

**HP 3000 Computer Systems**

**HP 3000 SERIES 64/68 DCU TO HP 150  
COMMUNICATION PROGRAM**

**Special Documentation Package**



**19447 PRUNERIDGE AVENUE, CUPERTINO, CA 95014**

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# PRINTING HISTORY

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The software code printed alongside the date indicates the version level of the software product at the time the manual or update was issued. Many product updates and fixes do not require manual changes and, conversely, manual corrections may be done without accompanying product changes. Therefore, do not expect a one to one correspondence between product updates and manual updates.

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The List of Effective Pages gives the date of the most recent version of each page in the manual. To verify that your manual contains the most current information, check the dates printed at the bottom of each page with those listed below. The date on the bottom of each page reflects the edition or subsequent update in which that page was printed.

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ALL . . . . .	JUN 1985

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# PREFACE

This manual describes the installation and use of the HP 3000 Series 64/68 DCU (Diagnostic Control Unit) to HP 150 Communication Program (32342-13402). With the Communication Program, the HP 150 Personal Computer can be used as a System Console for the HP 3000 Series 64/68 Computer System.

The Communication Program employs the HP 150 function keys in connection with a dual disc drive to emulate a partial set of the cartridge tape functions of the previous Series 68 console, the HP 2647F terminal. These function keys enable the HP 150 to perform standard tape functions such as REWIND, FORMAT, SHOW FILES, etc.

Diskettes on the HP 150 can be used to load Fault Locating Diagnostics (FLDs) (32342-13403), and can also be used to store String Dumps of the Series 68 shift strings for diagnostic purposes.

The Communication Program (distributed on a standard HP Micro Diskette) together with the following hardware comprise the Communication package:

- An HP 150 Touchscreen II Personal Computer (45851A) (U.S. and all localized versions supported as of May 1, 1985.)
- An HP 9123D Dual Double-Sided Disc Drive configured with the left disc as Drive A and the right disc as Drive B.
- One of the following cables:
  - 13242N U.S. Modem cable RS-232C.
  - 13242M European Modem cable RS-232C.
  - 13242P RS-422 cable (25 pin to 5 pin).
  - 13242X RS-232C cable (25 pin to 3 pin).
- The following supported printers are optional:
  - HP 2934A opt. 046 (HP-IB) Serial Dot Matrix Printer.
  - HP 2225A Think Jet (HP-IB) Printer.

A further hardware requirement for the Communication Program is a ~~Diagnostic Control Unit~~ (30140-60001) with a ROM ~~32342-13402-01~~ or later.\* These ROMs have the modifications necessary to work with the Communication Program on the HP 150.

A further software requirement is the ~~MPE V System~~ Operating System (Version ~~E.00.01/P.00.01~~ or later) ~~on the HP 150~~ Operating System (Version ~~G.00.00 or later~~).

\* To display the date code for the ROMs currently in your system use the DCU Control Mode command PA (for detailed instructions refer to the MPE V System Operation and Resource Management Reference Manual (32033-90005), Section XI, "SYSTEM CONTROLS AND SPECIAL FUNCTIONS").



# CONVENTIONS USED IN THIS MANUAL

NOTATION	DESCRIPTION
nonitalics	Words in syntax statements which are not in italics must be entered exactly as shown. Punctuation characters other than brackets, braces and ellipses must also be entered exactly as shown. For example:  EXIT;
<i>italics</i>	Words in syntax statements which are in italics denote a parameter which must be replaced by a user-supplied variable. For example:  CLOSE <i>filename</i>
[ ]	An element inside brackets in a syntax statement is optional. Several elements stacked inside brackets means the user may select any one or none of these elements. For example:  $\left[ \begin{array}{c} A \\ B \end{array} \right]$ User may select A or B or neither.
{ }	When several elements are stacked within braces in a syntax statement, the user must select one of those elements. For example:  $\left\{ \begin{array}{c} A \\ B \\ C \end{array} \right\}$ User must select A or B or C.
...	A horizontal ellipsis in a syntax statement indicates that a previous element may be repeated. For example:  [, <i>itemname</i> ]...;  In addition, vertical and horizontal ellipses may be used in examples to indicate that portions of the example have been omitted.  A shaded delimiter preceding a parameter in a syntax statement indicates that the delimiter <i>must</i> be supplied whenever (a) that parameter is included or (b) that parameter is omitted and any <i>other</i> parameter which follows is included. For example:  <i>itema</i> [, <i>itemb</i> ][, <i>itemc</i> ]  means that the following are allowed:  <i>itema</i> <i>itema, itemb</i> <i>itema, itemb, itemc</i> <i>itema, , itemc</i>

# CONVENTIONS (continued)

$\Delta$  When necessary for clarity, the symbol  $\Delta$  may be used in a syntax statement to indicate a required blank or an exact number of blanks. For example:

```
SET[(modifier)] $\Delta$ (variable);
```

underlining When necessary for clarity in an example, user input may be underlined. For example:


```
NEW NAME? ALPHA
```



In addition, brackets, braces or ellipses appearing in syntax or format statements which must be entered as shown will be underlined. For example:

```
LET var[[subscript]] = value
```

shading

Shading represents inverse video on the terminal's screen. In addition, it is used to emphasize key portions of an example.



The symbol  may be used to indicate a key on the terminal's keyboard. For example,  indicates the carriage return key.

 *char*

Control characters are indicated by  followed by the character. For example  Y means the user presses the control key and the character Y simultaneously.

## SYSTEM CONSOLE INSTALLATION

The following is the procedure for installing an HP 150 Personal Computer as the System Console on an HP 3000 Series 6X computer system:

1. See Figure 1-1 for the equipment supplied with the HP 150.
2. Ensure the HP 150 POWER switch, located at the lower left front of the display unit, is in the OFF (out) position.

