HEWLETT PACKARD

INSTALLATION AND SERVICE MANUAL

HP 1000 COMPUTER SYSTEM

Manual Part No. 02170-90006

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MODELS COVERED

This manual covers models 20, 25, 30, 40, and 45 of the HP 1000 Computer system.

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LIST OF EFFECTIVE PAGES

Changed pages are identified by a change number adjacent to the page number. Changed information is indicated by a vertical line in the outer margin of the page. Original pages do not include a change number and are indicated as change number 0 on this page. Insert latest changed pages and destroy superseded pages.

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All pages in this edition are original.

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SAFETY CONSIDERATIONS

KEEP WITH MANUAL

GENERAL - This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation.

SAFETY SYMBOLS

Instruction manual symbol: 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 the product against damage.

Indicates hazardous voltages.

Indicates earth (ground) terminal (sometimes used in manual to indicate circuit common connected to grounded chassis).

WARNING

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 injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

CAUTION

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. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

SAFETY EARTH GROUND - This is a safety class I product and is provided with a protective earthing terminal. An uninterruptible safety earth ground must be provided from the main power source to the product input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and be secured against any unintended operation.

BEFORE APPLYING POWER - Verify that the product is configured to match the available main power source per the input power configuration instructions provided in this manual.

If this product is to be energized via an auto-transformer (for voltage reduction) make sure the common terminal is connected to the earth terminal of the main power source.

SERVICING

WARNING

Any servicing, adjustment, maintenance, or repair of this product must be performed only by qualified personnel.

Adjustments described in this manual may be performed with power supplied to the product while protective covers are removed. Energy available at many points may, if contacted, result in personal injury.

Capacitors inside this product may still be charged even when disconnected from its power source.

To avoid a fire hazard, only fuses with the required current rating and of the specified type (normal blow, time delay, etc.) are to be used for replacement.

INSTALLATION

SECTION I

1-1. INTRODUCTION

This manual describes the installation activities and provides service information for the HP 1000 Computer System. The systems covered in this manual are:

MODEL NO.	PRODUCT NO.
20	HP 2174A/B
25	HP 2175A/B
30	HP 2170A
	HP 2171A
	HP 2172A
40	HP 2176A/B
45	HP 2177A/B

This section provides the unpacking, installation, and checkout instructions required for the HP 1000 Computer System. Installation of the system must be performed by Hewlett-Packard Customer Engineers who have been trained in the handling and operation of Hewlett-Packard systems.

On-site installation and checkout of the HP 1000 Computer System (together with the accessories that comprise the complete system) are performed by a Hewlett-Packard Customer Engineer. This service includes supervision of equipment unpacking, inventory, equipment set-up, turn-on, running self test and diagnostics as applicable, and operator training. Software installation and assistance, including system boot-up are also provided. The installation and checkout service does not include uncrating of equipment, equipment positioning, routing of cabling in customer's ducts, adding-on non-HP equipment, or programmer training. Also the customer will provide assistance for the handling or racking of heavy instruments.

The customer received instructions in the Configuration and Site Preparation Guide for inspecting the shipment, verifying the packing list, filing claims, and moving the system to the installation site. You can begin by inspecting the site to ensure that the physical and electrical site preparation has been completed. Have the customer correct any deficiencies.

1-2. POWER CABLING

An electrician will be required to install the customer fabricated power cable for all cabinets in 50 Hertz installations and for multi-phase 60 Hertz installations. Single bay upright (56-inch) cabinets are furnished with a cable and plug, but the cable must be wired to the cabinet power input terminals by the electrician. Make sure that an electrician is available.

1-3. FINDING DOCUMENTS

Before the customer unpacks any hardware items, ask him to open the cartons marked "MANUALS AND ACCESSORIES" and unpack the manuals. Several of the manuals will be required for the installation.

1-4. UNPACKING THE SHIPMENT

The customer may begin unpacking at the installation site, using the Installation Record in the SYSTEM SUPPORT LOG for a detailed inventory of the equipment. Refer to paragraph 1-5 for uncrating cabinets and to paragraph 1-6 unpacking the desk top instructions. The system console and accessories do not have to be removed completely from their cartons until instructed to install them. Some interface PCA's are installed in the computer. These can be inventoried during system cabling. Unpack an item and inspect it for external or internal damage. Look for broken controls, dents, cracks, scratches, breaks, etc. Open all doors or panels to look for damaged or missing parts.

Check all device serial numbers and inspect all software items (magnetic tapes, paper tapes, disc packs, tape cartridges, etc.) for damage. If the visual inspection and inventory reveals damaged or missing items follow the filing claims instructions described in paragraph 1-7.

1-5. UNCRATING CABINETS

Cabinets that are shipped in reuseable containers contain the uncrating and unpacking instructions in an envelope on the crate. **Do not attempt to lift the cartridge disc assembly by its top.**

1-6. UNPACKING THE DESK TOP

The 1.8 metre (72-inch) desk top for the computer cabinet is shipped in a carton (figure 1-1). The cabinet supports the end of the desk top opposite the Leg assembly.

CAUTION

The desk top weighs 38.6 kilograms, (85 pounds). Installation may be performed by one person if the unpacking procedure described here and in paragraph 1-9 is followed; if not, it is recommended that two persons perform the operation.

a. Cut open the top of the carton and carefully cut away the sides (figure 1-1 item 1)

b. Remove the styrofoam packaging material. Do not unpack further until the remainder of the system components are ready for installation. At that time the desk top may be attached to the computer cabinet, following the instructions given in paragraph 1-9.

1-7. FILING CLAIMS

The customer should report any flaw in the shipment immediately, to the carrier or the carrier's agent and you. Make sure that he saves all crates, cartons, boxes, and packing material for inspection. Don't make any verbal reports of damage or missing items without making a written report also. You, the customer engineer, should report any problem with the shipment or packing list to the responsible product support engineer at the factory. Missing or damaged items will be replaced without waiting for the settlement of claims.

1-8. INSTALLATION PROCEDURES

These instructions pertain to the installation of the HP 1000 Computer System. In addition to these instructions, you will need to refer to the appropriate *Installation and Service Manuals* for data regarding installation of accessories supplied with the system.

1-9. DESK-COMPUTER CABINET ASSEMBLY

a. Remove the packaging support (figure 1-1 item 2) located under the front clamps of the desk top assembly. Raise the top of the desk slightly and slide the packaging support out from under the desk.

b. Roll the computer cabinet under the desk top with the front of the cabinet under the clamps.

c. Carefully cut and remove the remainder of the support packaging (3) and lower the desk top onto the cabinet. Exercise care while cutting to avoid scratching the paint on the desk key or cable tray.

d. Engage the two clamps on the bottom surface of the desk top with the top front crossmember of the cabinet frame as shown in figure 1-2 (detail A.)

e. Using a 3/8-inch nutdriver, attach the bottom surface of the desk top to the mounting brackets (4) at the top rear of the cabinet with the two 1/4-20 × 5/16-inch screws supplied. The mounting hardware is located in a package taped to the bottom of the desk top assembly.

f. Using a 5/16-inch nut driver attach the cable through (5) to the side panel (6) of the computer cabinet with the two 10-32 × 1-inch screws supplied. Ensure that the cable trough is firmly bolted to the side panel before attempting to move the cabinet with the desk top attached.

g. Using a screwdriver attach the three adjustable cable clamps to the bottom rear of the desk top with the #8 tap screws supplied (see figure 1-2). After cabling of the desk mounted equipment is complete, dress the cables through the cable clamps and tighten the clamps.

NOTE

To open the cable clamp insert a thin knife blad in the side, lift latch and pull clamp open.

