This indicates no response from some portion of the circuitry. The only exit from an error condition is to turn OFF (O) ac power to the plotter. Diagnostic information is listed with the test steps in Table 5-1.

5-4. During operation of the plotter the two servo systems are continuously being monitored. If an error condition occurs the particular servo will be shut down, and the front panel LEDs will display a flashing error code.



7570-A-84-1

Figure 5-1. Front Panel LEDs

Table 5-1. Power-On Self-Test

STEP	TEST	INDICATION
0.	Power ON, Reset Condition	All LEDs ON (This step will not cause the test to stop.)
1.	Front panel LEDs	LEDs cycle one at a time; VIEW, ROTATE, ENTER, and SPEED
2.	Slave ROM Test	SPEED LED on steadily or flashing, 8 kbyte slave ROM failed
3.	Slave RAM Test	VIEW LED on steadily or flashing, 128 byte slave RAM failed
4.	Support IC Test	VIEW and SPEED LEDs on steadily or flashing, Support IC failed
5.	Master/Slave microprocessor handshake	ENTER LED on steadily, slave microprocessor fails to respond ENTER LED flashing, slave and master microprocessor handshake failed
6.	Master external ROM Test	SPEED and ENTER LEDs on steadily or flashing 8 kbyte external ROM failed or RAM failed
7.	Master internal RAM Test	ENTER and VIEW LEDs on steadily or flashing, 256 byte Master microprocessor RAM failed
8.	Master external RAM Test	ENTER, VIEW and SPEED LEDs on steadily or flashing, 32 kbyte master ROM failed

Table 5-1. Power-On Self-Test (Continued)

STEP	TEST	INDICATION
9.	Option ROM Checksum	ROTATE LED on steadily or flashing, 32 kbyte option ROM failed*
	Passed	All LEDs ON
	Ready to Plot	SPEED LED ON
10.	X-Servo Drive Test	ROTATE and VIEW LEDs flashing, X-Servo failure
11.	Y-Servo Drive Test	ROTATE and ENTER LEDs flashing Y-Servo failure

*If an option module is installed

5-5. DEMONSTRATION PLOT

5-6. The built-in demonstration plot will indicate with a high degree of confidence that the plotter is functioning properly. The plot includes characters and lines for checking line quality and pen picking. To run the test, proceed as follows:

a. Connect the plotter to the ac line and turn the plotter ON (I).

b. Load either ISO A1 (D) or A2 (C) paper into the plotter.

c. Install a loaded carousel in the plotter.

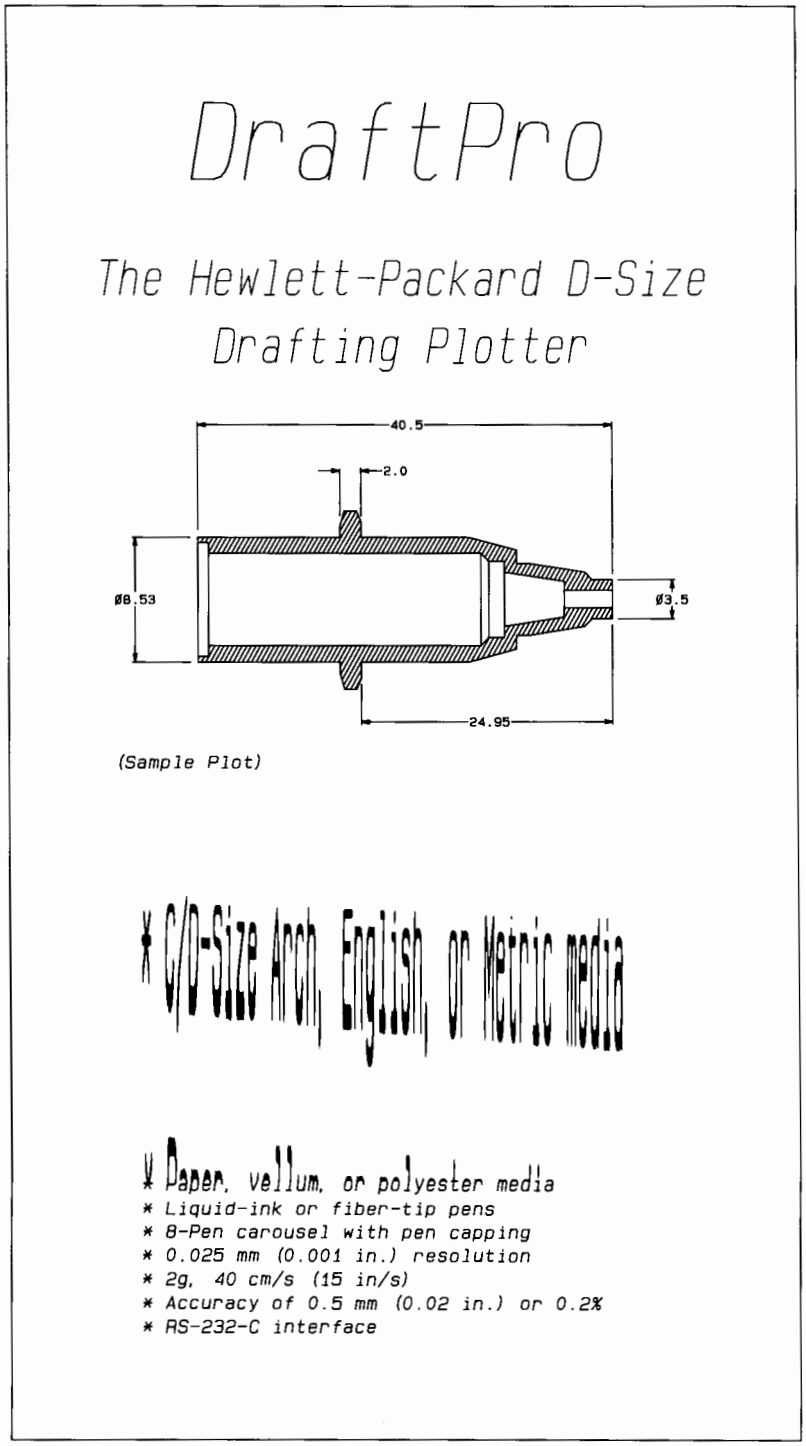
d. Press the P1 and P2 pushbuttons on the plotter front panel simultaneously.

e. When the plot is complete the plotter will move the paper to the view position and remain in the READY state. The demonstration plot is illustrated in Figure 5-2.

5-7. SERVICE TESTS

CAUTION

The following diagnostic tests are intended for use by qualified service trained personnel. Serious damage to the plotter may result if the procedures are not correctly followed.



7570-C-65-1

Figure 5-2. Demonstration Plot

5-8. The following diagnostics are intended to aid in the isolation of defects in the plotter.

a. Confidence Test — This is the demonstration plot with an added feature for checking accuracy. The plot will be repeated continuously until the plotter is turned off.

b. I/O Loopback Test — Checks the receivers and transmitters in the RS-232-C interface.

c. Front Panel Pushbutton Test — Operator interactive test to check the front panel pushbuttons for opens, shorts, or excessive switch bounce.

d. Servo Test — To evaluate servo circuit performance with an oscilloscope.

e. Repeatability Test — This test measures the ability of the plotter to return the pen to a specified point. The test is not built in, but must be run on the HP-85 Personal Computer or equivalent controller.

5-9. CONFIDENCE TEST

5-10. To perform the confidence test, proceed as follows:

a. Turn OFF (O) the plotter.

b. Load a sheet of ISO A1 (ANSI D) paper.

c. Install a loaded pen carousel.

d. Set the rear panel TEST switch (11) to the I (on) position. See Figure 5-3.

e. Turn ON (I) the plotter.

f. The plotter will continuously run the confidence plot until the plotter is turned OFF (O).

g. Turn the plotter OFF (O), and reset the TEST switch (11) to the O (off) position.

h. Accuracy may be checked by measuring the length of the test line, see Figure 5-4. Confidence Test Plot, with a metric scale. The length must be:

Paper-axis 750 mm ±1.5 mm
Pen-axis 450 mm ±0.9 mm

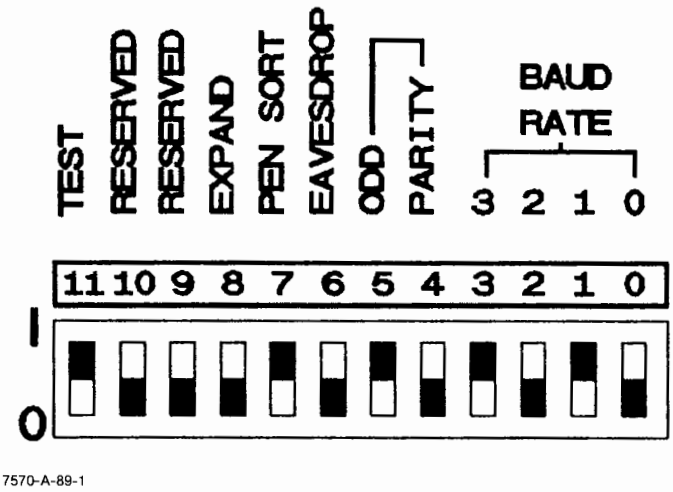
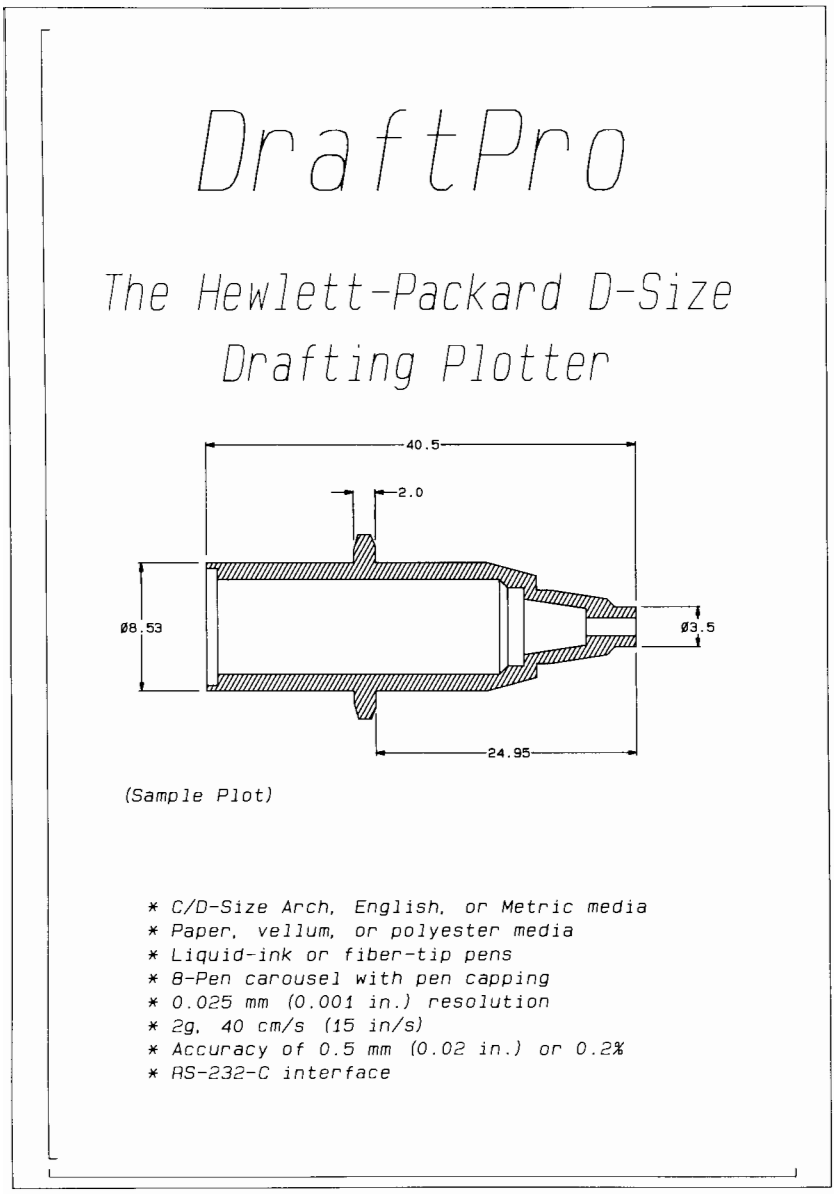


Figure 5-3. Test Switches



7570-A-67-1

Figure 5-4. Confidence Test Plot

5-11. I/O LOOPBACK TEST

5-12. To perform the I/O Loopback test, proceed as follows:

a. Turn the plotter OFF (O).

b. Disconnect the RS-232-C interface cable.