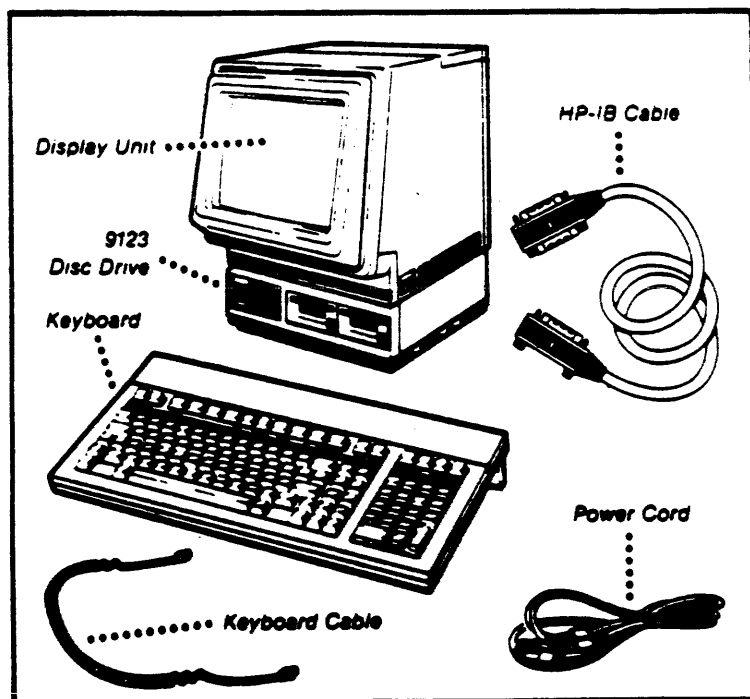


Figure 1-1. HP 150 and Equipment Supplied

3. Remove the top and back covers from the HP 150 by pressing in on the left and right release tabs (see Figure 1-2).

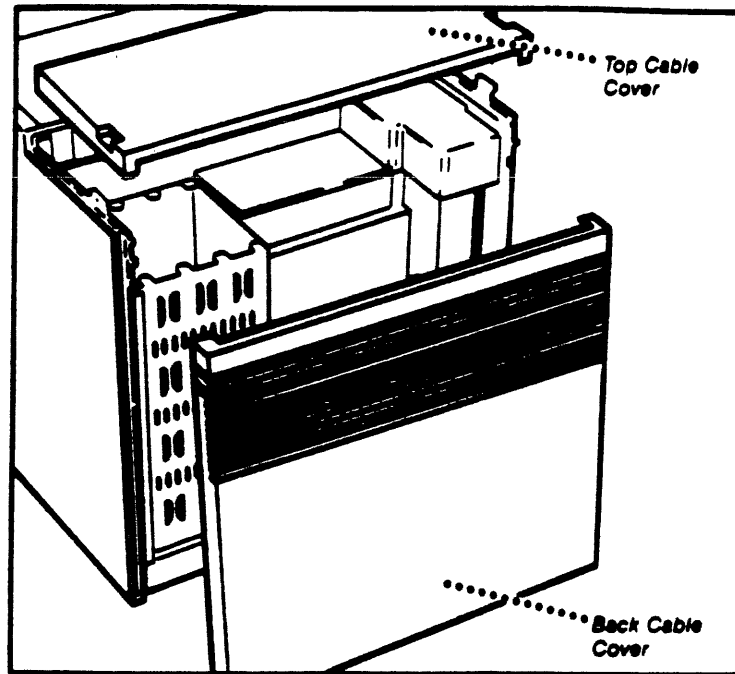


Figure 1-2. Removable Cable Covers - Top and Back

4. Connect the HP 9123D Disc Drive to the HP 150 as follows:
  - a. Remove the sheet of stickers from the back of the Getting Started With Your Touchscreen II Personal Computer Manual (45487-90001), supplied with the HP 150.
  - b. Place the "A" sticker next to the left disc drive slot and the "B" sticker next to the right disc drive slot of the HP 9123D. A and B are the "names" that the HP 150 uses to identify which drive (left or right) contains the disc to be accessed.
  - c. Remove the rear cable cover from the disc drive and locate the disc drive power cable (see Figure 1-3).
  - d. Place the HP 150 display unit on top of the disc drive, as shown in Figure 1-4.
  - e. Connect the single-sided connector of the HP-IB cable to the back of the disc drive and the double-sided connector to the HP-IB connector of the HP 150 (see Figure 1-4).
  - f. Connect the disc drive power cord as shown in Figure 1-4.
5. Connect the keyboard as follows:
  - a. Identify and connect the keyboard cable connector, marked with one dot, to the receptacle marked with one dot on the back of the keyboard (see Figures 1-5 and 1-6).
  - b. Secure the flat section of the cable in the slot provided as shown in Figure 1-7.
  - c. Connect the other end of the cable, marked with two dots, into the receptacle on the right front side of the HP 150 (see Figure 1-8).