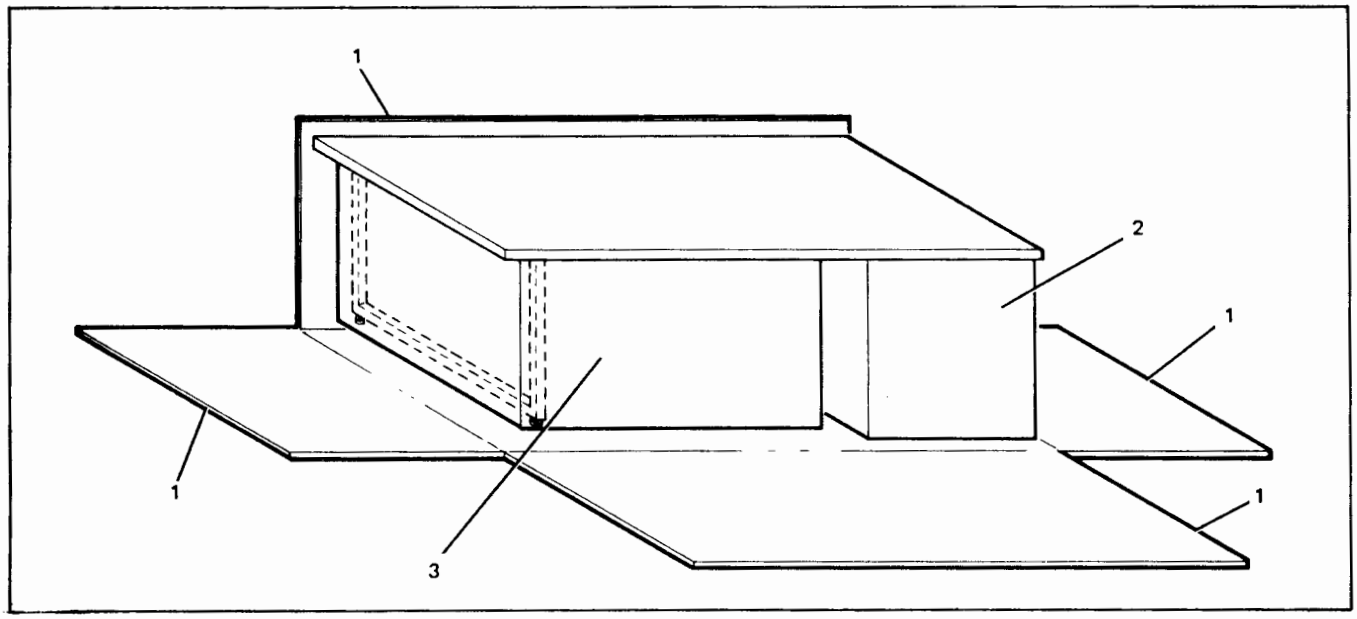


Figure 1-1. Desk Top Carton Disassembly

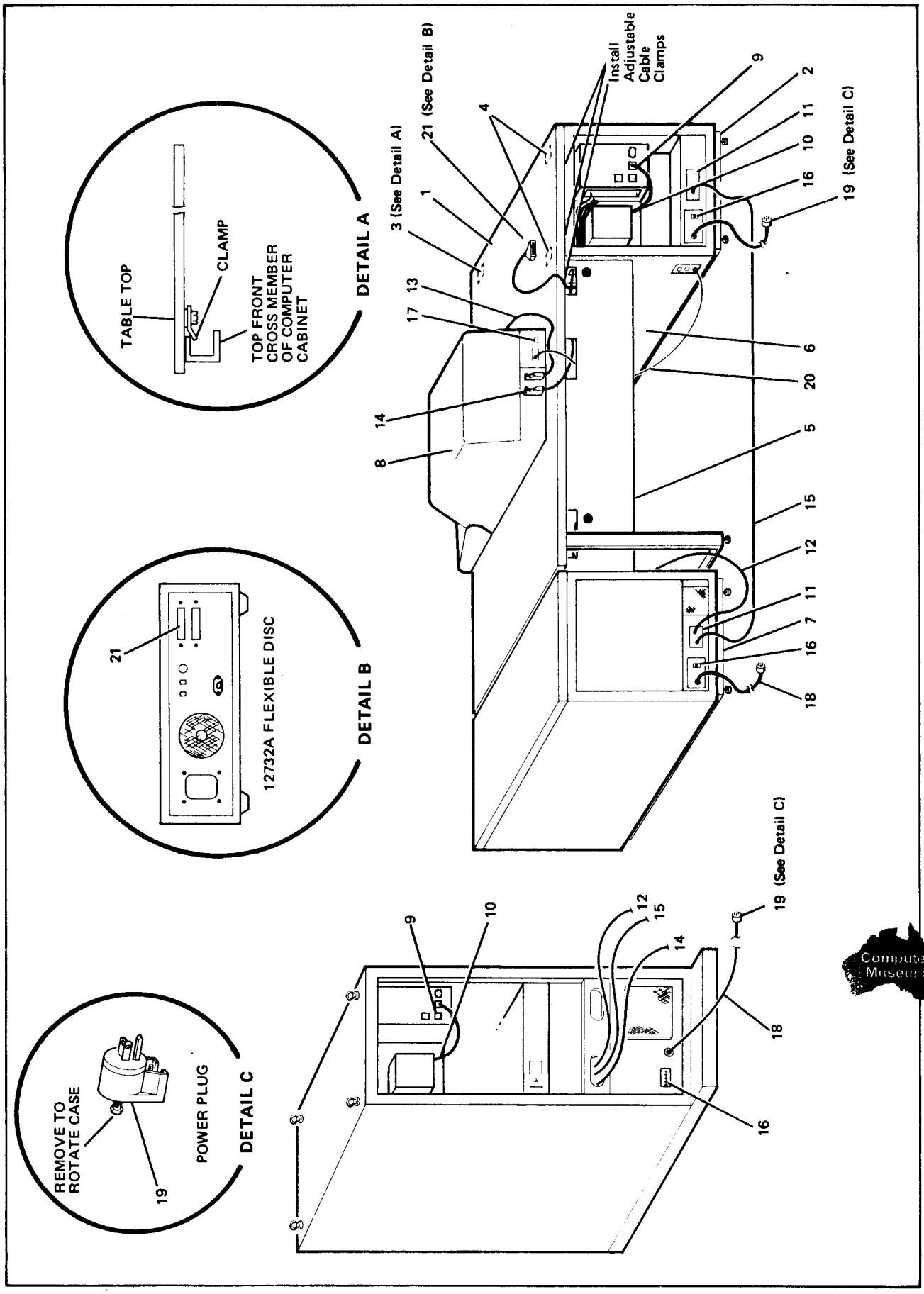


Figure 1-2. System Installation Details (Rear View)

7700-5

CAUTION

Ensure that the levellers on the cabinet and desk leg assembly are fully raised before moving the equipment.

Do not attempt to move the cabinet when the desk top assembly is not properly secured to the cabinet.

Keep the desk top leg clear of any obstruction when moving the cabinet.

Do not raise the desk top assembly more than 4.88 mm (2-inches) above floor level when moving the cabinet.

h. Level the cabinet and desk top by means of the levellers on the cabinet and the desk leg assembly.

1-10. SYSTEM CONSOLE

Place the system console and keyboard assembly on the desk top for desk models, or any convenient surface for other models.

CAUTION

Do not use typewriter pads or any spongy surface that might restrict the air flow through the bottom vents.

1-11. CARTRIDGE DISC MINI-CABINET

Carefully move the disc cabinet into position as shown in figure 1-2. Adjust the levellers so that the cabinet is level with respect to the desk.

1-12. HP 29402B 56-INCH CABINET

WARNING

Once the 56-inch cabinet is in place, the anti-tip legs must be fully extended with the pads down and locked. Some single bay configurations require the HP 40017A (bent front legs and rear anti-tip) stabilizer. Refer to the Cabinet Racking Diagram in the System Support Log for stabilizer requirements. In any case the stabilizer or anti-tip Legs must be porperly installed with pads down prior to pulling out any equipment on rack slides or any hinged equipment. Failure to comply may result in the cabinet tipping over..

a. Carefully move the cabinet(s) to the desired position. Pull out the front anti-tip extension legs until they latch. When the 40017A is required, insert the bent legs (right and left bends outward) in the front of the cabinet. Latch pins inside the cabinet must be raised to insert and latch the legs fully. Insert the rear anti-tip stabilizer per the *Installation Instructions for HP 40017A Cabinet Stabilizer Assembly.*

b. Lower the levelling feet until they firmly touch the floor.

c. Install the magnetic tape unit or other rack mounted accessories at this time. *Refer to the SYSTEM MANUAL INDEX in binder 1 to locate the appropriate Installation and Service manuals.* The recommended location for rack mounted accessories is shown in the Cabinet Racking Diagram of the System Support Log.

d. Remove eyebolts or lifting fixtures (they block ventilation holes in the cabinet top).

NOTE

Set aside any interface PCA's supplied with the accessories. These PCA's will be installed later.

1-13. FLEXIBLE DISC

Place the disc on the desk as shown in figure 1-2.

1-14. LINE PRINTER

Move the line printer to the desired position, within 7.6 metres (25 feet) of the computer cabinet I/O card cage if the standard length signal cable is to be used.

1-15. ACCESSORIES AND INTERFACE PCA'S

Position free standing accessories in any convenient location within the range of the signal cable supplied.

NOTE

A decal, showing the PCA slot assignments for the computer I/O card cage and memory card cage, is located on the inside of the computer cabinet front door. A copy of the decal is contained in the SYSTEM SUPPORT LOG. This copy may be more convenient to use at this time.

To check the installed interface and memory PCA's and to install the accessory interface PCA's proceed as follows:

a. Unlock and open the rear door of the computer cabinet.

b. Remove the I/O card cage cover and battery pack (figure 1-2 item 10) by loosening the four captive screws on the cover. Ensure that the battery pack cable is disconnected from the "BAT INPUT" connector (9).