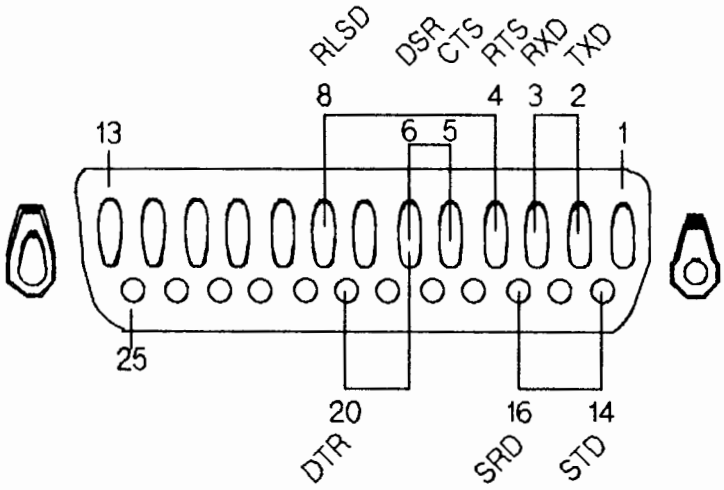
c. Connect the I/O loopback connector [P/N 07440-60302] to the RS-232-C interface at the rear of the plotter. If no loopback connector is available, specific contacts on the RS-232-C connector may be shorted as shown in Figure 5-5.

d. Set the rear panel TEST switch (11) and the RESERVED switch (10) to the I (on) position. See Figure 5-6.

e. Turn ON (I) the plotter.

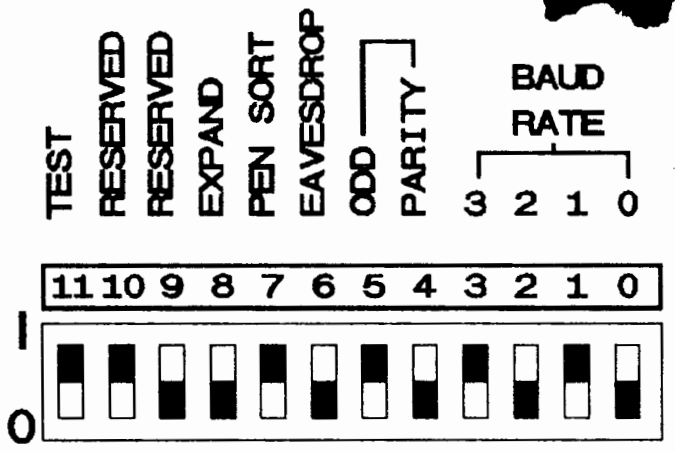
f. Proper completion of the test is indicated by the flashing ENTER and SPEED LEDs on the front panel.

g. The ENTER and SPEED LEDs on steadily indicate no feedback.



7570-A-90-1

Figure 5-5. Loopback Test



7570-A-91-1

Figure 5-6. I/O Test Switches

h. The ROTATE and VIEW LEDs flash when an error is detected in the I/O loopback. The test periodically loops back to the top of this test loop, allowing time to trace the defective line with an oscilloscope.

i. Turn OFF (O) the plotter, remove the loopback connector, and reset the test switches (9 & 11) to the O (off) position.

5-13. FRONT PANEL PUSHBUTTON TEST

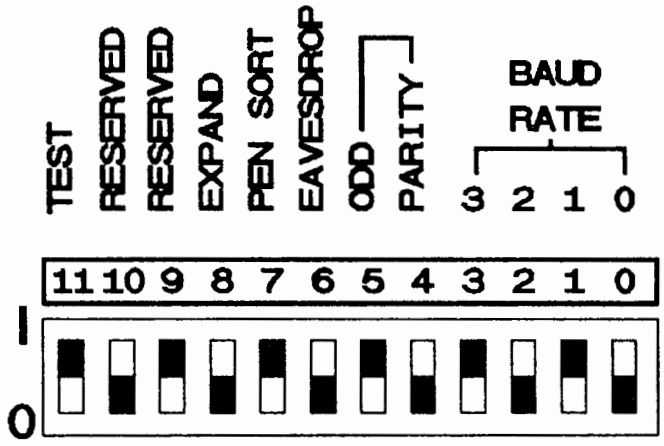
5-14. To perform the front panel pushbutton test, proceed as follows:

a. Turn the plotter OFF (O).

b. Set the rear panel TEST switch (11) and the RESERVED switch (9) to the I (on) position. See Figure 5-7.

c. Turn the plotter ON (I).

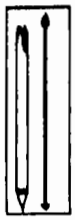
d. The SPEED LED on the front panel will flash, indicating the start of the test.



7570-A-92-1

Figure 5-7. Pushbutton Test Switches

e. Press each front panel pushbutton in the indicated sequence.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12. 
13. 
14. 
15. 
16. 
17. 
18. 
19. 
20. 
21. 
22. 

f. As each switch passes the test a different LED will light.

g. An error condition is indicated by all the front panel LEDs flashing.

h. At the completion of the switch sequence, turn the plotter OFF (O), reset the rear panel switches (10 & 11) to the O (off) position.

5-15. SERVO TEST

5-16. 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. Disconnect the Paper- and Pen-axis motor cable assemblies from the main PCA, Jacks J5 and J6. See Figure 5-8.

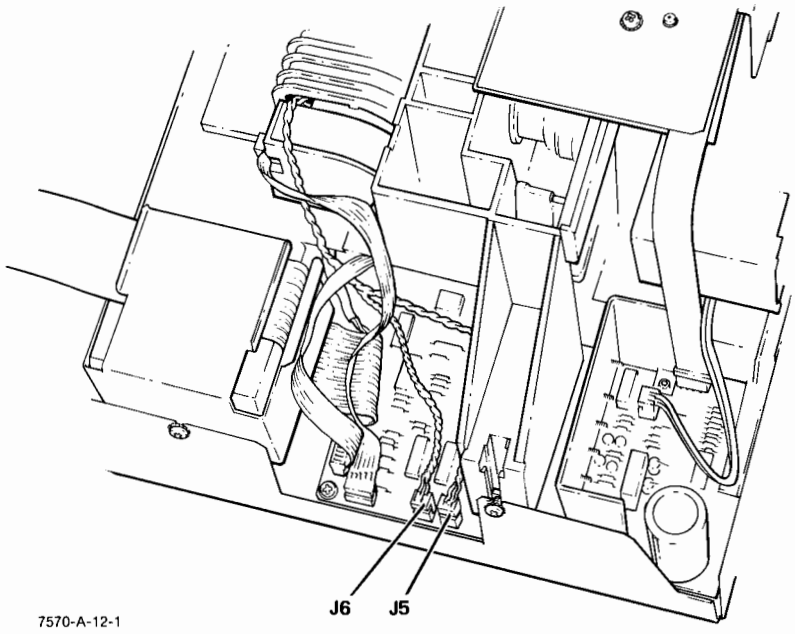


Figure 5-8. PCA Cable Connections

d. Set the rear panel TEST switch (11) and both RESERVED switches (9 & 10) to the I (on) position. See Figure 5-9.

e. Press and hold the ENTER and UP cursor pushbuttons while turning the plotter ON (I). Hold the buttons down until the power-on self test is completed.

f. An oscilloscope is used to monitor the output of each of the four motor driver circuits as the appropriate front panel cursor pushbutton is pressed.

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

g. Each drive signal should appear similar to the waveform in Figure 5-10.

h. Connect the pen and paper-axis motor cables to the jacks on the main PCA.

i. Monitor the output of the motor encoders with the oscilloscope at pins 3 and 5 of J7 while pressing either the UP or DOWN cursor pushbutton.

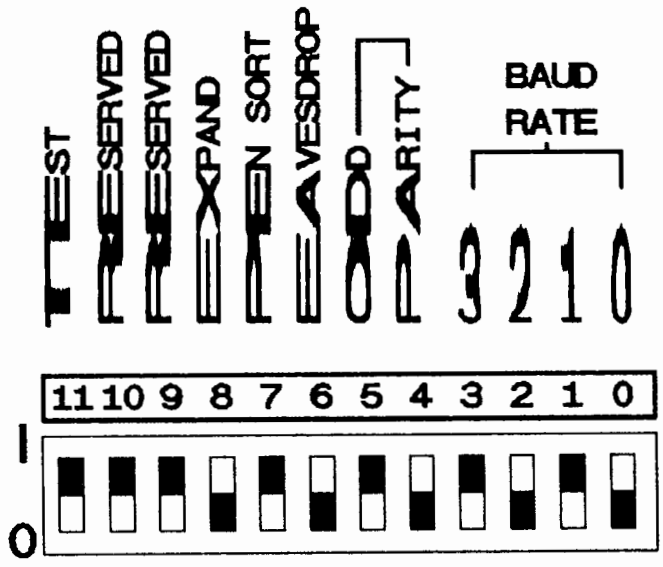


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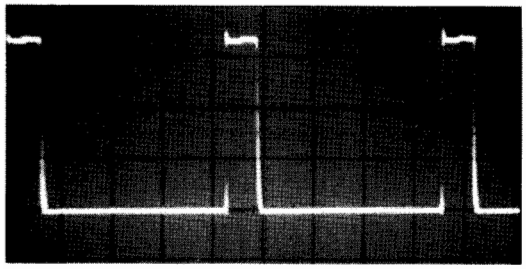
Figure 5-9. Servo Test Switches

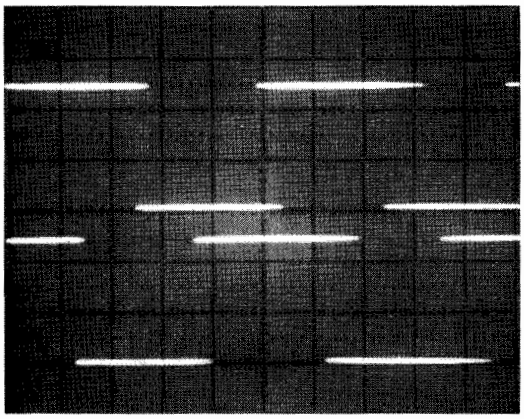


7570-A-68-1

Figure 5-10. Motor Drive Output

j. Monitor the output of the motor encoders with the oscilloscope while pressing either the LEFT or RIGHT cursor pushbutton. The waveforms should appear similar to Figure 5-11.

k. Turn OFF (O) the plotter, return the test switches to the OFF (O) position, and replace the chassis cover.