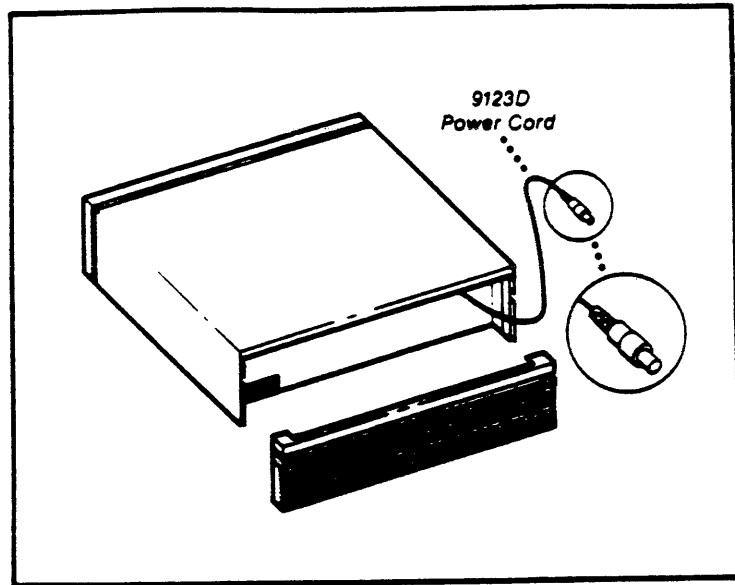


Figure 1-3. Disc Drive Power Cord Location

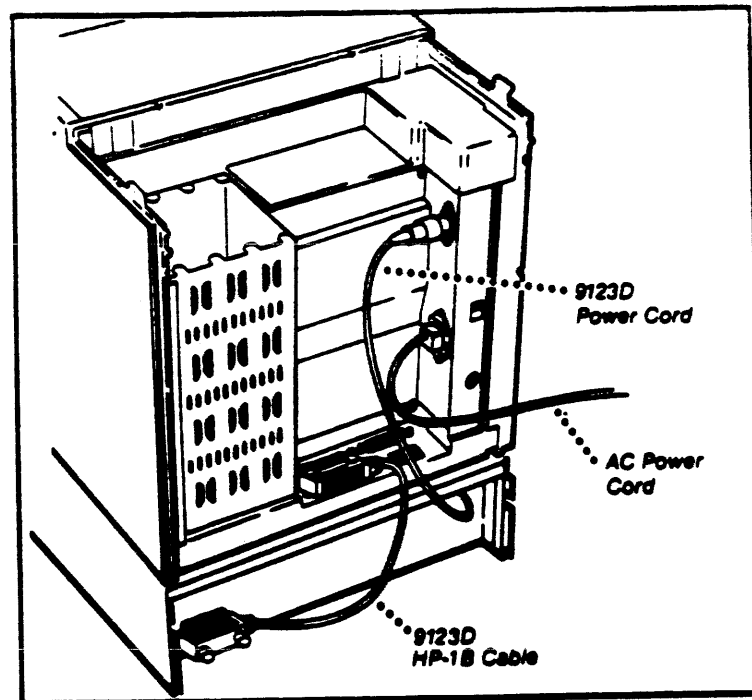


Figure 1-4. HP 150 With HP 9123D Connected

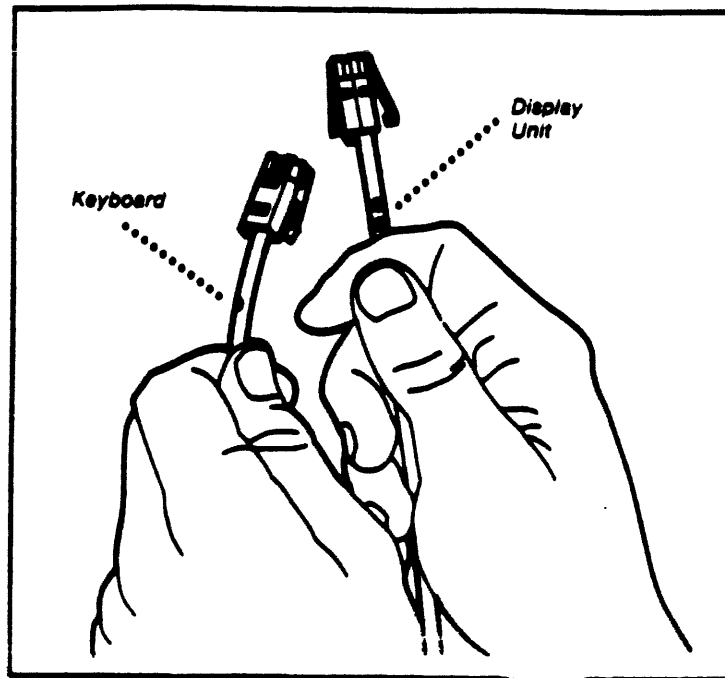


Figure 1-5. Keyboard Cable Connector Identification

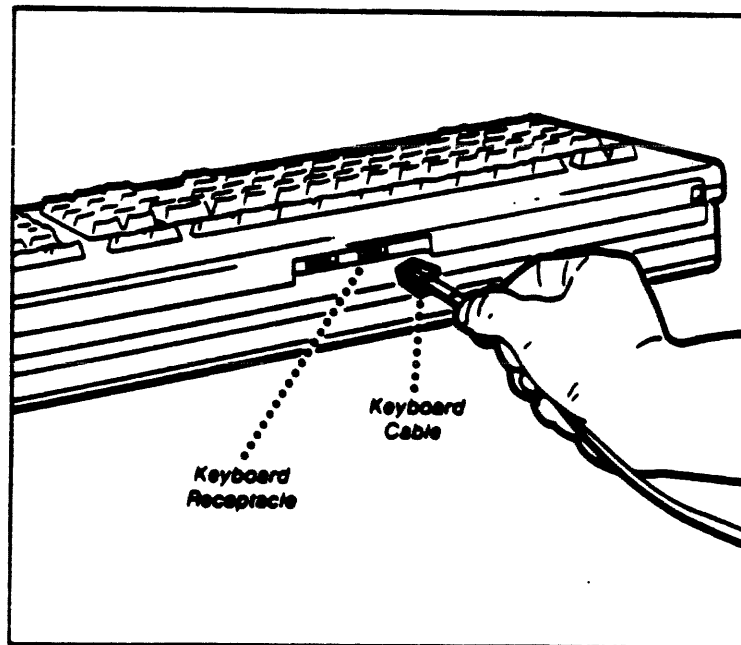


Figure 1-6. Keyboard Cable Connection

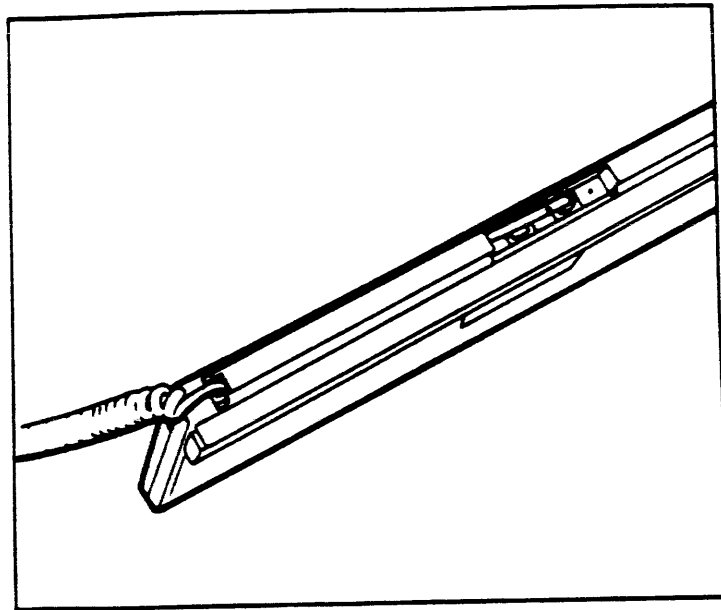


Figure 1-7. Keyboard Cable Routing

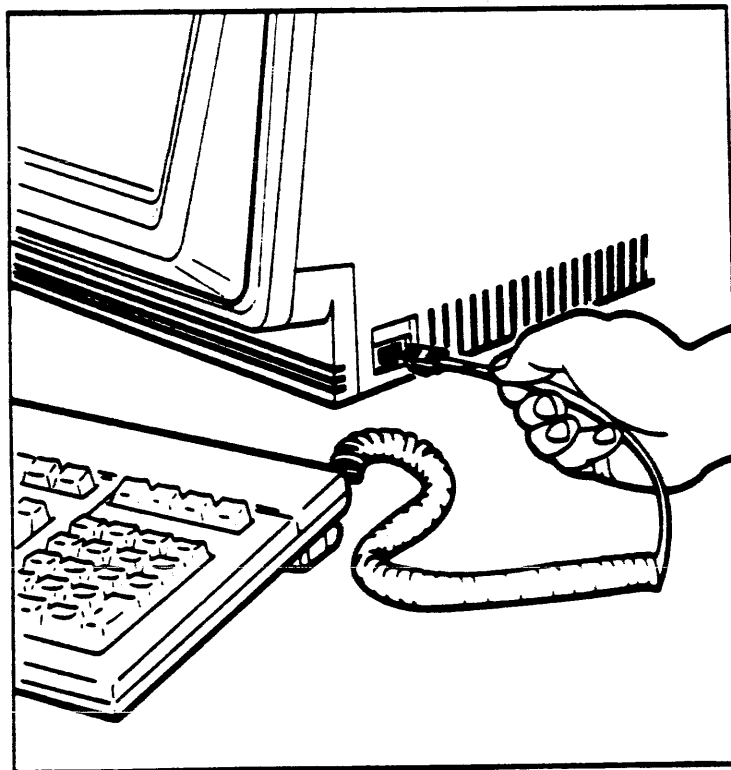


Figure 1-8. Keyboard To Display Unit Cable Connection

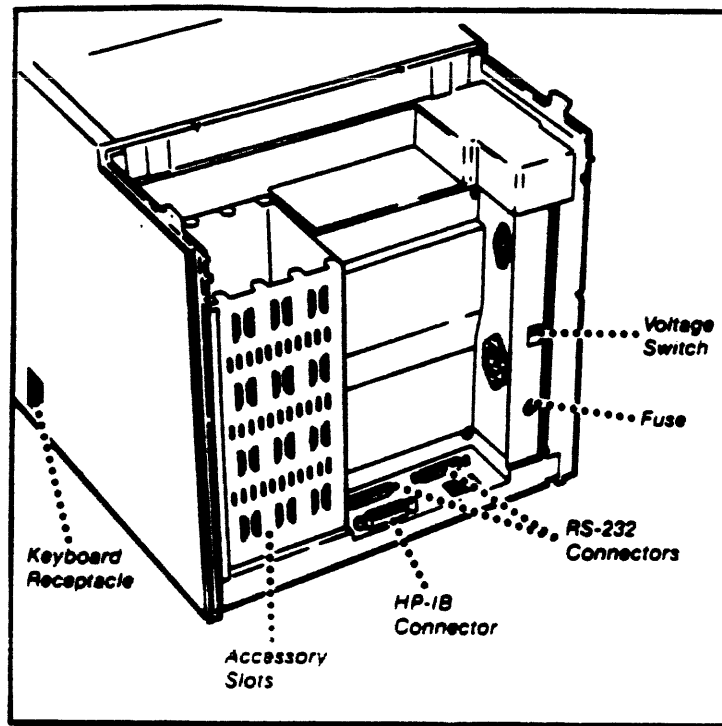



Figure 1-9. HP 150 Switch and Cable Connector Location

6. Check the **VOLTAGE** switch setting to ensure it is set to the proper voltage for the area (see Figure 1-9).
7. Connect the HP 150 AC power cord as shown in Figure 1-4. Connect the other end to a dedicated AC power source that has the same ground as the Series 6X CPU.
8. Insert the HP 150 II ~~System Work Disc (45847-15000)~~ in Drive A of the HP 9123D and power-up the HP 150 (this disc is found in the back of the Using Your Touchscreen II Personal Computer Manual (45847-90005) shipped with the HP 150).
9. When the Personal Applications Manager ~~(P.A.M.)~~ Main menu appears on the screen, use the Tab key to highlight the box labeled ~~MS-DOS Device Config~~.
10. Press the Start Application key . The MS-DOS Device Configuration menu will appear on the screen.
11. Refer to the Using Your Touchscreen II Personal Computer Manual, (45847-90005) shipped with the HP 150. Follow the instructions in Chapter 11, "CONFIGURING YOUR TOUCHSCREEN II" under the heading "Using Device Config" to configure the printer (optional), the disc drive, and the Primary Host Computer (COM1) port. Figure 1-10 shows how a properly configured HP 150 Device Configuration Main menu should look (if the optional printer is not used).



MS-DOS Device Configuration

System Devices

	Interface	Address	Model	Print Wheel		Interface	Address
PRN:	No Device	HP-IB			PLT:	No Device	HP-IB 1
LST:	No Device	Port 2			COM1:	No Device	Port 1
AUX:	No Device	Remote			COM2:	No Device	Port 2

USASCTI

Disc Drives      Maximum Sector Size **512** bytes      RAM Disc Size **0** K bytes



Interface	Addr	Drive	Interface	Addr	Drive	Interface	Addr	Drive
A: HP-IB	0	0	E: No Device			I: No Device		
B: HP-IB	0	1	F: No Device			J: No Device		
C: No Device			G: No Device			K: No Device		
D: No Device			H: No Device			L: No Device		

Figure 1-10. ~~MS-DOS Device Configuration~~ Main Menu

Only the printer configurations shown below are supported:

	Interface	Address	Model
PRN:	HP-IB	1	Thinkjet
	OR		
PRN:	HP-IB	1	2934A