NOTE

Leave the battery pack and I/O card cage cover off until system testing is complete.

c. Using the decal copy, check that the installed PCA's are in the proper slots. For models 40 and 45 proceed to step d. For models 20, 25 and 30, locate the interface PCA's to be installed and install them in the slots specified on the decal. Install any additional accessory in the remaining empty slots and proceed to step f.

d. Locate the interface PCA's of the Primary System to be installed. Remove the jumper boards from the slots required for the PCA's specified in table 1 of the System Support Log and Install the interface PCA's.

e. Install any additional accessory interface PCA's in the empty slots (higher select codes) following the previously installed PCA's and jumper cards.

f. Using one of the blank copies of the decal in the System Support Log fill in the part number and tab label of the accessory I/O cards (in the space beside the proper select code) that you have installed. The customer may then have the decal typed at his convenience.

NOTE

If more I/O slots are required, jumper boards may be removed and the additional cards installed in place of the jumper boards. Remember that if the interrupt mode is to be used, there can be no vacant slots from select code 10 (octal) to the highest select code used due to the priority chaining scheme.

g. To check the PCA's in the memory card cage rotate the key lock clockwise on operator panel and lower it to the access position.

h. Remove the two screws and lockwashers securing cover to the memory card cage; remove the cover.

i. Using the decal, inventory the PCA's and check that they are in the proper slots.

j. Replace the card cage cover; close and latch the operator panel.

1-16. SYSTEM SIGNAL AND POWER CABLING

Desk to models will require installation of signal cables and power cords for all system components and accessories. Upright cabinet models will have most of the system components in place and completely cabled. Check the cables on these components and their interface PCA's to ensure that the connectors are firmly seated. Install the system cables by performing the procedures in the following paragraphs that pertain to the components in your system.

CAUTION

The cabinet ac receptacles are dedicated for system products. Do not connect external equipment to the cabinet power strips.

1-17. SYSTEM CONSOLE

a. The interface cable, part no. 12966-60008 (figure 1-2 item 14) is in the computer cabinet with one hooded connector connected to the 12966-60004 PCA. This card is identified by "BACI 12966" marked on the extractor. Uncoil the cable and pass the end through the cabinet access hole into the cable trough (for desk models) and up to the console.

b. Raise the rear access cover of the system console and connect the hood connector to the console PCA connector that has been notched to match the cable connector key.

c. Connect the hood connector on keyboard cable 02640-60081 (13) to the console PCA that has been notched to match the cable connector.

d. Connect one end of the system console power cord (20) to the ~LINE connector on the system console and the other end to a convenience outlet on the side panel (6) of the computer cabinet.

1-18. ADDITIONAL DISPLAY TERMINALS

When adding 2645 or 2648 Terminals (non multipoint terminals) miniature rocker switches on the 13260B Extended Asynchronous Interface PCA, part no. 02640-60143 must be set as shown in figure 1-3. You should make your customer aware of this procedure. To set the rocker switches proceed as follows:

NOTE

The installation of multipoint terminals and interface should be accomplished by following the procedures in the *Multipoint Terminal Interface Reference Manual,* part no. 12790-90001.

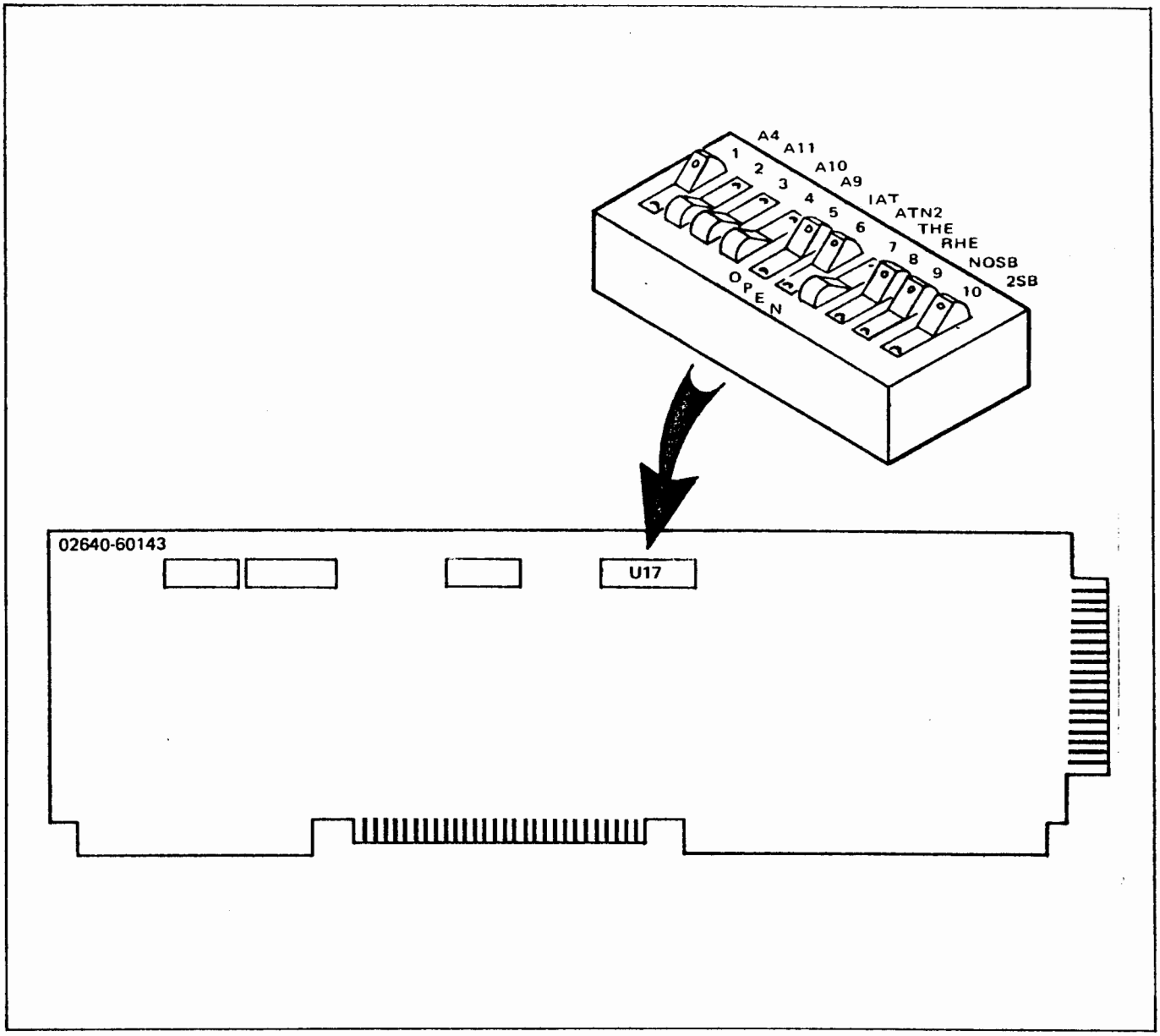


Figure 1-3. HP 13260B Extended Asynchronous Interface PCA Switch Settings.

a. Open the terminal to its half open position.

b. Locate the 02640-60143 PCA, and remove the cable hood connector (if installed) from the PCA. Then, remove the PCA from the Backplane Assembly connector.

c. Set the U17S1 through U17S10 rocker switches as shown in figure 1-3.

d. Reinstall the PCA into the Backplane Assembly connector.

e. Carefully lower top cover to its closed postion.

f. Locate the interface cable 12966-60008 (figure 1-2 item 14). Connect the hooded connector marked ASYN DATA to the 12966-60004 PCA. This card is identified by "BACI 12966" marked on the extractor. Uncoil the cable and pass the end through the cabinet access hole into the cable trough (for desk models) and up to the console.

g. Raise the rear access cover of the system console and connect the hood connector to the console PCA connector that has been notched to match the cable connector key.

h. Connect the hood connector on keyboard cable 02640-60081 (13) to the console PCA that has been notched to match the cable connector.

i. Connect one end of the system terminal power cord (20) to the ~LINE connector on the terminal and the other end to a convenience outlet on the side panel (6) of the computer cabinet.

1-19 FLEXIBLE DISC SUBSYSTEM

a. The interface cable, part no. 12735-60003 (figure 1-2. Item 21) is in the computer cabinet with the dual-hood connector on the PCA's labeled "FLEX DISC I/F 1" AND "FLEX DISC I/F 2". Flex disc I/F 1 is in the lower numbered (higher priority) slot and flex disc I/F 2 is in the next higher numbered (lower priority) slot. Ensure that the connector is seated firmly on the two PCA's.

b. Uncoil the cable and pass the single hood connector through the cable access hole, through the rear of the cable trough and up to the flexible disc. Connect to the top connector on the rear of the flexible disc drive.

c. Connect one end of the flexible disc drive power cord to the ~LINE connector and the other end to a convenience outlet on the side panel of the computer cabinet.