7570-A-68-1

Figure 5-11. Motor Encoder Output

5-17. REPEATABILITY TEST

5-18. To perform the repeatability test, proceed as follows:

NOTE

The HP-85 Personal Computer is required for this test.

a. Turn OFF (O) the plotter and the HP-85.

b. Connect the plotter to the HP-85 using either the HP-IB or RS-232-C interface. Set the plotter rear panel switches as follows:

HP-IB Address — 05
RS-232-C — baud 2400 — parity none

c. Turn on the plotter and the HP-85.

d. Enter the program listing given in Figure 5-12 into the HP-85. Note that program lines with an exclamation point (!) are only commentary, and may be omitted.

e. Load a sheet of either ISO A2 (ANSI C) or A1 (ANSI D) paper.

f. Install a new 0.3 mm pen in position 1 of the carousel.

g. Install the carousel in the plotter.

h. Run the repeatability test program. The resulting plot is shown in Figure 5-13.

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.

l. To test pen-to-pen repeatability, the program may be interrupted by pressing the VIEW pushbutton 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 pushbutton again to resume plotting.

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 the plotter and the HP-85 before disconnecting the interface cable.

```
10 !
20 !  HP DRAFTPRO REPEATABILITY TEST
30 !
40 !        (AUGUST 1, 1986)
50 !
60 !
70 ! SELECT ADDRESS FOR PLOTTER INTERFACE
80 !
90 CLEAR
100 DISP "ENTER ADDRESS"
110 DISP
120 DISP "  eg. RS-232-C    '10'"
130 DISP "  eg. HP-IB      '705'"
140 DISP
150 INPUT N
160 DISP "ADDRESS IS";N
170 IF N<99 THEN GOSUB 370
180 !
190 ! SET GRIT TRACKS IN PAPER
200 !
210 OUTPUT N ;"INSP0OP"
220 ENTER N ; X1,Y1,X2,Y2
230 FOR V=5 TO 25 STEP 10
240 OUTPUT N ;"VS";V;"PD";X1;",";Y1;",";X2;",";Y2
250 NEXT V
260 !
270 ! DRAW VECTORS AND CIRCLE INTERSECTIONS
280 !
290 OUTPUT N ;"PUSP1PA";X1;",0PD";X1;",";Y1;",0,";Y1;"PUCI150"
300 OUTPUT N ;"PA0,";Y2;"PD";X2;",";Y2;",";X2;",0PUCI150"
310 OUTPUT N ;"PA";X1;",0CI150PD";X1;",";Y2;",0,";Y2;"PUCI150"
320 OUTPUT N ;"PA0,";Y1;"PD";X2;",";Y1;",";X2;",0PU"
330 OUTPUT N ;"PA";X1;",";Y2;"PD0,0PU";X2;",";Y1;"PD0,0PUCI150"
340 OUTPUT N ;"PU6000,5000DI0,-1LBHP DRAFTPRO REPEATABILITY TEST";CHR$(3)
350 OUTPUT N ;"SP0NR"
360 END
370 !
380 ! HP 85 RS-232-C SET-UP
390 !
400 CONTROL N,1 ; 16 ! RECEIVED DATA GENERATES INTERRUPT
410 CONTROL N,2 ; 5 ! ACTIVATES DTR & CTS
420 CONTROL N,3 ; 11 ! SET BAUD RATE TO 2400
430 CONTROL N,4 ; 3 ! 8 BITS/WORD WITH NO PARITY
440 CONTROL N,5 ; 16 ! ENABLES HARDWIRE HANDSHAKE
450 CONTROL N,16 ; 0 ! NO CHARACTERS SENT AT EOL
460 !
470 ! TURN-ON & CONFIGURATION
480 !
490 OUTPUT N ;CHR$(27)&".(" !       TURN PLOTTER ON
500 OUTPUT N ;CHR$(27)&".@;15:" !   SET HARDWIRE HANDSHAKE
510 OUTPUT N ;CHR$(27)&".M50;;;13;10:" ! SET OUTPUT MODE
520 RETURN
```

7570-C-65-1

Figure 5-12. Repeatability Test Program Listing

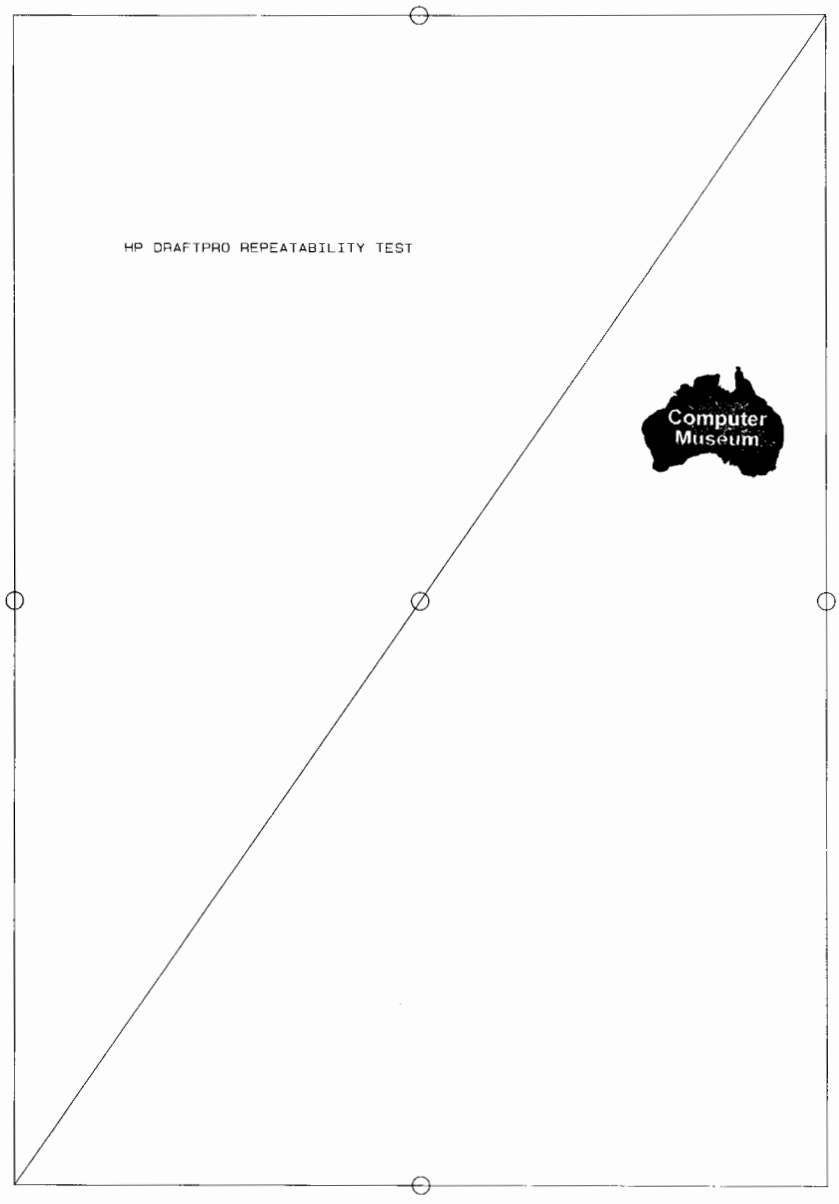


Figure 5-13. Repeatability Test Plot

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SECTION VI

ADJUSTMENTS

6-1. INTRODUCTION

6-2. This chapter would normally contain procedures for the mechanical and electrical adjustments of the HP 7570. There are no electrical or mechanical adjustments.

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SECTION VII

PERIPHERALS

Not applicable to the DraftPro plotter.

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TABLES

ILLUSTRATIONS

SECTION VIII

REPLACEABLE PARTS

8-1. EXCHANGE ASSEMBLIES

8-2. A list of the HP model 7570 exchange assemblies is provided in Table 8-1.

Table 8-1. Exchange Assemblies

REF DES	HP PART NUMBER	C D	DESCRIPTION
A1	07570-66211	2	PCA MAIN (A1), Rebuilt

8-3. REPLACEABLE PARTS

8-4. Replaceable parts in the HP 7570 are listed in Tables 8-2 through 8-7 and illustrated in Figures 8-1 through 8-6.

Table 8-2. Parts List, Covers and Chassis Assemblies

Reference Designation	HP Part Number	CD	Qty	Description	Mfr Code	Mfr Part Number
1	0515-1722	8	10	SCREW-MACHINE ASSEMBLY M4 X 0.7 14MM-LG	28480	0515-1722
2	07570-60024	3	1	COVER, LEFT	28480	07570-60024
3	07570-40116	2	26	RIB, LONG	28480	07570-40116
4	07570-40119	5	1	INSERT, REAR	28480	07570-40119
5	07570-00050	9	1	PLATEN, REAR	28480	07570-00050
6	0515-1472	5	4	SCREW-THD RLG ASSY M5 X 1.81 19MM-LG	28480	0515-1472
7	07570-00220	5	1	COVER, CENTER	28480	07570-00220
8	0624-0684	0	2	SCREW, PLASTITE	28480	0624-0684
9	07090-20020	4	1	WASHER, SHOULDER	28480	07090-20020
10	07570-60029	8	1	COVER, RIGHT	28480	07570-60029
11	3050-0816	6	1	WASHER, FLAT	28480	3050-0816
12	07570-60220	1	1	FRONT PANEL ASSY	28480	07570-60220
13	07570-60025	4	1	CABLE ASSY, FRONT PANEL	28480	07570-60025
14	07570-40017	2	2	RIB, SHORT	28480	07570-40017
15	07570-00045	2	1	PLATEN, FRONT	28480	07570-00045
16	07570-40118	4	1	INSERT, FRONT	28480	07570-40118
17	07570-60180	2	2	STATIC DISSIPATOR ASSY	28480	07570-60180
18	07570-00055	4	2	SHIELD, DISSIPATOR	28480	07570-00055
19				NOT USED		
20	07570-00024	7	2	BRIDGE	28480	07570-00024
21	07570-00025	8	4	PAD, ISOLATION	28480	07570-00025
22	07570-20160	4	4	NUT-HEX M6 X 1 3.5MM-THK 10.3MM-A/F	28480	07570-20160
23	07570-60013	0	1	KIT, HARDWARE	28480	07570-60013
24	07570-60015	2	1	STAND	28480	07570-60015
25	07570-60014	1	2	FOOT	28480	07570-60014
26	9100-4556	2	2	TAPE,CABLE	28480	9100-4556
27	07570-00017	8	1	SHIELD, LEFT	28480	07570-00017
28	0515-1597	5	1	SCREW M4X.7 14MM-LG	28480	0515-1597