## Installation And Configuration

12. Perform the following steps to set the Global Configuration for the HP 150:
  - a. Press the User\System key on the HP 150 keyboard to display and access the System Configuration Keys.
  - b. Press the User\System key again (if necessary to display and access the System Configuration Keys).
  - c. Press the Config Keys function key .
  - d. Press the Global Config function key .
  - e. Verify the following Global configuration (use the Tab key and the NEXT CHOICE and PREVIOUS CHOICE keys to change any incorrect values). Figure 1-11 is an example of a Global Configuration Menu.

---

GLOBAL CONFIGURATION


Click	<input type="checkbox"/>	On			
Keyboard	<input type="checkbox"/>	USASCII		Power On	Computer
Op Sys Dev	<input type="checkbox"/>	HP-IB 0	0	Remote/Serial Dev	PORT1/PORT2



---

Figure 1-11. ~~Global Configuration Menu~~ Global Configuration Menu

**NOTE**

For local language keyboards select the correct keyboard value (e.g., ESPANOL in Venezuela, FRANCAIS in France etc.).

- f. If you made any changes to the values on the screen then press the SAVE CONFIG key  to save the new values.

13. Perform the following steps to set the Terminal Configuration for the HP 150:
  - a. Press the User\System key on the HP 150 keyboard to display and access-the System Configuration Keys.
  - b. Press the User\System key again (if necessary to display and access the System Configuration Keys).
  - c. Press the Config Keys function key .
  - d. Press the Terminal Config function key .
  - e. Verify the following Terminal configuration (use the Tab key and the NEXT CHOICE and PREVIOUS CHOICE keys to change any incorrect values). Figure 1-12 is an example of a Terminal Configuration Menu.

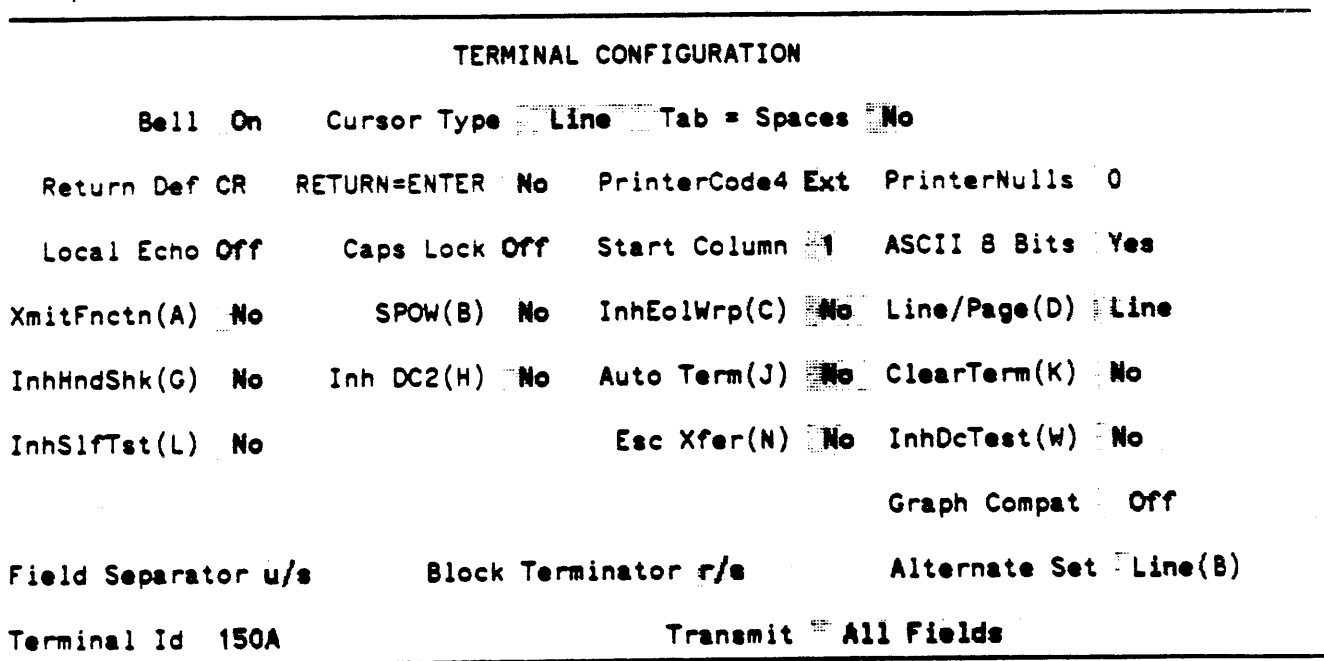



Figure 1-12. Terminal Configuration Menu

- f. If you made any changes to the values on the screen then press the SAVE CONFIG key  to save the new values.

## Installation And Configuration

14. Perform the following steps to set Port 1 Configuration for communication to the Series 68 console port:
  - a. Press the User\System key on the HP 150 keyboard to display and access the System Keys.
  - b. Press the User\System key again (if necessary to display and access the System Keys).
  - c. Press the Config Keys function key **[F8]**.
  - d. Press the Port 1 Config function key **[F3]**.
  - e. Verify the following Port 1 configuration, although the baud rate may vary (use the Tab key and the NEXT CHOICE and PREVIOUS CHOICE keys to change any incorrect values). Figure 1-13 is an example of a Full Duplex Hardwired Port 1 Configuration Menu.