1-20. CARTRIDGE DISC SUBSYSTEM (MINI-CABINETS)

a. Unlock and open the rear door of the cartridge disc subsystem cabinet. Remove the ac power cord and plug the female and into the recessed receptacle (figure 1-2 Item 18) on the rear of the cabinet. (Do not connect to ac power mains at this time.

b. Loosen the screws securing the sliding shutter that covers the cable entry opening on the cartridge disc subsystem cabinet and the computer cabinet.

c. Check that the controller and disc power plugs are plugged in the convenience outlets in the cabinet.

d. Set the circuit breaker on the rear of the cabinet to OFF and connect the ac power cord to an ac receptacle.

e. Locate interface cable, part no. 13037-60015 and the copper-braid grounding cable stored in the bottom of the cartridge disc subsystem cabinet. Pass these cables (12 & 15) through the cabinet cable entry opening, along the cable trough (5), and into the interior of the computer cabinet (2), as shown in figure 1-2. If more convenient, the cables may be laid on the floor between the cabinets and routed into the computer cabinet via the cable entry opening. Dress these cables (and any others laid on the floor) close to the equipment to prevent personnel from stepping or tripping on them. The braided ground cable is not required with 7920 disc drives.

NOTE

If the desk system includes the 56-inch cabinet option, locate cable 13037-60015 and the copper-braid grounding cable in the bottom of the 56-inch cabinet and pass them through the opening in the rear of the cabinet. Route the cables to the computer cabinet as described in step e.

f. Connect the hooded connector on the interface cable 13036-60015 to the 13175A PCA in the computer I/O card cage. This card has "13037 INTF" marked on its extractor. Connect the copper-braid grounding cable to the grounding stud in the computer cabinet, adjacent to the grounding stud used for the power cable grounding wire (see figure 1-4, 1-5, or 1-6).

g. Close the shutter on both cabinets tightly and secure in place with locking screws.

1-21. ACCESSORIES

Install the signal cables and power cords for the magnetic tape unit, lineprinter, and other system accessories at this time. Refer to the appropriate *Installation and Service Manuals* for cable installation data of each accessory.

1-22. HP 29402B CABINET DOOR PANELS

The integration of some accessories such as magnetic tape units, additional disc drive, etc. require the reconfiguration of the door panels. Locate and install the new door panels (packed with the accessories).

1-23. CONNECTION TO MAINS POWER SOURCE

To connect the system to the ac mains power source proceed as follows:

a. Remove the insulators from the BAT. INPUT connector and connect the battery load simulator plug (BLSP), part no. 12991-60002 to the BAT. INPUT connector (figure 1-2, item 9).

b. If the system is equipped with a Hardware Floating Point Processor (FFP), check that the power control cable, part no. 12740-60009, is installed from the PWR CONT OUT connector of the computer power supply to the PWR CONT IN connector of the FFP.

c. Set the power switches listed in table 1-1. Set the power switches on all accessories off.

d. Set the circuit breakers at the rear of each cabinet to OFF.

e. If the system includes a single bay 56-inch cabinet, locate the power cable (stored in the bottom of the cabinet). Have the electrician install the cable in the cabinet at this time. Refer to figure 1-6 for cabinet wiring diagram.

NOTE

50 HERTZ INSTALLATIONS — Have the electrician install the customer furnished power wiring at this time. Refer to figures 1-4, 1-5, and 1-6 for wiring diagrams of the cabinets.

MULTI-PHASE 60 HERTZ INSTALLATIONS — Have the electrician install the customer furnished power wiring at this time. Refer to figures 1-4, 1-5, and 1-6 for cabinet wiring diagram. More detailed cabinet wiring information may be obtained from the *HP 29402B Cabinet Installation and Service Manual,* part no. 02940-90306.

f. Connect the 60 Hertz power cables furnished with the single bay cabinets to the NEMA 5-20R receptacles. The case of the 5-20P power plug may be moved to a more convenient position by removing the screw in the top of the case and the strain relief hood screws. Lift the case free of the plug. Redress (rewire) the cable to the desired position observing polarity of the wires. (White wire to silver screw terminal, black wire to brass screw terminal, and green wire to green screw terminal.) Lower the case onto the plug, replace and tighten the screws.

1-24. TURN ON PROCEDURE

To energize the system following the completion of the installation instructions described in the preceding paragraphs, proceed as follows:

CAUTION

Before the initial start of a system containing an HP 7900A Disc Drive Subsystem, the carriage clip on the disc drive must be removed. Failure to remove the carriage clip will result in damage to the disc drive.

a. Ensure that the following switches for the components in your system are in the off position. Refer to table 1-1 for the location of these switches.

COMPONENT	SWITCH
Computer	~POWER ON/OFF
Hardware Floating Point Processor	~LINE ON/OFF
9885M/S Flexible Disc	AC LINE 0/1
7906A/7920A Disc Drive	POWER/OFF
7900A Disc Drive	LOAD/UNLOAD
13215A Disc Power Supply	POWER ON/OFF
2645A System Console	~LINE ON/OFF

b. Ensure that the power switches of the system accessories are off.

c. Apply power to the mini-cabinets by setting the circuit breaker on the rear of each cabinet to the ON position.

d. Apply power to the 29402B 56-inch cabinet by setting the circuit breaker on the rear of the cabinet to the ON position and then, by pressing the SYSTEM ON-OFF switch at the top front of the cabinet. The switch pushbutton will light.

e. Check that the fans in the cartridge subsystem cabinet and the fans in the 56-inch cabinets are operating.

f. Set the system controls as detailed in table 1-1. Energize the system accessories. Note that the computer, system components, and accessories power-up and the appropriate indicators come on. Perform the self test on the system console and accessories equipped with self test. Any failures or abnormal indications should be investigated and corrected before proceeding.

CAUTION

The disc drive heads should always be retracted before shutting power off in any cabinet containing a disc drive. This is accomplished by setting the RUN/STOP (LOAD/UNLOAD) to STOP (UNLOAD). Failure to do this may result in damage to the disc drive, disc cartridge or disc pack.

g. After the preceeding checks have been completed, shut the computer cabinet off by setting the circuit breaker on the rear of the mini-cabinet to OFF or by setting the disc drive RUN/STOP (LOAD/UNLOAD) switch to STOP (UNLOAD) and then pressing the SYSTEM ON/OFF switch at the top front of the 56-inch cabinet. The switch pushbutton light will go out.

1-25. INSTALLATION CHECKOUT

Following application of power to the system, carry out the disc drive installation checkout procedure described in the *HP 7906A Disc Drive Installation and Service Manual,* part no. 07906-90902 or the *HP 7920A Disc Drive Operating and Service Manaul,* part no. 07920-90001. If marginal or intermittent computer operations are encountered during verification, perform the Processor Power Supply Check, detailed in your *HP 1000 Computer Installation And Service Manual.* Also, consult the Installation and Service manuals for the system accessories, and perform all the required installation checks.

Table 1-1. Initial Control Settings

COMPONENT/ SUBSYSTEM	CONTROL	SETTING	REMARKS
Computer	LOCK/OPERATE switch	OPERATE	Located on power supply — inside front panel
	~POWER ON/OFF switch	ON	Located on power supply — inside front panel
Hardware Floating Point Processor (if installed)	~LINE ON/OFF switch	ON	Located on rear panel
9885M Flexible Disc (Primary system disc should be installed as drive O and the cover closed)	AC LINE 0/1 switch	1	Located on front panel
7906A/7920A Cartridge Disc Subsystem			
a. Disc Controller	POWER ON/OFF switch	ON	Located on rear panel
b. Disc Drive	POWER/OFF switch	POWER	Located below cover on front panel
(Primary system disc cartridge or disc pack must be installed and cover closed)	RUN/STOP switch	RUN	DRIVE READY sign lights after temperature stabilization (approximately 45 seconds).
7900A Cartridge Disc Subsystem			Primary disc cartridge must be installed and cover closed
a. Disc Power Supply	POWER ON/OFF switch	ON	DRIVE POWER lamp on disc panel will light
b. Disc Drive	LOAD/UNLOAD/POWER	LOAD	DRIVE READY indicator lights after 30 seconds
System Console	~LINE ON/OFF switch	ON	Located on rear panel
	DUPLEX switch	FULL	Located on keyboard assembly
	PARITY switch	NONE	
	BAUD RATE switch	9600	
	REMOTE key	DOWN	
	CAPS LOCK key	DOWN	
	AUTO LF key	UP	
	DISPLAY FUNCTIONS key	UP	

1-26. VERIFICATION OF OPERATION (MODELS 20, 25, AND 30)

After completing the checkout procedures, operation of the system components may be verified by running the diagnostic test routines provided with the system. These routines apply to the individual components and subsystems of the system. The diagnostic test routines are absolute programs on tape cartridges that are loaded into the processor using the cartridge tape loader ROM. The test and diagnostic routines are the same as those used for maintenance and troubleshooting. Locate the diagnostic tape cartridges and refer to the *Diagnostic Configurator Reference Manual*, part no. 02100-90157 for detailed information regarding the use of the diagnostics and the contents of each tape.