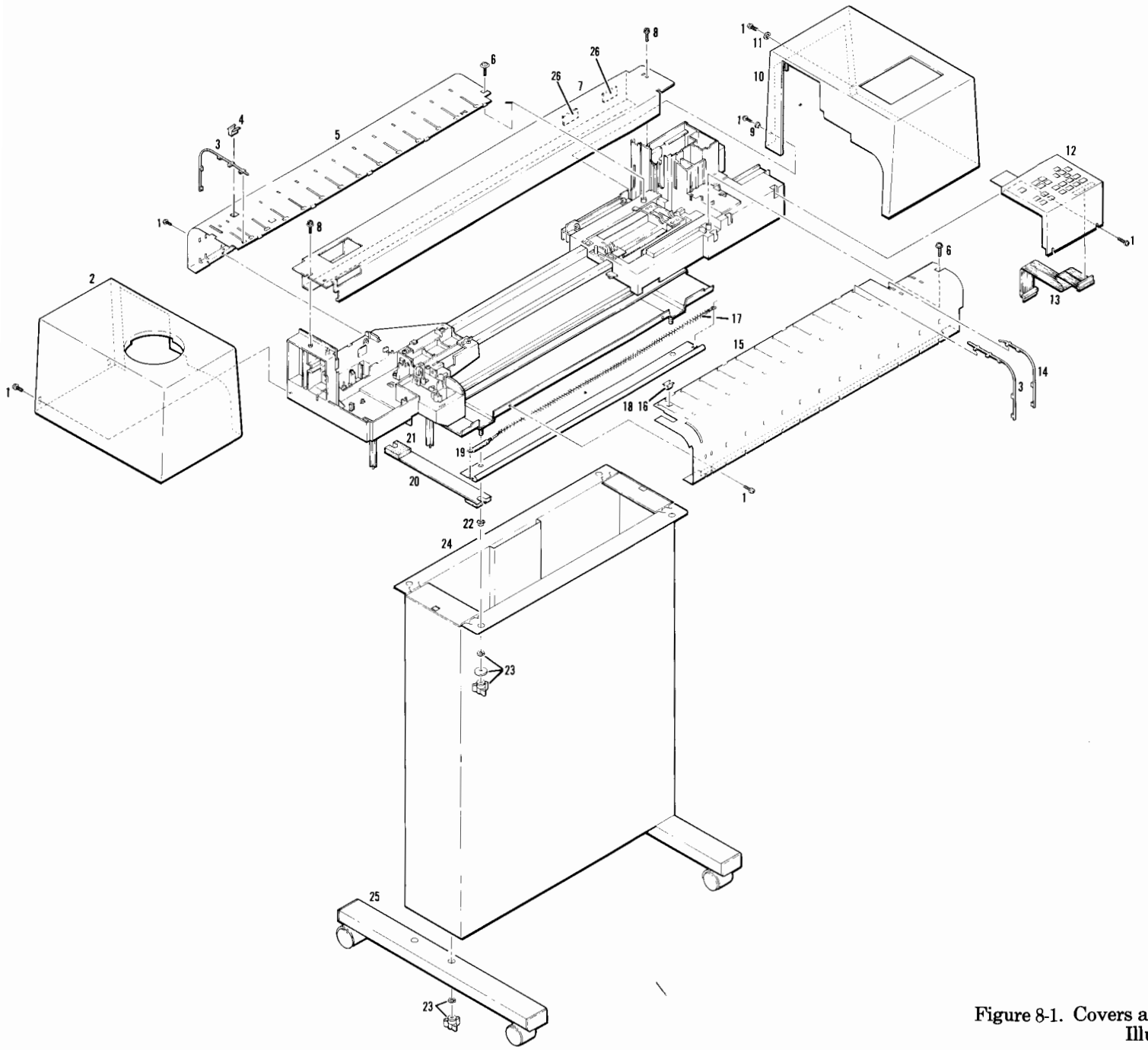


Figure 8-1. Covers and Chassis Assemblies, Illustrated Parts Breakout

Table 8-3. Parts List, Left-Hand Chassis

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	TURNTABLE, CAROUSEL	28480	07570-40050
4	0624-0684	0	1	SCREW, PLASTITE	28480	0624-0684
5	07570-20031	8	1	MOUNT, CAROUSEL	28480	07570-20031
6	07570-40060	5	1	LEVER, ENGAGING	28480	07570-40060
7	1460-2134	2	3	SPRING-EXT 4.8-MM-OD 28.6-MM-OA-LG SST	28480	1460-2134
8	07570-40070	7	1	SHAFT, CLUTCH	28480	07570-40070
9	07570-20016	9	1	GEAR, WORM	28480	07570-20016
10	0515-1472	5	1	SCREW-THD RLG ASSY M5 X 1.81 19MM-LG	28480	0515-1472
11	07570-40165	1	1	SENSOR, EDGE-REAR	28480	07570-40165
12	07570-40095	6	1	SENSOR, EDGE-FRONT	28480	07570-40095
13	1460-2129	5	2	SPRING-EXT 4.8-MM-OD MUW ZN	28480	1460-2129
14	07570-40065	0	1	CLAMP, BEARING	28480	07570-40065
15	07580-60099	4	1	PINCHWHEEL ASSY	28480	07580-60099
16	07570-20035	2	1	SHAFT, PINCHWHEEL	28480	07570-20035
17	0905-1092	2	1	O-RING .07-IN-ID .07-IN-XSECT-DIA NTRL	83259	2-004N103-70
18	0510-0015	0	2	RETAINER-RING E-R EXT .125-IN-DIA STL	28480	0510-0015
19	07570-20045	4	1	SHAFT, PINCHWHEEL ARM	28480	07570-20045
20	07570-40200	5	1	ARM, PINCHWHEEL	28480	07570-40200
21	1460-2135	3	2	SPRING-EXT 11.1-MM-OD 60-MM-OA-LG MUW ZN	28480	1460-2135
22	07570-40185	5	2	STOP, PAPER	28480	07570-40185
23	07570-40160	6	1	LEVER, PAPER STOP FRONT	28480	07570-40160
24	07570-40180	0	1	HANDLE, PW SHAFT	28480	07570-40180
25	07570-40036	5	1	COUPLER	28480	07570-40036
26	07570-40090	1	1	CAM, PINCHWHEEL	28480	07570-40090
27	0535-0095	8	3	NUT-SQUARE NO-CHAM M4 X 0.7 3.2MM-THK	28480	0535-0095
28	07570-40175	3	1	LEVER, PAPER STOP REAR	28480	07570-40175
29	0515-1722	8	4	SCREW-MACHINE ASSEMBLY M4 X 0.7 14MM-LG	28480	0515-1722
30	07570-00010	1	1	BASE, LEFT	28480	07570-00010

Table 8-3. Parts List, Left-Hand Chassis (Continued)

31	07570-20011	1	CHASSIS, LEFT	28480	07570-20011
32	1460-2139	1	SPRING, MAIN TENSIONER	28480	1460-2139
33	07570-40105	1	TENSIONER, MAIN	28480	07570-40105
34	07570-60105	1	IDLER ASSEMBLY, MAIN	28480	07570-60105
35	1500-0684	1	BELT-GEAR .512-IN-WD .046-IN-THK	28480	1500-0684
36	07570-00012	1	SHIELD	28480	07570-00012
37	07570-20017	1	BUSHING	28480	07570-20017
38		1	SPRING, EXT.	28480	