**NOTE**

Only baud rates of 300, 1200, 2400, 4800, and 9600 are supported.

---

FULL DUPLEX HARDWIRED			Port 1
BaudRate <b>9600</b>	Parity <input type="checkbox"/> None	DataBits <b>8</b>	Clock <b>INT</b>
Asterisk <input type="checkbox"/> OFF		Stop Bits <b>1</b>	EnqAck <input type="checkbox"/> Yes
TR(CD) <b>Hi</b>	Check Parity <input type="checkbox"/> No	SR(CH) <b>Lo</b>	
RecvPace <input type="checkbox"/> None		SRRXmit <input type="checkbox"/> No	RR(CF)Recv <input type="checkbox"/> No
XmitPace <input type="checkbox"/> None		SRRInvert <input type="checkbox"/> No	CS(CB)Xmit <input type="checkbox"/> No    DM(CC)Xmit <input type="checkbox"/> No

---

Figure 1-13. ~~Full Duplex Hardwired Port 1 Configuration Menu~~

- f. If you made any changes to the values on the screen then press the SAVE CONFIG key **[F1]** to save the new values.
15. The HP 150 serial port 1 has a female DB-25 RS-232C D shell connector which must be connected to the HP 3000 Series 6X DCU console port (port 0). Select one of the cables listed below, that matches your installation needs.
    - a. The HP 3000/6X Modem port uses one of the following cables:
      - 13242N U.S. Modem cable RS-232C.
      - 13242M European Modem cable RS-232C.
    - b. The HP 3000/6X ATP direct connect port uses one of the following cables:
      - 13242P RS-422 cable (25 pin to 5 pin).
      - 13242X RS-232C cable (25 pin to 3 pin).

## Installation And Configuration

16. Replace the top and back covers.
17. Remove the MS-DOS Operating Disc from Drive A.
18. Refer to Section 2 of this manual for the procedure for powering up the HP 150 as a System Console for the Series 68.
19. Refer to Section 6 of this manual for instructions for creating a backup copy of the Communication Program Disc.
20. Refer to Section 7 of this manual for the procedure to run FLDs using an HP 150. If more detailed information is necessary refer to the Series 68 FLD Manual (32342-90003) located in Volume 1 of the Series 68 Diagnostic Manual Set.

# POWER UP PROCEDURE

SECTION

2

These steps describe how to power up the HP 3000 and verify that the HP 150 Personal Computer is operating as the System Console.

1. Insert the Communication Program Disc into Drive A.

## NOTE

Leave the Communications Program Disc inserted in Drive A at all times. It contains files that are often accessed by the Communication Program. This software will operate only if the Communication Program Disc is inserted in Drive A.

2. Test the Communication Program Disc:
  - a. Turn off the power to the HP 150, wait several seconds, and then turn on the power to the HP 150.
  - b. Verify that the Communication Program starts up displaying the header message:

HP 3000 Series 68 System Console version C.01.01  
Copyright 1985 by Hewlett-Packard Company

3. Power up the HP 3000 Series 68 Computer System. Verify that the Diagnostic Control Unit (DCU) passes self-test by observing the message "DCU SELF TEST COMPLETE". (Refer to the MPE V System Operation and Resource Management Reference Manual (32033-90005), Appendix A, "QUICK REFERENCE GUIDE", for the appropriate power up procedure.)
4. Your HP 150 is now operational as the System Console.

Refer to Section 3, "COMMUNICATION PROGRAM MENU KEYS", for instructions on how to use the Communication Program Menu Keys.

# COMMUNICATION PROGRAM MENU KEYS

SECTION

3

## HOW COMMUNICATION PROGRAM MENU KEYS DIFFER FROM USER AND SYSTEM KEYS

The function keys on the HP 150 operate in three mutually exclusive modes: as System Keys, as User Keys, or as Communication Program Menu Keys.

System Keys are used to access the HP 150 internal system functions such as Device Configuration and Device Control. For example, these keys are used to reconfigure a serial port or to begin logging (with a printer) all characters displayed on the screen.

User Keys operate in the same manner as "soft keys" on the previous Series 68 Console, the HP 2647F. These keys are user-definable and serve to execute complex commands with only one keystroke. Note that Communication Program Menu Keys and corresponding virtual cartridge tape functions are not accessible when in the User Key mode.

Communication Program Menu Keys are used to control the Communication Program running on the HP 150.

## MOVING BETWEEN MENUS

The MPE Operating System and the Diagnostic Control Unit respond only to user-defined User Keys. The following are considerations when moving between function key modes:

- To access the System Keys, press the User/System key twice. When you are in the System Key mode, User Keys and Communication Program Menu Keys are not available.
- To access the Communication Program Menu keys, hold down the Shift key and press the User/System key. When you are in the Communication Program Menu Key mode, the virtual cartridge tape function keys are displayed and are available for use. System Keys and User Keys are not available in this mode.
- To access the User Keys, hold down the CTRL key and press the User/System key. When you are in the User Key mode, the function keys operate similarly to the soft keys on the HP 2647F. Console Menu Keys and System Keys are not available.

## COMMUNICATION PROGRAM MENUS

To use these keys press one of the function keys (  through  ) on the keyboard.

### Main Menu

f1	f2	f3	f4	f5	f6	f7	f8
set	copy	help & utility	MARK FILE	REWIND	disc	find	

set	Move to set menu.
copy	Move to copy menu.
help & utility	Move to help menu.
MARK FILE	Mark end of file on virtual cartridge tape.
REWIND	Rewind virtual cartridge tape.
disc	Move to disc menu.
find	Move to find menu.

### Set Menu

SET TIME				SET DATE			main menu
-------------	--	--	--	-------------	--	--	--------------

SET TIME	Set the time on the HP 150.
SET DATE	Set the date on the HP 150.
main menu	Return to the main menu.



## Copy Menu

READ LINE	READ FILE	READ ALL		COPY LINE	COPY SCREEN		main_ menu
--------------	--------------	-------------	--	--------------	----------------	--	---------------

READ LINE	Reads one line from virtual cartridge tape file to screen.
READ FILE	Reads one file from virtual cartridge to screen.
READ ALL	Reads all files from virtual cartridge to screen.
COPY LINE	Copies one line (at the cursor position) from screen to virtual cartridge tape file.
COPY SCREEN	Copies entire screen to virtual cartridge tape file.
main menu	Return to the main menu.

## Help and Utility Menu

utility		CONSOLE HELP			DCU HELP		main menu
---------	--	-----------------	--	--	-------------	--	--------------

utility	Move to utility menu.
CONSOLE HELP	Prints a list of the Communication Program Menu keys and a short description of their functions.
DCU HELP	Prints a list of the DCU commands and a short description of each command.
main menu	Return to the main menu.

### Utility Menu

		MAKE CON DISC		MAKE UPD DISC			main menu
--	--	------------------	--	------------------	--	--	--------------

**MAKE CON DISC**

Formats a blank diskette in Drive B, copies the MS-DOS operating system from Drive A to the diskette in Drive B, and copies all of the files necessary to make a Communication Program Disc from the master distribution disc in Drive A to Drive B.