1-27. OPERATOR TRAINING (MODELS 20, 25, AND 30)

If the system operator has not been responsible for an HP 1000 Computer System before you must show him how to operate the system. With the system operator, review the contents and procedures contained in the *Getting Started With Your HP 1000 Computer System Manual.* Demonstrate the system start up procedures and the physical operation of peripheral devices (loading discs, paper, ribbon, magnetic tape, etc.). At the conclusion of the operator training replace the I/O card cage cover. With the battery switch OFF install the battery power cable, then set the battery switch to ON. Close and lock the doors of the system cabinets and accessories. Finally, show the operator how to shut the system down. This completes the installation procedures for models 20, 25, and 30.

1-28. VERIFICATION OF OPERATION (MODELS 40 AND 45)

The following is a summary of the activities required to complete the installation of a model 40 or 45.

a. Boot-up the Primary System.

b. Modify the LU Reassignment Table.

c. Perform the Primary System Tests.

d. Run diagnostics, as appropriate, on accessories that are not part of the Primary System. Also the diagnostic must be used to check out any DS/1000 interface cards supplied with the system.

NOTE

Interconnection, initialization, and node coordination of the DS/1000 nodes is not a part of this installation. Therefore the Primary System Test for DS/1000 is not functional until the DS/1000 installation has been completed.

e. Operator training (including Primary System disc back-up).

NOTE

The *System Support Log* and the *Getting Started With Your HP 1000 Manual* will be used during these operations. It will be more convenient if you get them before proceeding.

1-29. PRIMARY SYSTEM AUTO BOOT-UP (MODELS 40 AND 45)

a. Set the LOCK/OPERATE switch to LOCK.

b. Ensure that the Primary System disc cartridge is installed.

c. Restore power to the cabinet by positioning the circuit breaker to ON or pressing the SYSTEM ON/OFF switch.

d. Observe that the computer and components powered by the cabinet power-up normally. If the system console and disc were powered down, wait for the TERMINAL READY message and DRIVE READY light (30 to 45 seconds).

e. Observe the system console. A successful boot-up will be indicated by a set of pre-defined soft keys and several messages being displayed. The final message informs you that your system *IS OPERATIONAL AND AT YOUR SERVICE*. If you have no display on your system console:

1. Check that the console is plugged in and the switches and keys are in the positions listed in table 1-1.

2. Shut off computer cabinet power and repeat steps a. through e. above.

3. If you still have no display, refer to BOOT-UP TROUBLE SHOOTING in Appendix A. of the Getting Started Manual.

1-30. LOGICAL UNIT NUMBER REASSIGNMENT FILE MODIFICATION

Primary System logical unit numbers (LU#) have been preassigned at Data Systems Division, however only the LU# for the elements of the system that were integrated and tested at DSD were left activated. The remainder were deactivated by setting the Equipment Table number (EQT#) for the LU#'s to zero in the LU reassignment files. To activate the LU#'s for the Primary System equipment you have installed perform the following procedure.

After boot-up your console will display several pre-defined softkeys and messages. These will vary depending on the Primary System and add-on software purchased. The last entries on the screen should be as shown below. If DS/1000 was not purchased with the system "WITH DS/1000" will be omitted from the message.

```
YOUR RTE-IV PRIMARY SYSTEM WITH DS/1000 IS OPERATIONAL AND
      AT YOUR SERVICE. PRIMARY SYSTEM REVISION xxxx
```

NOTE: xxxx = Primary System date code

Run the editor by typing RU,EDITR cr (cr= return)
beside the File Manager prompt (:)

```
                                  COMMENTS

:RU,EDITR                         request editor
SOURCE FILE?                      editor response
/&RASLU                           request LU reassignment transfer file
  :SYLU,6,4                       editor responds with first line of file
/L100                             type L100 to list complete file
  :SYLU,6,4
  :SYLU,7,0
  :SYLU,8,0
  :SYLU,9,2,1
  :SYLU,10,0
  :SYLU,17,0
  :SYLU,18,0
  :SYLU,19,0
  :SYLU,22,0
  :SYLU,23,0
  :SYLU,24,0
  :SYLU,25,0
  :SYLU,26,0
  :SYLU,30,0
  :SYLU,31,0
  :SYLU,32,0
  :SYLU,33,0
  :SYLU,34,0
  :SYLU,35,0
  :SYLU,36,0
  :SYLU,37,0
  :SYLU,38,0
  :SYLU,39,0
  :SYLU,47,0
  :CN,22,20B,100000B
  :CN,23,20B,0101B
  :CN,24,20B,0102B
  :TR

EOF                               indicates end of file
```


The listing is a sample of a Primary System LU reassignment file; your file may be different. In the System Support Log, Installation Records section, locate Table 2: PRIMARY SYSTEM #x LOGICAL UNIT NUMBER ASSIGNMENTS. Compare the table with the decal copy and check off the elements of the primary system that you have installed. Then compare the marked up table 2 with the LU reassignment file noting the lines of the file that have to be modified or deleted.

NOTE

If you have a hard copy list device (printer) obtain a printed copy of the LU reassignment table. If no printer is available and if your console does not have enough memory to display the complete table, relist the table with the console BAUD RATE switch set to 150 while comparing with table 2 in the System Support Log. This will slow the listing on the console.

1-31. LU REASSIGNMENT PROCEDURE

The procedure for activating LU#'s is to delete the appropriate entries from the file and the procedure for reassigning an LU# is to change the EQT# entry in the file. A sample procedure is shown below, remember the changes in the sample do not necessarily apply to your system. The modifications to your reassignment file will be controlled by the equipment installed and table 2 in the System Support Log.

The second file entry in the sample is a line printer LU# with an EQT# of the system console. Consider that the sample system contains a line printer and the EQT# must be modified. This probably will be the only modification to the table, all other elements will either be deleted or remain unchanged.

The following commands typed after the editor prompt (/) may be used in this procedure. cr is used to indicate the RETURN key on your console; x=LU#; y=EQT#.

/R:SYLU,x,ycr	replaces entry
/-cr	deletes entry
//cr	leaves entry unchanged and goes to next entry
/^2cr	will display entry 2 back from current entry (3 would display third entry back, etc.)
/ :SYLU,x,ycr ↑ *Single space*	adds new entry under existing one

PROCEDURE	COMMENTS
1	typing 1 returns you to first entry in file
:SYLU,6,4	line printer LU with console EQT#
/R:SYLU,6,6	replaces console EQT#4 with line printer EQT#6
//	/ leaves entry unchanged, displays next entry
:SYLU,7,0	This entry reserved, go to next entry
//	entry ok, go to next entry
:SYLU,8,0	7970 Magnetic Tape installed
/-	delete entry (this activates magentic tape LU #8)
:SYLU,9,2,1	DS/1000 Communications port #1 installed
//	entry ok
:SYLU,10,0	no DS/1000 port #2
//	entry ok
:SYLU,17,0	
//	
:SYLU,18,0	
//	
:SYLU,19,0	
//	
:SYLU,22,0	
//	
:SYLU,23,0	
//	
:SYLU,24,0	
//	
:SYLU,25,0	
//	
:SYLU,26,0	
//	None of this equipment installed left file
:SYLU,30,0	entries unchanged. Realized that I do have
/^2	two Data Entry Terminals. Return to entry for LU# 25
:SYLU,25,0	(2 entries back) and delete
/-	entries for LU# 25 and LU#26
:SYLU,26,0	
/-	
:SYLU,30,0	one channel of HPIB installed
/-	delete entry
:SYLU,31,0	
//	LU# 31 through 39 equipment not installed entries remain unchanged

PROCEDURE (CONTINUED)	COMMENTS (CONTINUED)
:SYLU,32,0	
//	
:SYLU,33,0	
//	
:SYLU,34,0	
//	
:SYLU,35,0	
//	
:SYLU,36,0	
//	
:SYLU,37,0	RS232 terminal installed
//	delete entry, this is the last entry you will modify
:SYLU,38,0	
//	type 1 to return to first entry in file
:SYLU,39,0	
/	To check your modifications list the complete
:SYLU,47,0	file and compare against table 2 in System Support Log.
/-	
:CN22,10B,100000B	
/1	
:SYLU,6,6	
L100	
:SYLU,6,6	
:SYLU,7,0	
:SYLU,9,2,1	
:SYLU,10,0	
:SYLU,17,0	
:SYLU,18,0	
:SYLU,19,0	
:SYLU,22,0	
:SYLU,23,0	
:SYLU,24,0	
:SYLU,31,0	
:SYLU,32,0	
:SYLU,33,0	
:SYLU,34,0	
:SYLU,35,0	
:SYLU,36,0	
:SYLU,37,0	
:SYLU,38,0	
:SYLU,39,0	
:CN,22,20B,100000B	
:CN,23,20B,0101B	
:CN,24,20B,0102B	
:TR	
EOF	
/ER	if the listing shows the correct LU's deactivated or changed when compared with table 2
END OF EDIT	type ERcr to replace original
	file with modified file
:	editor will now replace the file,
	return you to the File Manager, and
	the FMP prompt will be displayed

To activate of the reassignment file changes, shut the computer off, reboot the system, then perform the Primary System tests.