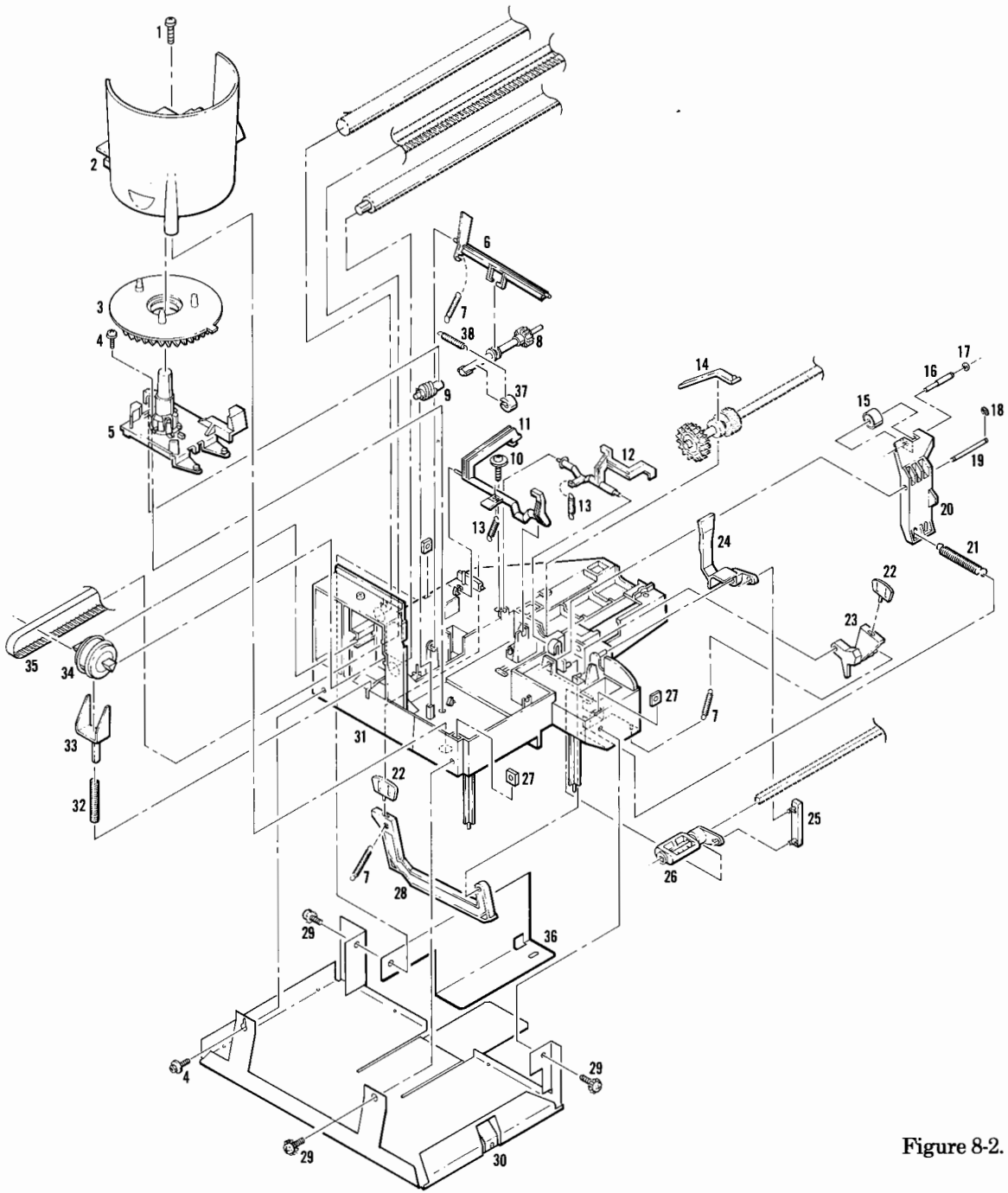


Figure 8-2. Left-Hand Chassis Assembly, Illustrated Parts Breakout

Table 8-4. Parts List, Center Chassis

Reference Designation	HP Part Number	CD	Qty	Description	Mfr Code	Mfr Part Number
1	07570-60250	7	1	CABLE ASSEMBLY, TRAILING	28480	07570-60250
2	07570-60235	8	1	SOLENOID ASSY INCLUDES PLUNGER	28480	07570-60235
3	0515-0733	9	1	SCREW	28480	0515-0733
4	07570-20146	6	1	PAD, UPPER	28480	07570-20146
5	1460-2127	3	1	SPRING-CPRSN 12-MM-OD 10.7-MM-OA-LG SST	28480	1460-2127
6	07570-40145	7	1	PAD, LOWER	28480	07570-40145
7	07570-60245	0	1	PEN CARRIAGE ASSY (INCLUDES ITEMS 2-11)	28480	07570-60245
8	1520-0255	2	1	DAMPER	28480	1520-0255
9	1460-2136	4	1	SPRING-EXT 5-MM-OD 25-MM-OA-LG SST	28480	1460-2136
10	1460-2125	1	1	SPRING-EXT 3.5-MM-OD SST	28480	1460-2125
11	1460-2126	2	1	SPRING-EXT 3.5-MM-OD SST	28480	1460-2126
12	07570-00035	0	4	CLIP, PLATEN	28480	07570-00035
13	07570-20105	7	1	ROD, UPPER SLIDER	28480	07570-20105
14	1500-0684	9	1	BELT-GEAR .512-IN-WD .046-IN-THK	28480	1500-0684
15	0515-1743	3	1	SCREW, TAPTITE	28480	0515-1743
16	07570-40245	8	1	PLATEN, CENTER	28480	07570-40245
17	07570-60085	6	1	GRIT WHEEL SHAFT ASSY	28480	07570-60085
18	07570-00027	0	1	CLAMP, ROD	28480	07570-00027
19	07570-40195	7	2	GASKET, CHASSIS	28480	07570-40195
20	07570-20015	8	1	BAR, DATUM	28480	07570-20015
21	07670-00106	6	1	PAN	28480	07670-00106
22	07570-40090	1	2	CAM PINCHWHEEL ARM	28480	07570-40090
23	07570-20030	7	1	BAR PINCHWHEEL	28480	07570-20030
24	0624-0684	0	4	SCREW, PLASTITE	28480	0624-0684
25	3160-0499	4	1	FAN-TBAX 35-CFM 115V 50	28480	3160-0499
26	9100-4617	6	1	TRANSFORMER	28480	9100-4617
27	07570-40197	9	1	GASKET, FAN	28480	07570-40197
28	07570-40196	8	1	GASKET, MODULE	28480	07570-40196
29	0535-0043	6	6	NUT-HEX W/LKWR M4 X 0.7 3.2MM-THK	28480	0535-0043
30	07570-40045	6	1	MODULE, FAN/TX	28480	07570-40045

Table 8-4. Parts List, Center Chassis (Continued)

31	1400-1428	60	4	CLAMP-CABLE .375-DIA PLSTC	02768	220-24200-04
32	1400-1428	60	2	CLAMP, CABLE	28480	1400-1428
33	3050-0225	71	4	WASHER, FLAT	28480	3050-0225
34	07570-00305	78	1	LABEL, CAUTION	28480	07570-00305
35	07570-00017	74	1	SHIELD, LEFT	28480	07570-00017
36	07570-00018	95	1	SHIELD, RIGHT	28480	07570-00018
37	0515-1597	55	3	SCREW M4X.7 14MM-LG	28480	0515-1597
38	07570-20210	55	1	ROD, SLIDER LOWER	28480	07570-20210
39	07570-20270	77	1	BUSHING, UPPER	28480	07570-20270
40	07570-40275	44	1	GROMMET, ROD	28480	07570-40275
41			1	SPRING, ROD	28480	
42			1	SPRING, UPPER	28480	
43			1	SPRING, LEFT	28480	
44			1	SPRING, RIGHT	28480	

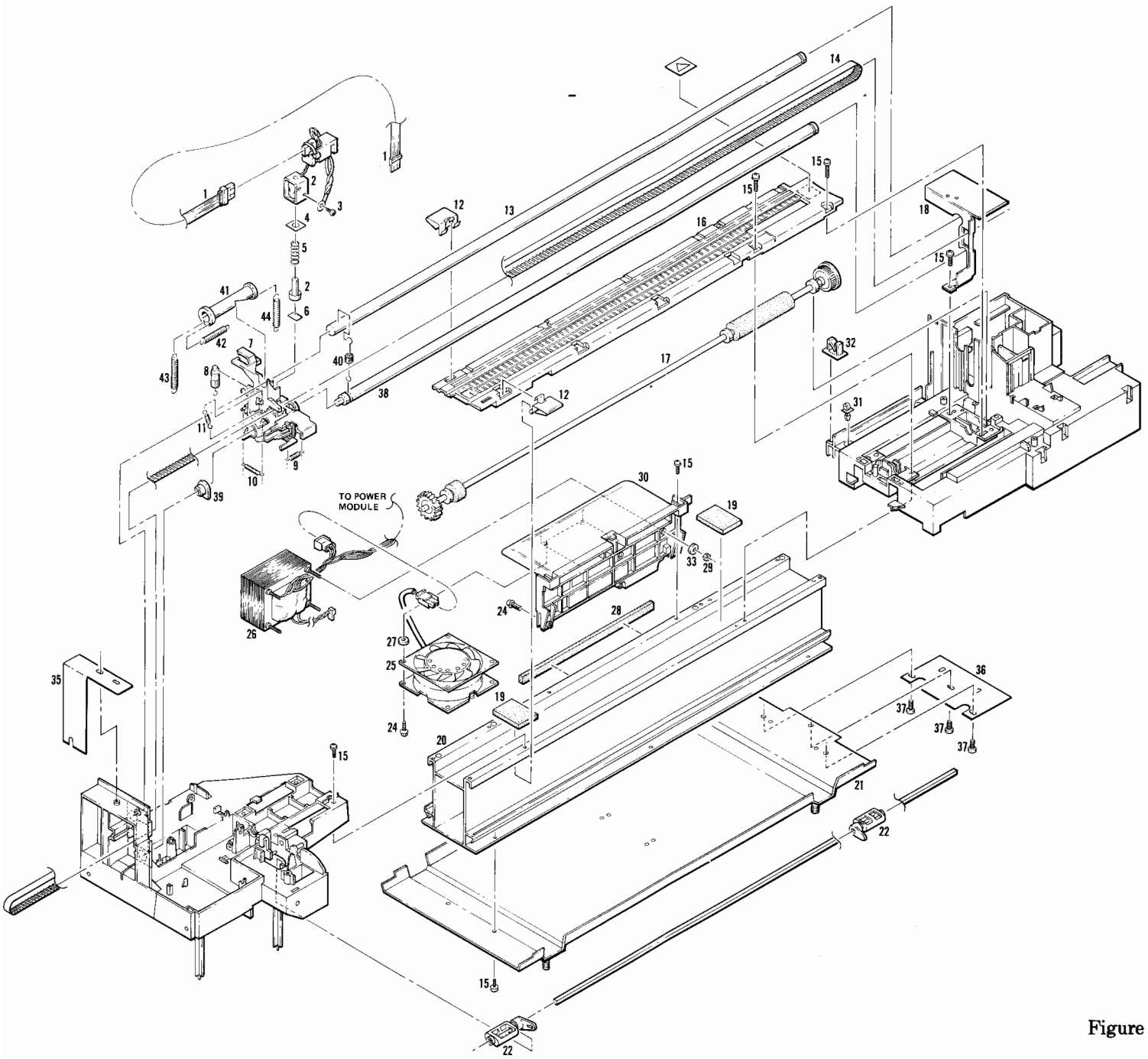


Figure 8-3. Center Chassis Assembly, Illustrated Parts Breakout

Table 8-5. Parts List, Right-Hand Chassis

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	0515-0397	1	2	SCREW-MACH M4 X 0.7 16MM-LG	00000	ORDER BY DESCRIPTION
3	07570-40111	7	1	PANEL, REAR	28480	07570-40111
4	0515-1743	3	1	SCREW, TAPTITE	28480	0515-1743
5	07570-00027	0	1	CLAMP, ROD	28480	07570-00027
6	07570-20040	9	1	BUSHING	28480	07570-20040
7	1410-1237	9	2	BEARING-RDL BA 6-MM-ID 19-MM-OD 2-SHLD	55130	626ZZQE6MT2
8	07570-20025	0	1	SHAFT	28480	07570-20025
9	1500-0683	8	2	BELT-GEAR .25-IN-WD .043-IN-THK 103-IN-T	28480	1500-0683
10	07570-40120	8	1	PULLEY	28480	07570-40120
11	07570-40080	9	1	FLANGE	28480	07570-40080
12	07570-40006	9	2	CLAMP, MOTOR	28480	07570-40006
13	07570-60067	4	2	MOTOR, ENCODER ASSY-INCLUDES ITEMS 14-17	28480	07570-60067
14	0515-1723	9	8	SCREW-MACHINE ASSEMBLY M2.5 X 0.45	28480	0515-1723
15	07570-40250	5	2	COVER, ENCODER	28480	07570-40250
16	QEDS-9500	3	2	IC, ENCODER	28480	QEDS-9500
17	3050-0890	6	4	WASHER 2.78 ID	28480	3050-0890
18	07570-60003	8	1	CABLE ASSY, X-ENCODER	28480	07570-60003
19	07570-60002	7	1	CABLE ASSY, Y-ENCODER	28480	07570-60002
20	07570-40065	0	1	CLAMP, BEARING	28480	07570-40065
21	07570-00013	4	1	BRACKET, GROUND	28480	07570-00013
22	07570-40100	4	2	BRACKET, TENSIONER	28480	07570-40100
23	1460-2061	4	2	SPRING-EXT .187-IN-OD MUW ZN	28480	1460-2061
24	07550-40104	4	2	CAM, TENSIONER	28480	07550-40104
25	07570-60112	0	2	IDLER, TENSIONER	28480	07570-60112
26	07570-40035	4	1	SHIELD, PRIMARY	28480	07570-40035
27	07570-60041	4	1	POWER MODULE	28480	07570-60041
28	2110-0687	6	1	FUSEHOLDER-SPR TYP 6A 250 V	28480	2110-0687
29	9135-0248	4	4	VOLTAGE SELECTOR DRUM VOLTAGE: 100,120	28480	9135-0248
30	1400-1428	6	1	CLAMP-CABLE .375-DIA PLSTC	02768	220-24200-04

Table 8-5. Parts List, Right-Hand Chassis (Continued)