**MAKE UPD DISC**

Takes a formatted diskette in Drive B containing HP 3000 files and makes an updated master Communication Program Disc from them. (Also copies the MS-DOS operating system from the disc in Drive A to Drive B.)

main menu

Return to the main menu.

### Disc Menu

FORMAT FLOPPY		PURGE FILE		SHOW STATUS	SHOW FILES		main menu
------------------	--	---------------	--	----------------	---------------	--	--------------

**FORMAT FLOPPY**

Formats a diskette in Drive B for the virtual cartridge tape.

**PURGE FILE**

Purge a file on the virtual cartridge tape.

**SHOW STATUS**

Shows status information for the virtual cartridge tape.

**SHOW FILES**

Shows a list of the files on the virtual cartridge tape.

main menu

Return to the main menu.

### Find Menu

			FIND END			FIND FILE	main menu
--	--	--	-------------	--	--	--------------	--------------

**FIND END**

Finds end of data on virtual cartridge tape.

**FIND FILE**

Finds file number n on virtual cartridge tape.

main menu

Return to main menu.

## PRINTER LOGGING CONSIDERATIONS

The following are important considerations when using a printer to log console messages:

1. If printer logging is enabled and the power fails (or the HP 150 is reset), the HP 150 will DISABLE printer logging.
2. If printer logging is enabled, and the printer baud rate is considerably slower than the DCU to HP 150 link, the keyboard will be "locked" during logging from the HP 150 to the printer. While the keyboard is locked you will be unable to use the **BREAK** key to abort long listings such as produced with "LISTF @.@.@,2". The keyboard will remain locked until the command terminates.

## COMMUNICATION PROGRAM ERROR MESSAGES

The following is a list of error messages that you may see displayed and the appropriate action to take:

**Message:** PRESS <RETURN> TO CONTINUE

**Cause:** The virtual cartridge tape status or an error message has been displayed on the graphics screen and the program is waiting for you to press **RETURN** before continuing.

**Remedy:** Press **RETURN**.

**Message:** ERROR WRITING TO FLOPPY OR OUT OF DISC SPACE

**Cause:** The Communication Program encountered an error while writing to the diskette. The diskette may be improperly inserted in the disc drive, write-protected, full of files, or damaged.

**Remedy:** Verify that the floppy is properly inserted into the disc drive. Remove and check the diskette to see if it is write-protected. Check to see if the disc is full by listing its files. To do this press the disc key and then the SHOW FILES key. If there is a large number of files, purge some files by pressing PURGE FILE.

**Message:** ERROR, END OF DATA ON FLOPPY

**Cause:** You attempted to read data beyond the END OF DATA on the virtual tape cartridge

**Remedy:** Rewind the virtual cartridge tape by pressing the REWIND key.

## Error And Recovery

- Message:** FIRMWARE ERROR, CANNOT FIND MESSAGE -- NOTIFY H.P.
- Cause:** The communication program could not access one of the messages contained in CON\_MSG.MSG when the Communication Program was loaded. This is a FATAL error.
- Remedy:** Perform a "hard reset" (press the Shift, CTRL, and Reset keys simultaneously; or you can turn off and then turn on the HP 150). If the Communication Program does not start properly, insert another copy of the Console Disc in Drive A and perform another hard reset. If the Communication Program still does not start properly then there may be a fault in the HP 150.
- 
- Message:** NUMBER OUT OF RANGE OR ERROR IN INPUT
- Cause:** You specified an illegal file number when using the FIND FILE key.
- Remedy:** Try the operation again with a valid file number (1 to 99).
- 
- Message:** ERROR IN READING SCREEN
- Cause:** An HP 150 firmware routine returned an error status indication when the communication program used it to read the screen. This is a FATAL error.
- Remedy:** Perform a "hard reset" (press the Shift, CTRL, and Reset keys simultaneously; or you can turn off then turn on the HP 150). If the Communication Program does not start properly, insert another copy of the Communication Program Disc in Drive A and perform another hard reset. If the Communication Program still does not start properly then there may be a fault in the HP 150.
- 
- Message:** ERROR IN OPENING DATACOM PORT
- Cause:** The communication program tried to open the devicefile COM1 for serial communications with the physical serial PORT 1 and received a failure status. This is a FATAL error.
- Remedy:** Perform a "hard reset" (press the Shift, CTRL, and Reset keys simultaneously; or you can turn off then turn on the HP 150). If the Communication Program does not start properly, insert another copy of the Communication Program Disc in Drive A and perform another hard reset. If the Communication Program still does not start properly then there may be a fault in the HP 150.
- 
- Message:** ERROR IN OPENING CONSOLE HELP FILE
- Cause:** The Communication Program could not open the file CONSOLE.HLP for reading.
- Remedy:** Verify that the Communication Program Disc is properly inserted in Drive A. If this check does not prove fruitful, press the Shift and Reset keys simultaneously to cause a "soft" reset. If this does not help the problem, try another copy of the Communication Program Disc.

**Message:** ERROR IN OPENING DCU HELP FILE

**Cause:** The Communication Program could not open the file DCU.HLP for reading.

**Remedy:** Verify that the Communication Program Disc is properly inserted in Drive A. If this check does not prove fruitful, press the Shift and Reset keys simultaneously to cause a "soft" reset. If this does not help the problem, try another copy of the Communication Program Disc.

**Message:** ERROR IN DATE/TIME FORMAT

**Cause:** You specified an illegal date or time in response to the TIME or DATE key.

**Remedy:** Try the operation again with a valid file time or date. Time should be specified HH:MM:SS (where HH is the current hour in 24-hour time, MM is the current minute, and SS is the current second). Dates should be specified as MM-DD-YYYY (where MM is the month, DD is the day of the month, and YYYY is the year).

**Message:** ERROR IN OPENING FILE TO GENERATE NEW CONSOLE DISC

**Cause:** The Communication Program could not open the file MAKECON.BAT for reading.

**Remedy:** Verify that the Communication Program Disc is properly inserted in Drive A. If this check does not prove fruitful, press the Shift and Reset keys simultaneously to cause a "soft" reset. If this does not help the problem, try another copy of the Communication Program Disc (remember to hard reset the HP 150 changing to a new disc).

**Message:** ERROR IN OPENING FILE TO UPDATE DISC

**Cause:** The Communication Program could not open the file MAKEUPD.BAT for reading.

**Remedy:** Verify that the Communication Program Disc is properly inserted in Drive A. If this check does not prove fruitful, press the Shift and Reset keys simultaneously to cause a "soft" reset. If this does not help the problem, try another copy of the Communication Program Disc (remember to hard reset the HP 150 when changing to a new disc).

**Message:** WARNING! A FATAL DISC ERROR HAS OCCURRED. IT IS RECOMMENDED THAT THE CONSOLE PROGRAM BE RE-BOOTED BY SIMULTANEOUSLY PRESSING THE <SHIFT> <CTRL> AND <RESET> KEYS. PRESS <RETURN> TO CONTINUE.

**Cause:** The Communication Program encountered an error while reading or writing to the floppy disc. Either the floppy disc is write-protected (if writing), is bad, is full, or is not properly inserted in the disc drive.

**Remedy:** Remove the write-protect from the floppy disc if it is write-protected and you are writing. Make sure that the floppy disc is good (compare it to another disc). Check to see if the disc is full by listing its files press the disc key and then the SHOW FILES key. If there is a large number of files, purge some files by pressing PURGE FILE. Verify that the floppy is properly inserted into the disc drive. Verify that your Global Configuration has not been changed.