1-32. PRIMARY SYSTEM TEST (MODELS 40 AND 45)

Perform the Primary System test procedure described in Appendix C of The Getting Started With Your HP 1000 Models 40 and 45 Manual, then return to this manual to complete the installation.

1-33. ACCESSORY COMPONENT VERIFICATION (MODELS 40 AND 45)

Operation of the accessory components or peripherals that have not been checked by Primary System test programs may now be verified by running diagnostic test routines provided with the system. The diagnostic test routines are absolute programs on tape cartridges that are loaded into the processor using the cartridge loader ROM. Locate the diagnostic test cartridges and refer to the Diagnostic Configurator Reference Manual, part no. 02100-90157 for detailed information regarding the use of the diagnostics and the contents of each tape.

1-34. OPERATOR TRAINING (MODELS 40 AND 45)

With the system operator, demonstrate the system start up procedures, how to back up his Primary System disc, the operation of physical devices (loading discs, paper, ribbon magnetic tape, etc.). Review the contents and procedures contained in the Getting Started With Your HP 1000 Computer System Manual. Finally, show the system operator how to shut the system down. At the conclusion of the operator training replace the I/O card cage cover. With the battery switch off install the battery power cable, then set the battery switch to ON. Close and lock the doors of the system cabinets and accessories. This will complete the installation procedures for models 40 and 45.

1-35. PRIMARY SYSTEM DISC BACKUP

A backup copy of the Primary System disc cartridge to a spare cartridge or the disc pack to another disc pack or magnetic tape must be created and left with the system operator. Perform the backup procedure with the system operator.

1-36. DISC CARTRIDGE (7900/7906) BACKUP PROCEDURE

The procedure for duplicating a cartridge consists of copying the cartridge to the fixed platter, replacing the cartridge with the blank spare and copying the information from the fixed platter to the spare. With the system operational, the Primary System disc cartridge installed, and the backup disc available perform the following procedure.

a. Insert the Off Line Utility tape cartridge, part no. 92067-13301 into the system console left cartridge tape drive unit.

b. Set CPU LOCK/OPERATE switch to OPERATE and press HALT.

c. Hard reset the console by pressing RESET TERMINAL twice.

d. Set Switch Register bits 14 and 15 to console loader ROM address (listed on decal) and bits 6-11 to the console select code.

e. Press LOAD, PRESET, IBL, and RUN. The utility program will load (approximately 2-minutes). A successful load will terminate with a halt 102077 in the display register.

f. Set P-register=2 and press STORE.

g. Set console select code in switch register bits 0-5, press STORE and RUN. Console will display: DISC BACKUP UTILITY and begin asking a series of questions. Follow the sample annotated utility program as an aid to complete the procedure.

h. After completing the following utility routine set the RUN/STOP (LOAD/UNLOAD) switch to STOP (UNLOAD) and turn power to the computer cabinet off. Set the LOCK/OPERATE switch to LOCK. Turn the cabinet power on and set disc drive RUN/STOP (LOAD/UNLOAD) switch to RUN (LOAD). The system will boot up from the new disc.

Utility Routine	Comments
TERMINAL READY	
DISC BACKUP UTILITY	
TASK?	Perform copy routine
CO	Type CO
SOURCE DISC CHANNEL#?	
14	Disc drive select code (use lowest select code listed on decal)
SOURCE DISC TYPE?	Enter type of disc 7900/7906
7906	
SOURCE DISC DRIVE#?	Use first disc drive; Enter 0
0	
TYPE OF COPY?	FROM-TO copy: enter FR

UTILITY ROUTINE (CONTINUED)	COMMENTS (CONTINUED)
FR	
RTE OR DOS DISC?	RTE system; enter RT
RT	
FROM CYLINDER#?	Where copying starts; enter 0
0	
# OF TRACKS?	264 for 7906; 203 for 7900
264	
# OF SURFACES?	Enter 2 for 7906; 7900 will
2	ask PLATTER #?; enter 1
STARTING HEAD#?	0=first head; enter 0
0	
DEST DISC DRIVE#?	0=same drive; enter 0
0	
TO CYLINDER#?	where copy starts; enter 0
0	
# OF SURFACES?	Enter 2 for 7906; 7900 will
2	ask PLATTER #?; enter 0
STARTING HEAD#?	Enter 2; first head fixed platter
2	
6144 WORD BUFFER DESIRED?	Enter yes
YES	
VERIFY?	Enter yes
YES	
VERIFYING	
TASK COMPLETED	
TASK?	When the transfer is complete, remove Primary System disc and install a blank disc cartridge. Return to the console and answer the questions as before. The answers are the same except the STARTING HEAD#? answers will be reversed because you are copying from the fixed platter to the new blank disc cartridge.
CO	
SOURCE DISC CHANNEL#?	
14	
SOURCE DISC TYPE?	
7906	
SOURCE DISC DRIVE#?	
0	
TYPE OF COPY?	
FR	
RTE OR DOS DISC?	
RT	
FROM CYLINDER#?	
0	
# OF TRACKS?	
264	
# OF SURFACES?	
2	
STARTING HEAD#?	First head fixed platter
2	
DEST DISC DRIVE#?	
0	
TO CYLINDER#?	
0	
# OF SURFACES?	
2	
STARTING HEAD#?	
0	Head 0 on new cartridge
6144 WORD BUFFER DESIRED?	
YES	
VERIFY?	
YES	
VERIFYING	
TASK COMPLETED	
TASK?	

1-37. REINITIALIZING THE DISC

The copying operation has overwritten the initialization information on the fixed platter. To reinitialize the disc perform one of the two following operations.

NOTE

This operation will not destroy Primary System.

For 7900 disc; type after the colon TR,&I7900cr

For 7906 disc; type after the colon TR &I7906cr
The operation will end with a colon prompt (approximately 15 seconds)

Remove the cartridge tape from the console and return it and the original Primary System disc cartridge to the system operator for storage.

1-38. DISC PACK BACK-UP PROCEDURE

Providing a back-up copy of the Primary System disc pack can be accomplished by copying to another disc pack if your system is equipped with two 7920 disc drives or saving the Primary System on magnetic tape. A sample of each OFF LINE UTILITY procedure is listed below. Perform steps a through g of paragraph 1-36 to load the off line utility program.

1-39. COPY FROM DISC PACK TO MAGNETIC TAPE

Utility Routine	Comments
DISC BACKUP UTILITY	
TASK?	Perform save routine
SA	Type SA
MAG TAPE CHANNEL#?	
20	Magnetic tape select code (from I/O decal)
SOURCE DISC CHANNEL#?	
14	Disc drive select code (from I/O decal)
SOURCE DISC TYPE?	
7920	Enter type of disc
SOURCE DISC DRIVE#?	
0	Disc drive number.
TYPE OF SAVE?	FROM-TO save: enter FR
FR	
RTE OR DOS DISC?	RTE system: enter RT
RT	
FROM CYLINDER#?	Where copying starts: enter 0
0	
# OF TRACKS?	264 for 7920
264	
# OF SURFACES?	2 for 7920
2	
STARTING HEAD#?	0=first head: enter 0
0	
6144 WORD BUFFER DESIRED?	Enter yes
YES	
VERIFY?	Enter yes
YES	
FILE ID?	Enter Primary System number, disc type, and date of save
PRIMARY SYSTEM #3 BACKUP, 7920, 5 MAY 1978	
MT FILE#?	Enter a file name
1	
VERIFYING	
TASK COMPLETED	The transfer is complete, rewind tape; label and store it.

1-40. COPY FROM DISC PACK TO DISC PACK

Utility Routine	Comments
DISC BACKUP UTILITY	
TASK?	Perform copy routine
CO	Type CO
SOURCE DISC CHANNEL#?	
14	Select code of drive 0
SOURCE DISC TYPE#?	
7920	
SOURCE DISC DRIVE#?	First disc drive: enter 0
0	
TYPE OF COPY	FROM-TO copy: enter FR
FR	
RTE OR DOS DISC?	RTE system: enter RT
RT	
FROM CYLINDER#?	Where copying starts: enter 0
0	
# OF TRACKS?	264 for 7920
264	
# OF SURFACES?	Enter 2 for 7920
2	
STARTING HEAD#?	0=first head: enter 0
0	
DEST DISC DRIVE#?	Second disc drive: enter 1
1	
TO CYLINDER #?	
0	
# OF SURFACES?	
2	
STARTING HEAD#?	
0	
6144 WORD BUFFER DESIRED?	Enter yes
YES	
VERIFY?	Enter yes
YES	
VERIFYING	
TASK COMPLETED	The transfer is complete; remove primary system disc pack, label and store it.