31	1460-2141	1	3	SPRING-TRSN 10.26-MM-OD 54.4-MM-OA-LG	28480	1460-2141
32	0535-0095	8	1	NUT-SQUARE,NO-CHAM M4 X 0.7 3.2MM-THK	28480	0535-0095
33	07570-40240	3	1	CHASSIS, RIGHT	28480	07570-40240
34	07570-00014	5	1	SHIELD, CABLE	28480	07570-00014
35	0515-1722	8	1	SCREW-MACHINE ASSEMBLY M4 X 0.7 14MM-LG	28480	0515-1722
36	07570-60220	1	1	FRONT PANEL ASSEMBLY	28480	07570-60220
37	07570-60025	4	1	CABLE ASSY, FRONT PANEL	28480	07570-60025
38	0515-1597	5	1	SCREW-MACHINE ASSEMBLY M4 X 0.7 14MM-LG	28480	0515-1597
39	07570-60211	0	1	PCA A1 MAIN	28480	07570-60211
40	07570-00023	6	1	BASE, RIGHT-HAND	28480	07570-00023
41	0624-0684	0	1	SCREW, PLASTITE	28480	0624-0684
42	07570-40039	8	1	GUIDE, CARTRIDGE	28480	07570-40039
43	07570-40081	0	1	BRACKET, SWITCH	28480	07570-40081
44	07570-40115	1	1	LEVER, SWITCH	28480	07570-40115
45	07570-60061	8	1	SWITCH ASSEMBLY	28480	07570-60061
46	1460-2138	6	1	SPRING-EXT 3.2-MM-OD 15-MM-OA-LG SST	28480	1460-2138
47	1460-2133	1	1	SPRING-EXT 4.8-MM-OD 51-MM-OA-LG SST	28480	1460-2133
48	07570-40205	0	1	ARM, PW RIGHT	28480	07570-40205
49	07570-60099	2	1	PINCHWHEEL	28480	07570-60099
50	07570-20035	2	2	SHAFT, PINCHWHEEL	28480	07570-20035
51	0905-1092	2	1	O-RING .07-IN-ID .07-IN-XSECT-DIA NTRL	83259	2-004N103-70
52	07570-40090	1	1	CAM, PINCHWHEEL	28480	07570-40090
53	0510-0015	0	2	RETAINER-RING E-R EXT .125-IN-DIA STL	28480	0510-0015
54	07570-20035	2		SHAFT, PW ARM	28480	07570-20035
55	07570-40170	8	1	YOKE, PINCHWHEEL	28480	07570-40170
56	1460-2135	3	1	SPRING-EXT 11.1-MM-OD 60-MM-OA-LG MUW ZN	28480	1460-2135
57	07570-20030	7	1	BAR, PINCHWHEEL	28480	07570-20030
58	0535-0662	5	1	NUT, HEX 5/16	28480	0535-0662
59	1400-1021	8	2	CLIP, CABLE	28480	1400-1021
60	07570-00018	9	1	SHIELD, RIGHT	28480	07570-00018
61	0535-0031	2	4	NUT M3	28480	0535-0031
62	07570-60019	6	2	STRAP, GROUND	28480	07570-60019

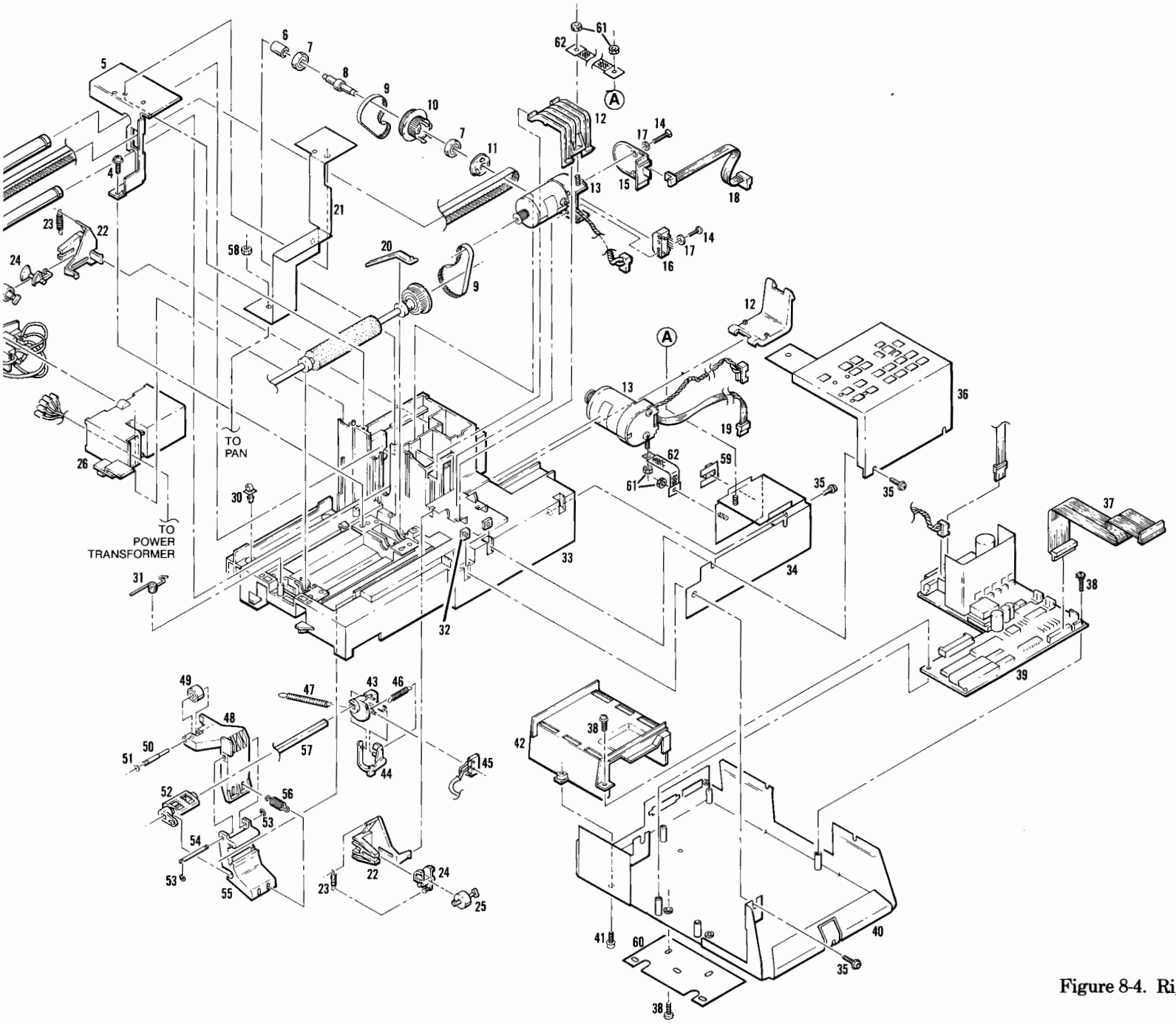


Figure 8-4. Right-Hand Chassis Assembly, Illustrated Parts Breakout

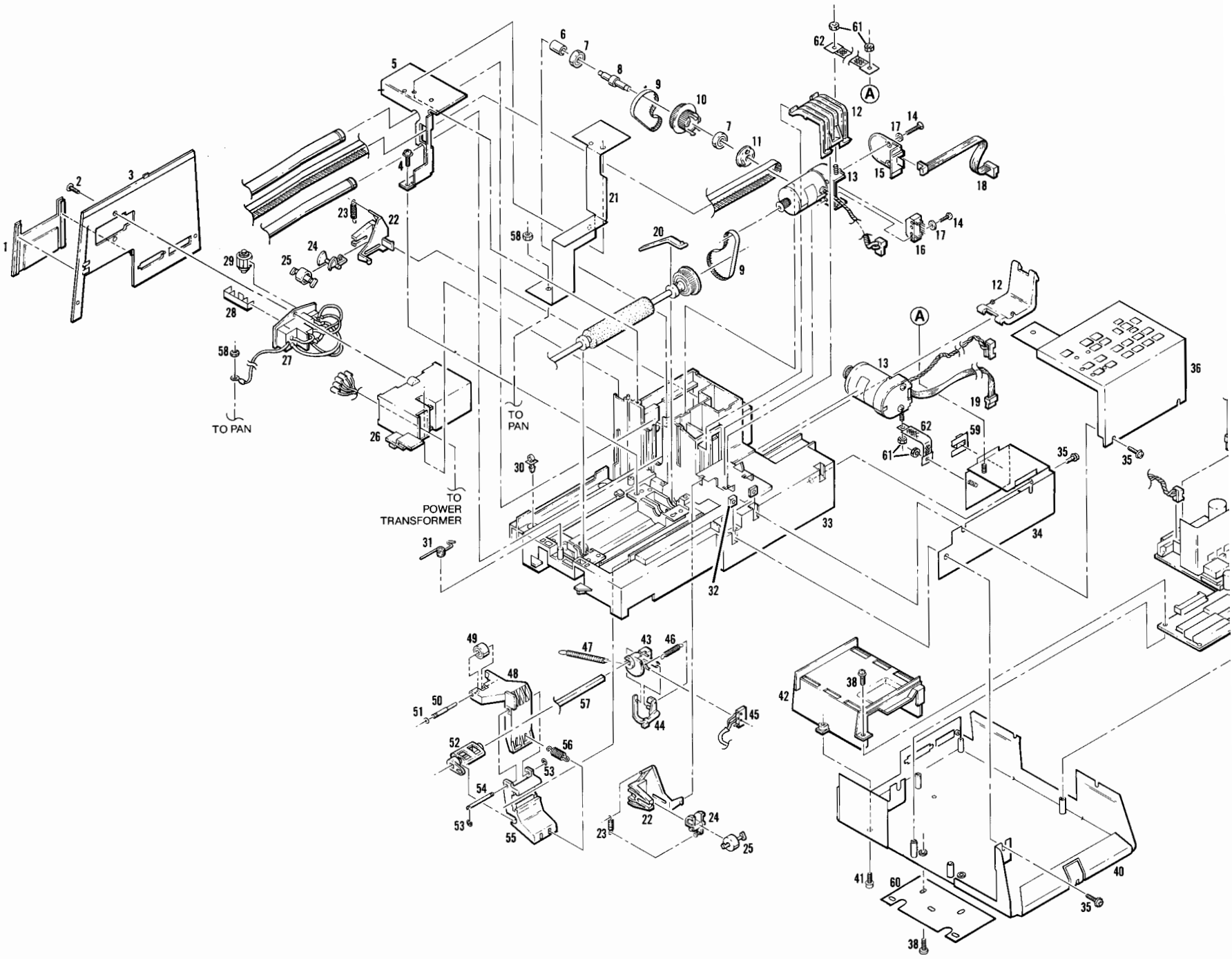
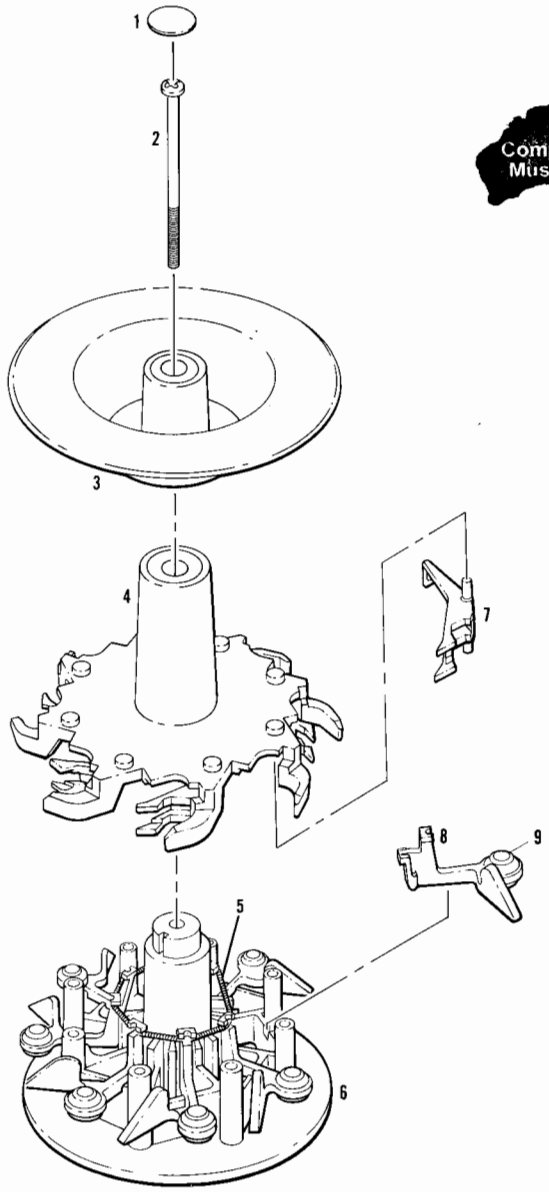