## **MS-DOS ERROR MESSAGES**

Please refer to Appendix B of Using Your HP Touchscreen II Personal Computer (45847-90005) and Appendix E of Using Your HP Touchscreen II Personal Computer As A Terminal Manual (45848-90001) for information on MS-DOS error messages.

## **DCU ERROR MESSAGES**

For the SE/CE: refer to the appropriate HP 3000 S6X service documentation (for example, the CE Handbook or DCU ERS).

# HOW TO TAKE A SHIFT STRING DUMP

SECTION

5

OPERATOR FUNCTION: PRE-SYSTEM STARTUP (AFTER SYSTEM FAILURE)

DESCRIPTION:

This procedure is used to obtain a shift string dump whenever a system failure/hang occurs. Through DCU maintenance mode commands, the contents of specific CPU registers are stored on the diskette in Drive B of the HP 150 Console.

---

STEP

PROCEDURE

---

- 1 Insert a blank diskette into Drive B. (Make sure that the diskette is not write-protected and slide the write-protect tab towards the diskette disc hub as shown in Figure 6-1.) This diskette will now be referred to as the String Dump diskette.
- 2 From the main menu, press the disc function key **[F6]**.
- 3 Press the FORMAT FLOPPY function key **[F1]**. The following message will be displayed:  
  
WARNING! THIS FUNCTION WILL FORMAT THE FLOPPY IN DRIVE B.  
ALL FILES (IF ANY) CURRENTLY STORED ON THE FLOPPY DISC IN  
DRIVE B WILL BE LOST.  
DO YOU WANT TO CONTINUE? (Y/N)
- 4 Enter "Y" and press **[RETURN]**. Wait for the "FORMAT DONE! PRESS <RETURN TO CONTINUE" message to be displayed.
- 5 In response to the "M>" prompt, enter the following:  
  
M> BA=OCT **[RETURN]**  
M> DS;WS;LG **[RETURN]**
- 6 The system will respond with the following header and series of questions. Enter appropriate responses for each line, followed by **[RETURN]**. Be as accurate as possible in supplying this information as it will assist the Customer Engineer (CE) or Technical Support Engineer (TSE) in locating the cause of the system failure.

GEMINI BOARD STRING & REGISTER DUMP

FILE	0	1	2	3	4	5	6	7	8	9
0		DESC	FIRM	SOFT	CTLA	CTLB	SKSP	RALO	RAL1	RAL2
10	RAL3	VBUS	CIR	CAC	MCS	MMC	CBI1	CBI2	CBI3	CBI5
20	CB17	IOB1	IOB2	IOB3	WCS0	WCS1				

---

## How To Take A Shift String Dump

---

**STEP**

---

**PROCEDURE**

---

DATE:  
TIME:  
OPERATOR:  
SYSTEM:  
MEMORY SIZE:  
HOW LONG WAS SYSTEM RUNNING ?  
WHAT WAS RUNNING ?  
DESCRIBE WHAT HAPPENED (CNTL-G CR TO TERMINATE)

- 7 Hold down the CTRL key and enter the letter "C".
  - 8 Press **RETURN**. The DCU will automatically load the contents of the shift string registers for each PCA onto the diskette in Drive B. This operation takes approximately ten minutes.
  - 9 When the M> prompt appears, press the main menu key **F9**.
  - 10 Press the copy key **F2**.
  - 11 Press the COPY SCREEN key **F5**. The contents of the screen display will be copied to the diskette.
  - 12 Press the "home" key (this key is found directly above the cursor control arrow keys on the keyboard; it has a small triangle printed on it).
  - 13 Press the Clear Display key.
  - 14 Enter RFLAG=0;XA;XB and press **RETURN**.
  - 15 Repeat steps 11, 12, and 13.
  - 16 Enter RFLAG=1;XA;XB and press **RETURN**.
  - 17 Repeat steps 11,12, and 13.
  - 18 Press the main menu function key **F9**.
  - 19 Press the REWIND function key **F3**. (You must do this before removing the String Dump diskette as this closes the last string dump file.)
  - 20 Remove, date, and label the String Dump diskette from Drive B. (Write-protect the diskette by sliding the write-protect tab away from the diskette hub.)
-



# CREATE THE COMMUNICATION PROGRAM DISC

SECTION

6

This section describes procedures for creating a spare Communication Program Disc from the Distribution Diskette containing the Communication Program. These procedures are performed as part of the installation.

1. Insert the Communication Program master distribution diskette (32342-13402) into the left-hand disc (Drive A) of the dual disc drive attached to the HP 150.
2. Turn off the power to the HP 150, wait several seconds, and then turn on the power to the HP 150. Wait for the Communication Program to start and print the header message:

HP 3000 Series 68 System Console version C.01.01  
Copyright 1985 by Hewlett-Packard Company

3. Put a blank diskette into the right-hand disc (Drive B). (Make sure that the diskette is not write-protected by sliding the write-protect tab towards the diskette hub as shown in Figure 6-1 below. Refer to the Using Your HP Touchscreen II Personal Computer Manual (45847-90005), Chapter 3, "HANDLING AND USING DISCS", for detailed instructions on write-protecting diskettes.)

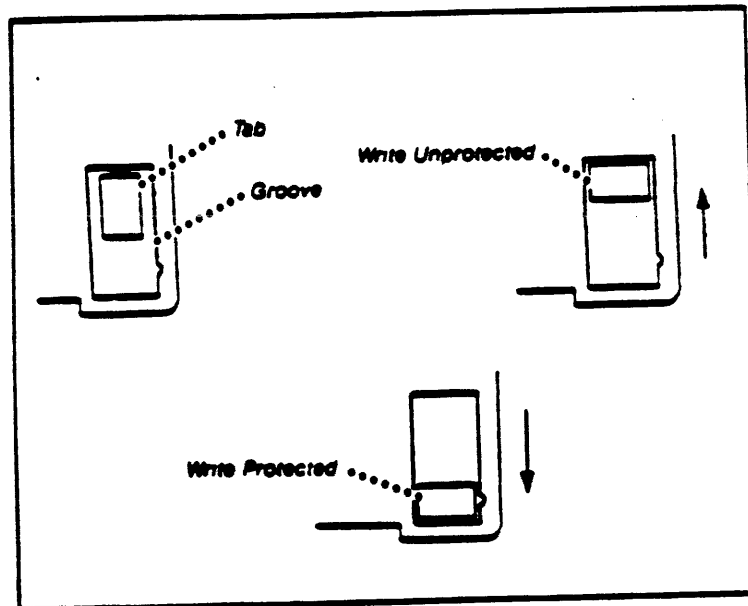


Figure 6-1. Diskette Write-Protect Tab

## Create The Communication Program Disc

4. Press the help & utility function key **F3**.
5. Press the utility function key **F1**.
6. Press the MAKE CON DISC function key **F3**. The following will be displayed:  

WARNING! A CONSOLE DISC WILL BE GENERATED IN DRIVE B.  
INSERT A BLANK FLOPPY DISC INTO DRIVE B. ALL FILES (IF ANY)  
CURRENTLY STORED ON THE FLOPPY DISC IN DRIVE B WILL BE LOST.  
DO YOU WANT TO CONTINUE? (Y/N)
7. Type "Y" and press **RETURN**. Wait for the "CONSOLE DISC DONE PRESS RETURN TO CONTINUE" message to be displayed. Press **RETURN**.
8. Remove and label the diskette from Drive B. (Write-protect the diskette by sliding the write-protect tab away from the diskette hub.) This diskette will now be referred to as the "Communication Program Disc".
9. Press the main menu function key **F6**.
10. Remove the master distribution diskette from Drive A and store it in a safe place for future use.