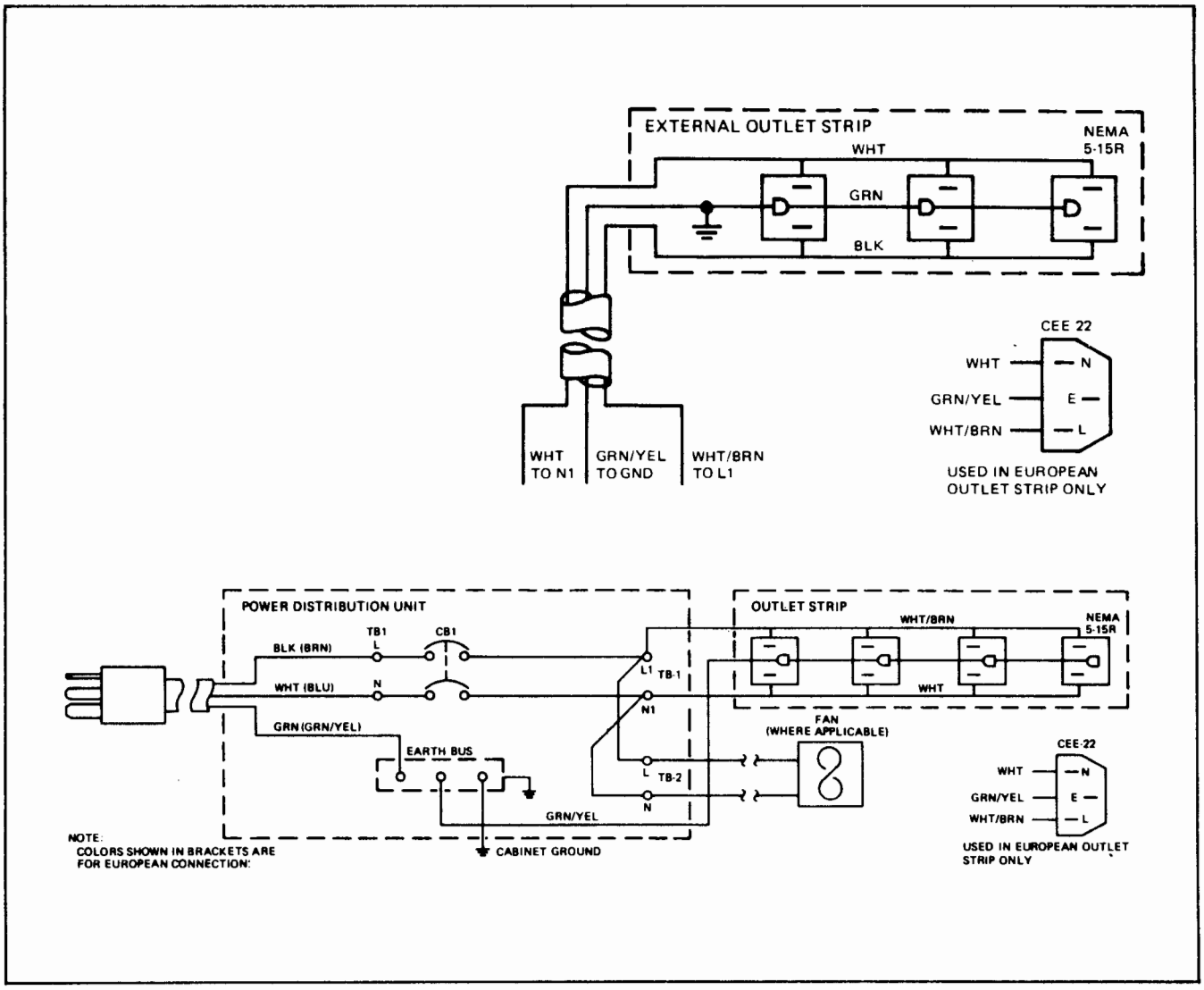


Figure 1-4. HP 29421A Computer Cabinet Wiring Diagram

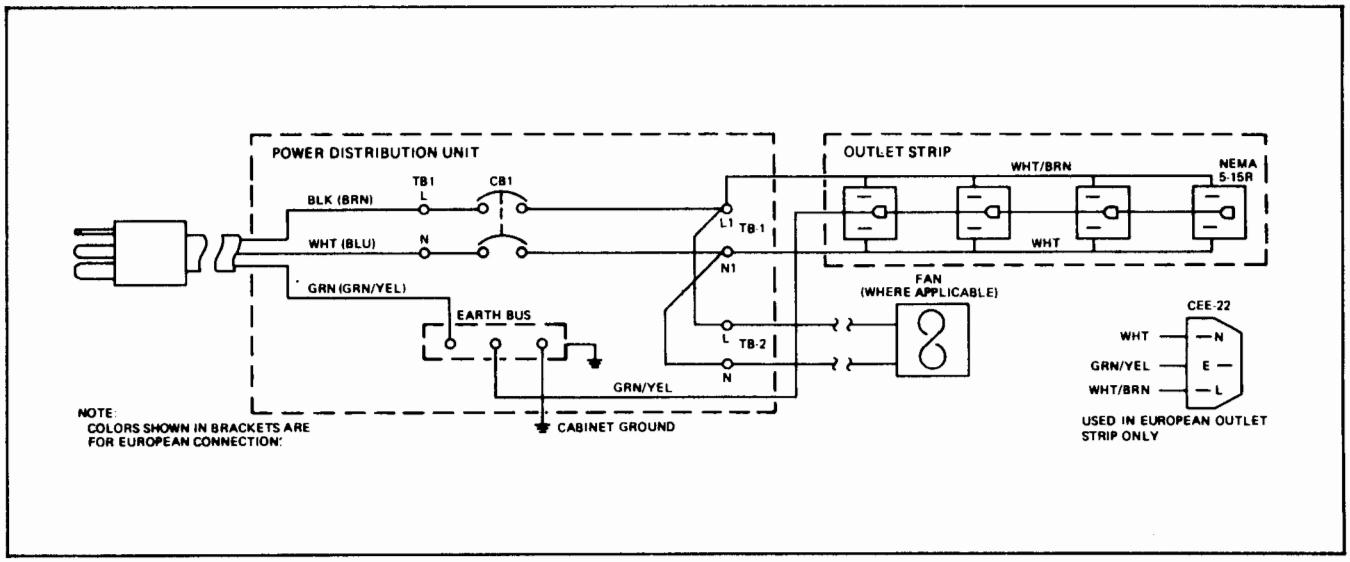
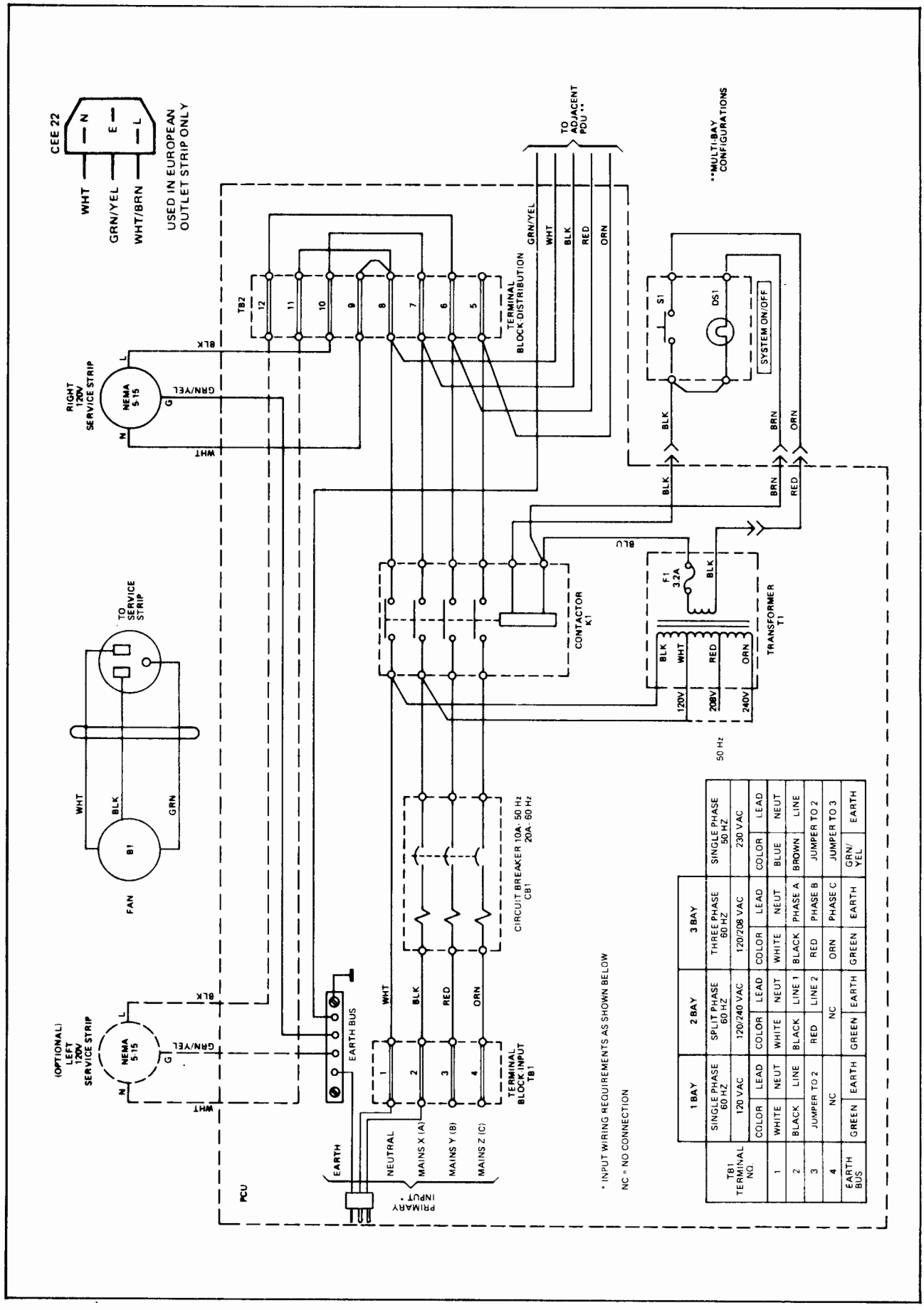