TO PAN
TO PAN
TO POWER TRANSFORMER

Table 8-6. Parts List, Pen Carousel

Reference Designation	HP Part Number	CD	Qty	Description	Mfr Code	Mfr Part Number
	07570-60055	0	1	CAROUSEL, DRAFTING PENS	28480	07570-60055
	07570-60050	5	1	CAROUSEL, FIBER TIP PENS	28480	07570-60050
1	5081-5098	3	1	LABEL, DRAFTING PENS	28480	5081-5098
	5081-5099	4	1	LABEL, FIBER TIP PENS	28480	5081-5099
2	0624-0679	3	1	SCREW-TPG 6-19 2.25-IN-LG PAN-HD-POZI	28480	0624-0679
3	07570-40066	1	1	HAT, CAROUSEL	28480	07570-40066
4	07570-40215	2	1	TOP, CAROUSEL	28480	07570-40215
5	1460-2124	0	2	SPRING-GTR 1.6-MM-OD 40-MM-OA-LG SST	28480	1460-2124
6	07570-40225	4	1	BASE, CAROUSEL	28480	07570-40225
7	07570-40220	9	8	PAWL	28480	07570-40220
8	07570-40210	7	8	CAPPER	28480	07570-40210
9	07475-40002	9	8	BOOT, FIBER PEN	28480	07475-40002
	07870-40235	9	8	BOOT, DRAFTING PEN	28480	07870-40235

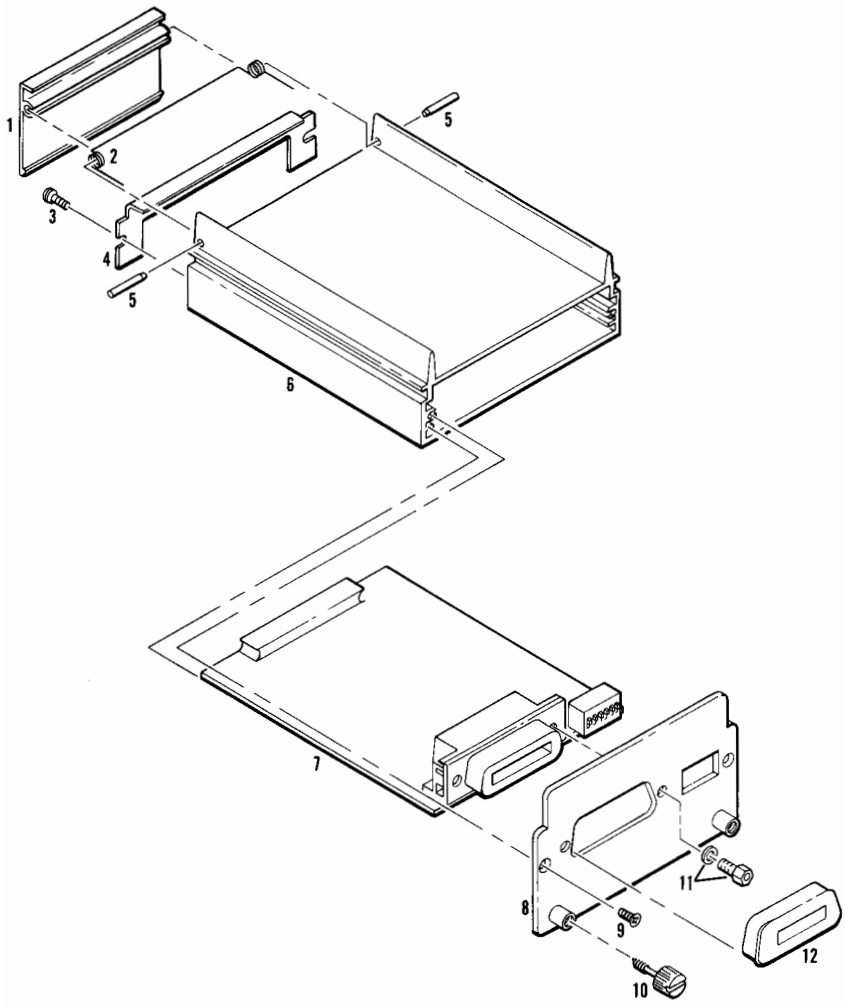


7570-B-100-1

Figure 8-5. Pen Carousel, Illustrated Parts Breakout

Table 8-7. Parts List, Optional I/O Module (HP-IB)

Reference Designation	HP Part Number	CD	Qty	Description	Mfr Code	Mfr Part Number
	17570A	2	1	HP-IB INTERFACE MODULE	28480	17570A
	17571A	3	1	HP-IB + KANJI INTERFACE MODULE	28480	17571A
1	07570-20097	6	1	DOOR, CARTRIDGE	28480	07570-20097
2	1460-2132	0	1	SPRING-TRSN 4.16-MM-OD 67-MM-OA-LG SST	28480	1460-2132
3	0515-1877	4	2	SCREW-THD-RLG M3 X 0.5 8MM-LG PAN-HD	93907	264-07200-382
4	07570-00096	3	1	PANEL, REAR	28480	07570-00096
5	1531-0319	2	1	PIN, DOOR	28480	1531-0319
6	07570-20050	1	1	HOUSING	28480	07570-20050
7	07570-60120	0	1	PCA, HP-IB	28480	07570-60120
	07570-60140	4	1	PCA, HP-IB + KANJI	28480	07570-60140
8	07570-60010	7	1	PANEL, FRONT	28480	07570-60010
9		1	2	SCREW, FLATHEAD	28480	
10	1390-0551	4	2	SCREW, THUMB	28480	1390-0551
11	0380-0644	4	2	STANDOFF-HEX .327-IN-LG 6-32THD	00000	ORDER BY DESCRIPTION
12	1251-7999	4	1	DUST COVER-MICRO RBN 24 CONT CONN	71785	474-11-91-707



7570-B-106-1

Figure 8-6. Optional I/O Module (HP-IB), Illustrated Parts Breakout

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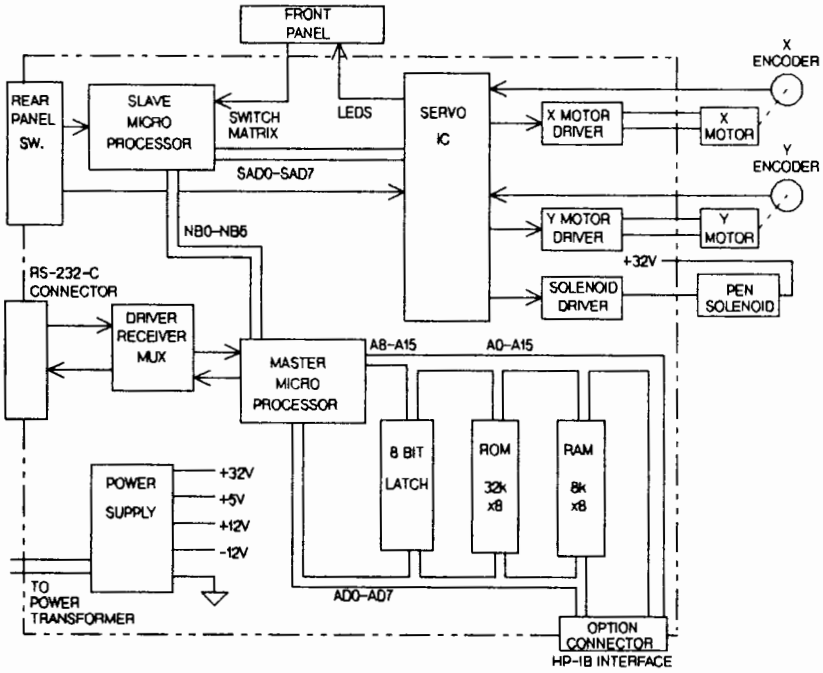
ILLUSTRATIONS

SECTION IX

DIAGRAMS

9-1. INTRODUCTION

9-2. The block diagram of the HP7570 and the cabling diagram are included in this section.