Figure 1-5. HP 29425A Cartridge Disc Cabinet Wiring Diagram



TB1 TERMINAL NO.	1 BAY			2 BAY			3 BAY			SINGLE PHASE 50 HZ	
	SINGLE PHASE 60 HZ			SPLIT PHASE 60 HZ			THREE PHASE 60 HZ			230 VAC	
	120 VAC			120/240 VAC			120/208 VAC				
	COLOR	LEAD		COLOR	LEAD		COLOR	LEAD		COLOR	LEAD
1	WHITE	NEUT		WHITE	NEUT		WHITE	NEUT		BLUE	NEUT
2	BLACK	LINE		BLACK	LINE 1		BLACK	PHASE A		BROWN	LINE
3	JUMPER TO 2			RED	LINE 2		RED	PHASE B		JUMPER TO 2	
4	NC			NC			ORN	PHASE C		JUMPER TO 3	
EARTH BUS	GREEN	EARTH		GREEN	EARTH		GREEN	EARTH		GRN/ YEL	EARTH

Figure 1-6. HP 29402B 56-Inch Cabinet Wiring Diagram

MAINTENANCE

SECTION II

This section contains preventive maintenance, general maintenance, troubleshooting, and cabling information for the HP 1000 Computer System. The system is designed to operate over a wide range of conditions (see the Technical Data Book). However, to reduce costly down time, and the possibility of failure, a maintenance agreement is advisable. (HP Maintenance Agreements are available for those who desire to contract for this service.) Personnel in charge of the system should become familiar with the hardware and software to be able to quickly place it back in operation.

2-1. ELECTRICAL SAFETY

Before proceeding with any maintenance or service on the system which requires physical contact with electrical or electronic components, be sure that either power is removed or that safety precautions are followed to protect personnel against shock. Heed all "WARNING" signs on equipment. Rubber mats should be used for standing on while working on equipment inside a cabinet with power on. All maintenance work must be done by qualified personnel.

2-2. PREVENTIVE MAINTENANCE

WARNING

High voltages are present on the equipment. Always disconnect power before performing any maintenance. Failure to do this could result in serious injury.

Preventive maintenance schedules should be set up according to the quality of the environment in which the system is operating. A system in a clean and air-conditioned atmosphere requires much less care than one which is located in an atmosphere with an unusual amount of dust, smoke, moisture, or other foreign matter.

The user should consult the *Installation and Service Manual* for each component in his system for the procedures required for a preventive maintenance schedule. The manuals for system components are listed in the System Manual Index.

2-3. GENERAL MAINTENANCE

The cabinets and all interconnecting cabling should be inspected by a qualified person once a month for signs of mechanical and electrical defects. Electrical components that show signs of deterioration should be checked and a thorough investigation made to verify proper operation. Mechanical parts should be inspected for excessive wear, looseness, misalignment, and corrosion. Be sure that all ventilating fans are in good working order.

The cabinets and equipment should be kept free of dust, moisture, grease, and foreign matter to ensure trouble-free operation. A dry clean cloth, a soft bristle brush, or a cloth saturated with isopropyl alcohol or similar cleaning compounds may be used to clean the metal portions of the cabinets and the table tops. Instrument front panels, (metal portions, knobs, etc.) may be cleaned with Chemisol, an industrial cleaner and degreaser, or Formula 409 (purchased from "A" Division of Harrell Corp., So. Norwalk, Connecticut). These cleaners are usually used in half-and-half mixture with water for the initial panel cleaning. If a slight residue remains, a half-and-half mixture of alcohol and water will remove it.

Filters for the ventilating fans in the cabinets, disc drive, and plenum should be cleaned weekly to ensure that the equipment remains free of dust. To clean the filters vacuum the outer sides (only). The ventilating fans used in the system have sealed bearings and require no lubrication.

CAUTION

Do not connect a vacuum cleaner or other equipment that generates line noise to a system ac receptacle. Failure to comply may result in erratic system operation.

2-4. REMOVAL OF SYSTEM COMPONENTS

Rail and column mounted system components may be removed using the following instructions:

WARNING

To prevent possible injury to personnel and accidental damage to equipment, two or more persons are required to remove, lift, or carry the rail-mounted processor and disc drive. These units weigh 34 kilograms (75 pounds) and 73.6 kilograms (162 pounds), respectively.

a. Ensure that all power is off. Disconnect cabinet power cable from wall receptacle or set circuit breaker to OFF in System Power Panel for hardwired cabinets.

   Disconnect all cables from rear of unit.

   NOTE

   The doors and side panels of the cabinets are removable. If it is necessary to remove these items to gain access to the cables, refer to the appropriate cabinet *Installation and Service Manual* for instructions. These manuals are listed in the System Manual Index.

c. Remove front channel mounting screws from behind both sides of unit. On the processor, these screws are located behind the drop-front panel.)

d. Slide unit out holding it firmly so that it does not drop out of the front. Remove unit. Heavy units should be moved on to a firm platform which can be adjusted to the operating height of the equipment being removed.

2-5. TROUBLESHOOTING PROCEDURE

If a malfunction occurs or is suspected in the system, it is suggested that an attempt be made first to isolate the problem to a particular system component or subsystem. This can be accomplished by an analysis of the symptoms, followed by running self-tests where available, running Primary System tests on models with an RTE-IV operating system, and running the system's diagnostic programs. System diagnostic tape cartridges, together with associated *Reference Manuals* are listed in *Diagnostic Configurator Reference Manual,* part no. 02100-90157, provides detailed information regarding use of the diagnostics.

When the problem has been isolated, the *Installation and Service Manual* for the suspected component should then be consulted for troubleshooting suggestions. These manuals are listed in the System Manual Index.

2-6. PRIMARY SYSTEM TEST (RTE-IV ONLY)

In preparation for running the Primary System tests, interview the System Manager to ascertain the status of the Primary System. If the Primary System has not changed, boot up the system and run the primary system tests using the operating procedures in Appendix C of the "Getting Started" manual. If the system has been reconfigured or updated then your Primary System Disc Cartridge or Disc Pack must be reconfigured or an LU reassignment performed.

2-7. LU REASSIGNMENT

Only LU reassignment is necessary when equipment is added into the original Primary System select code location, for example assume an HP-IB interface has been installed in select code 13 of a Primary System no. 1 and that no other Primary System select codes have been changed. Then LU 30 must be enabled to address the interface PCA and LUs 31 through 39 are enabled to address devices with bus addresses 1 through 9 respectively.

The Logical Unit Number Reassignment File Modification procedure in Section I (paragraph 1-30) of this manual must be performed to activate the LU numbers then the Primary System tests for the system and peripherals can be performed using the operating procedures in Appendix C of the "Getting Started" manual.

2-8. RECONFIGURATION

If interface PCAs have been moved to select codes different than those assigned in the original Primary System, then an I/O reconfiguration must be performed.

A temporary reconfiguration should be done and the Primary System tests performed to make certain there are no configuration problems before making the reconfiguration permanent. If the system is going to be changed again in the near future do not alter your Primary System disc by making a permanent configuration. To reconfigure your primary system proceed as follows:

a. In the System Support Log revise Primary System tables 1 and 3 to show the current I/O select codes for the installed equipment.

b. Install Primary System disc cartridge or disc pack.

c. Perform boot up and temporary reconfiguration using the procedures in the RTE-IV Programmers Reference Manual.

d. Run the Primary System tests described in appendix C of the "Getting Started" manual.

e. If this configuration is to be made permanent, repeat the reconfiguration procedure to update disc.

f. After testing or troubleshooting is complete, remove and store the Primary System disc cartridge or disc pack.

2-9. CABLING INFORMATION

For signal tracing between the Computer and the HP 7906 cartridge disc subsystem or the HP 7920A disc subsystem, refer to the *HP 13175A/13178B Disc Controller Interface Kit Installation and Service Manual,* part no. 13037-90015. This provides a description of the signal flow between the interface card in the processor and the device