7570-A-95-1

Figure 9-1. HP Model 7570 Simplified Block Diagram

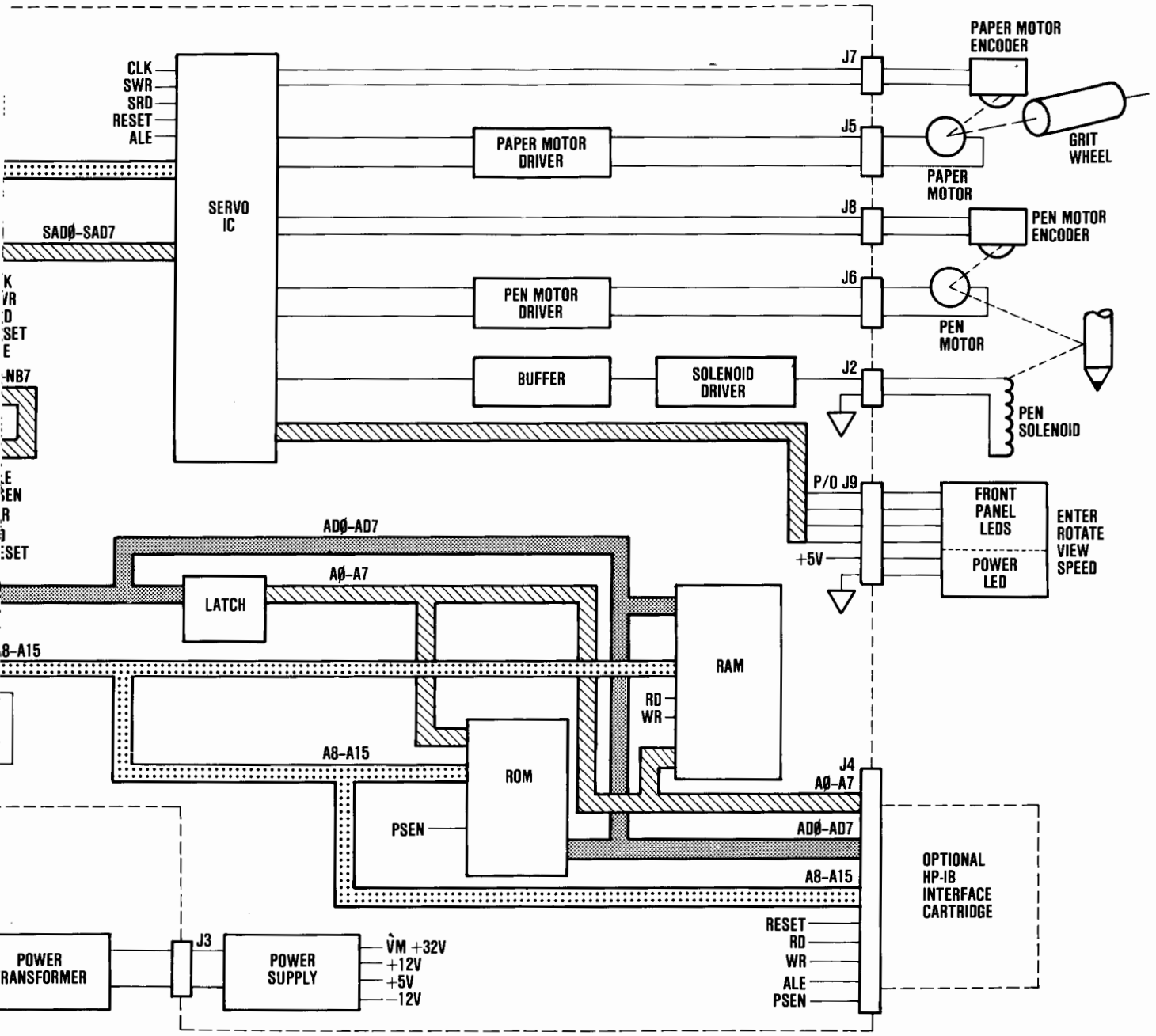
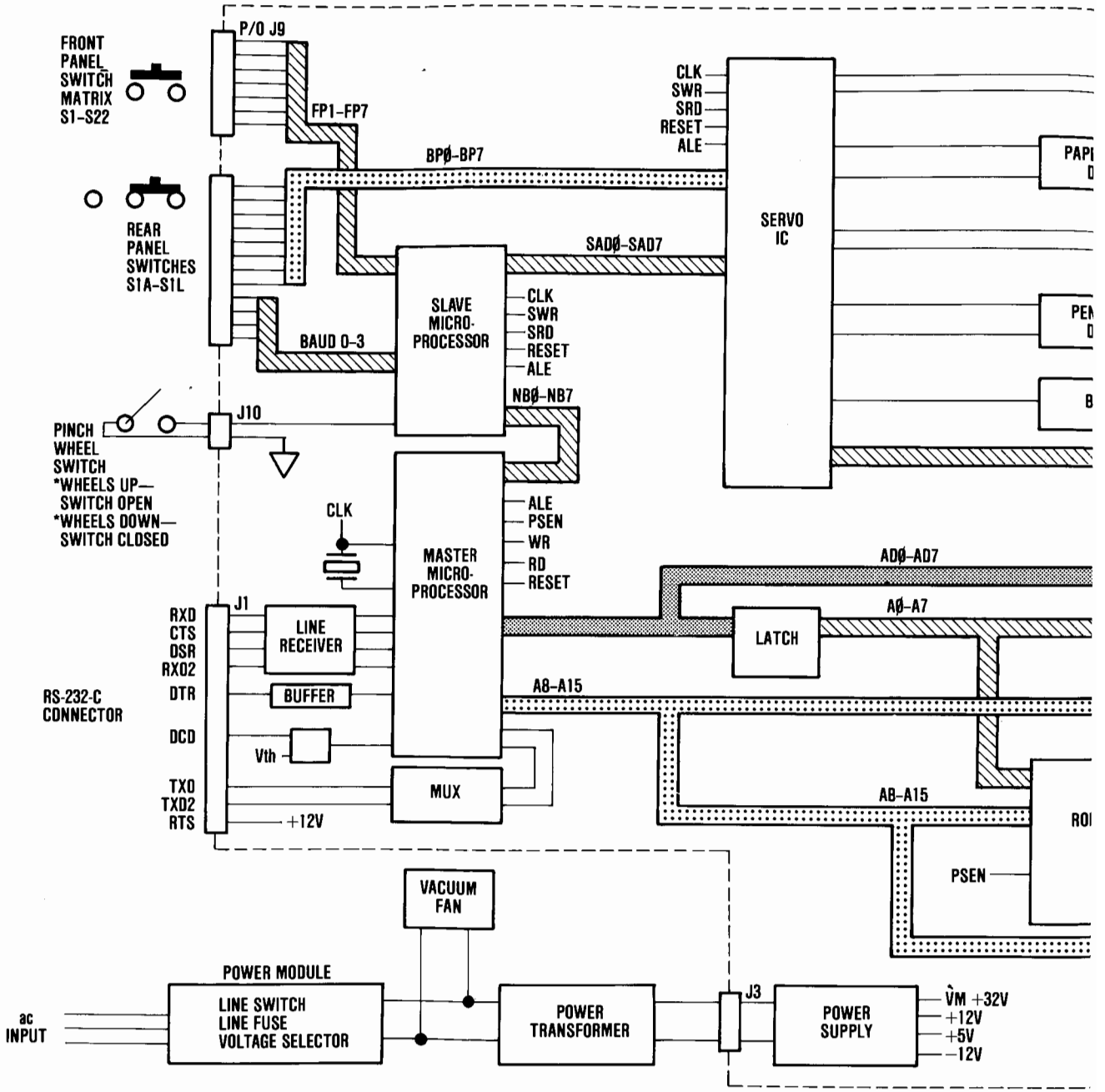


Figure 9-2. HP Model 7570 Functional Block Diagram


FRONT PANEL SWITCH MATRIX S1–S22
P/O J9
FP1–FP7
BPØ–BP7
REAR PANEL SWITCHES S1A–S1L
BAUD 0–3
SLAVE MICRO-PROCESSOR
SADØ–SAD7
CLK
SWR
SRD
RESET
ALE
NBØ–NB7
SERVO IC
PINCH WHEEL SWITCH
*WHEELS UP— SWITCH OPEN
*WHEELS DOWN— SWITCH CLOSED
J10
CLK
MASTER MICRO-PROCESSOR
ALE
PSEN
WR
RD
RESET
ADØ–AD7
AØ–A7
LATCH
J1
RXD
CTS
OSR
RXD2
LINE RECEIVER
DTR
BUFFER
A8–A15
RS-232-C CONNECTOR
DCD
Vth
TXD
TXD2
RTS
+12V
MUX
A8–A15
PSEN
VACUUM FAN
POWER MODULE
ac INPUT
LINE SWITCH
LINE FUSE
VOLTAGE SELECTOR
POWER TRANSFORMER
J3
POWER SUPPLY
VM +32V
+12V
+5V
–12V

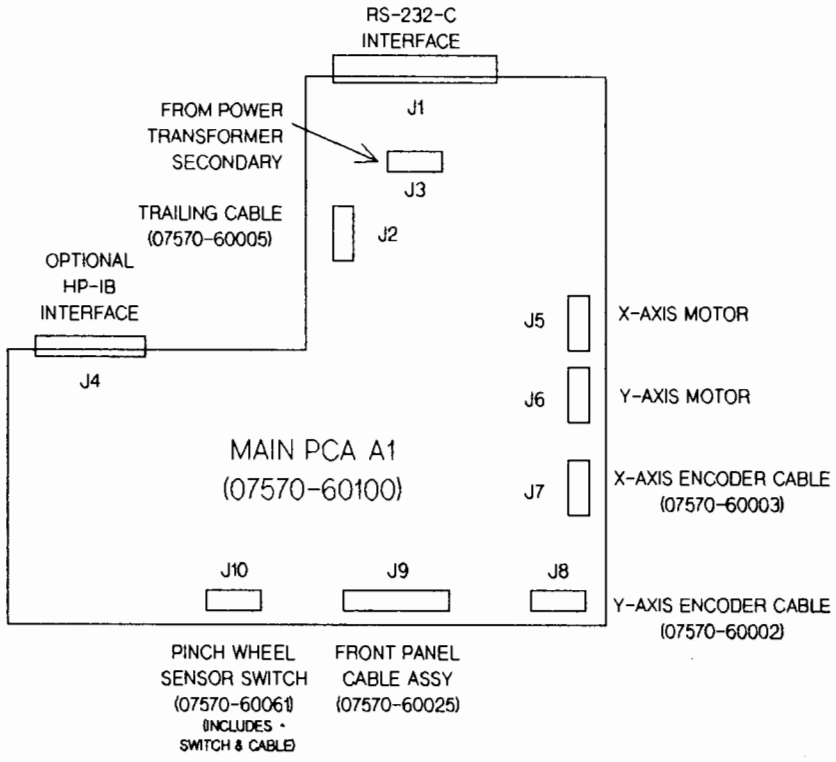


Figure 9-3. HP Model 7570 Cabling Diagram

NOTES

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TABLES

SECTION X

REFERENCE

10-1. INTRODUCTION

10-2. This chapter contains reference materials including other manuals which apply to the HP 7570 and error codes.

10-3. MANUALS

10-4. Information for programming, operating, and interfacing the HP 7570 plotter is contained in the following publications.

MANUAL	HP PART NUMBER
Programmers Reference Users Guide	07570-90001 07570-90002

10-5. SYSTEM ERROR CODES

10-6. System I/O error codes are listed in Table 10-1. Error codes for HP-GL are listed in Table 10-2.

Table 10-1. I/O Error Codes

ERROR CODE	MEANING
0	A zero indicates there was no I/O error.
*10	Output instruction received while another output instruction is executing. The original output instruction will continue normally while the one in error will be ignored.
11	Invalid byte received following the first two characters (ESC.) in a device control instruction.
12	Invalid byte received while parsing a device control instruction. Parameters are defaulted from the parameter where the invalid byte was received to the end of the instruction.

*RS-232-C Interface Only

Table 10-1. I/O Error Codes (Continued)

ERROR CODE	MEANING
13	Parameter out of range.
14	Too many parameters received. Additional parameters beyond the proper number are ignored, and the parsing of the instruction ends when a colon (normal exit) or the first byte of another instruction is received (abnormal exit). **NOTE** The receipt of something other than another parameter, a semicolon, or a colon will result in an error type 12 overwriting error type 14.
*15	A framing error, parity error, or overrun error has been detected.
*16	The input buffer memory has overflowed. As a result of the overflow, one or more bytes of data have been lost, and therefore, an HP-GL error will probably also occur.
*17	Baud rate mismatch or, full duplex data communication is selected and conditions for data transmission are not met. e.g. Cabling is configured for three-wire data communications.
*18	I/O error of indeterminate cause.

*RS-232-C Interface Only

Table 10-2. HP-GL Error Codes

ERROR CODE	MEANING
0	No HP-GL error for which the mask is set has occurred.
1	Instruction not recognized. The plotter has received an illegal character sequence.
2	Wrong number of parameters. Too many or too few parameters have been sent with the instruction.
3	Bad parameter. The parameters sent to the plotter with an instruction are out-of-range for that instruction or include an illegal character.

Table 10-2. HP-GL Error Codes (Continued)

ERROR CODE	MEANING
4	Not used.
5	Unknown character set. A character set out of the range −1 through 59 or 99 has been designated (CS, CA, or DS instruction).
6	Position overflow. Numeric overflow in plotter's character generator.
7	Buffer overflow for polygons.

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SECTION XI

SERVICE NOTES/IOSMs

11-1. INTRODUCTION

11-2. This section is reserved for the insertion of any Service Notes and/or Inter-Office Service Memos (IOSMs) that may be generated for the HP7570.