# RUNNING FLDCOPY

SECTION

7

## INTRODUCTION

This section contains the dialog necessary to run FLDCOPY from an HP 2647F or an HP 150 running the HP 3000 S68 DCU to HP 150 Communication Program. In some cases the dialog is the same for both the HP 2647F and the HP 150. There are places where the dialog differs, not only for the terminal type but also if the terminal is the MPE (system) console or LDEV 20 (DCU Console).

## RUNNING FLDCOPY TO CREATE A COPY FROM A PERMANENT FILE

When the system is running and it is necessary to make a copy of the FLD diskette from an existing file, use the following procedure:

`:run fldcopy` **RETURN**

(FLDCOPY HP32342.SUPPORT)

The following will be displayed:

FLDCOPY - ver 13.0

Terminal= XXXXX, LDEV=nn, MPE Console LDEV=aa

XXXXX is the Terminal type, nn is the LDEV number, aa is the current MPE Console LDEV number.

This utility program is intended to make copies of Fault Locating Diagnostics (binary) to HP92190A flexible disc media by using the HP2647F or to HP92192A micro flexible disc media by using an HP150 running the HP3000 S68 DCU to HP150 Communication Program.

If your terminal is configured as the MPE Console the following dialog will appear on your screen (if not, type go to continue):

\* *FORMAT FLOPPY PRIOR TO COPY* \*

Successful operation of this utility requires that the ~~MPE~~ Console be temporarily ~~moved~~ to another appropriately configured terminal. Please perform the following operations:

1. Press <Break> (to break MPE)
2. Type 'CONSOLE' idev# <Return> (to move console to new ldev)
3. Type 'RESUME' <Return> (to resume FLDCOPY)
4. Type 'GO' (to continue FLDCOPY)

The MPE console will be restored programmatically upon successful completion of the program.

TYPE 'GO' TO CONTINUE

go

FILE NAME = FLD1P



3. SHOW VOLUME (press <F3>, <F2>, and <Return> )
4. If volume name is "nonsif" or "nonfmat" then go to step 6.
5. PURGE VOLUME <volume name> (press <F8>, <F4>, <F5>, name of volume to be purged, and <Return>)
6. CREATE VOLUME <volume name> ON DISC#1 (press <F8>, <F5>, <F6>, type in a volume name, press <F2>, type '1', and <Return> )
7. VERIFY ENABLE (press <F1> twice, <F4> twice, and <Return> )
8. press <COMMAND> <Return>

Press <Return> when disc is ready and inserted.

If you are using an HP 150 the following will be displayed:

To prepare the TO disc for copying on the HP 150:

1. Make sure the HP 150 is running the HP 3000 s68 DCU to HP 150 Communication Program.
2. Make sure the micro floppy disc is not write-protected and insert the disc into drive B.
3. Press <Shift> and <User/System> at the same time to display the communication program application softkeys.
4. Press <F6> to access the 'disc' menu keys.
5. Press <F1> (FORMAT FLOPPY) to format the disc in drive B.
6. Wait for the format warning message and type 'Y' to continue the floppy format process.
7. Wait for the 'FORMAT DONE!' message.

Press <Return> when disc is ready and inserted.

BEGIN WRITE (approximately 15 minutes)

3 RECORDS RECORDED, FILE 1  
7 RECORDS RECORDED, FILE 2  
16 RECORDS RECORDED FILE 3  
15 RECORDS RECORDED, FILE 4  
14 RECORDS RECORDED, FILE 5  
6 RECORDS RECORDED, FILE 6  
3 RECORDS RECORDED, FILE 7  
90 RECORDS RECORDED, FILE 8  
121 RECORDS RECORDED, FILE 9  
97 RECORDS RECORDED, FILE 10  
65 RECORDS RECORDED, FILE 11  
146 RECORDS RECORDED, FILE 12  
10 RECORDS RECORDED, FILE 13  
170 RECORDS RECORDED, FILE 14

14 FILES COPIED.

WRITE COMPLETED

Do you want to make another copy? no

END OF PROGRAM

:

## RUNNING FLDCOPY TO CREATE A COPY OF AN FLD DISKETTE

When the system is running and it is necessary to make a copy of the FLD diskette from an existing copy, use the following procedure:

`:run fldcopy` **RETURN**

The following will be displayed:

FLDCOPY - ver 13.0

Terminal= XXXXX, LDEV=nn, MPE Console LDEV=aa

XXXXX is the Terminal type, nn is the LDEV number, aa is the current MPE Console LDEV number.

This utility program is intended to make copies of Fault Locating Diagnostics (binary) to HP92190A flexible disc media by using the HP2647F or to HP92192A micro flexible disc media by using an HP150 running the HP3000 S68 DCU to HP150 Communication Program.

If your terminal is configured as the MPE Console the following dialog will appear on your screen (if not, type go to continue):

Successful operation of this utility requires that the MPE Console be temporarily moved to another appropriately configured terminal. Please perform the following operations:

1. Press <Break> (to break MPE)
2. Type 'CONSOLE' ldev# <Return> (to move console to new ldev)
3. Type 'RESUME' <Return> (to resume FLDCOPY)
4. Type 'GO' (to continue FLDCOPY)

The MPE console will be restored programmatically upon successful completion of the program.

TYPE 'GO' TO CONTINUE

go

Pressing <CTRL> and <Y> will transfer control to a trap procedure, which sets terminal echo ON and terminates the program.

If the terminal is configured as the MPE Console the following message will appear on the screen:

Since you are using the MPE Console, the CTRL-Y trap will also restore the MPE Console to this terminal.

If the terminal is configured as LDEV 20 (the DCU Console), the following message will appear on the screen:

Since you are using LDEV 20, the CTRL-Y trap will also re-enable CTRL B functions.

The CTRL-Y trap should be used to abort the program whenever possible. However, during binary data transfer, CTRL-Y is regarded as data by the system. If it is necessary to abort the program during binary read or write, and CTRL-Y seems to be ignored, do the following instead:

1. Press <Break> {break to MPE}
2. type <ESC> ':' {turn on terminal echo}
3. type 'ABORT' <Return> {abort FLDCOPY}

Whether or not additional steps are displayed will depend upon the following conditions.

If user LDEV is 20 and MPE Console LDEV is not 20 then the following will be displayed:

4. type 'RUN CBON' <Return> {enable control B}

If user LDEV is 20 and MPE Console LDEV is 20 then the following will be displayed:

4. type 'RUN CBON' <Return> {enable control B}
5. type 'CONSOLE 20' <Return> {move console back to LDEV 20}

If user LDEV is not 20 and user LDEV and MPE Console LDEV are equal then the following will be displayed:

4. type 'CONSOLE nn' <Return> {restore MPE Console}

The following will then be displayed:

Do you have a permanent file (saved from previous execution of this program) you want to copy the discs from? no

Insert the FROM disc and press <Return>.

BEGIN READING (approximately 15 minutes)

3 RECORDS READ, FILE 1  
 7 RECORDS READ, FILE 2  
 16 RECORDS READ FILE 3  
 15 RECORDS READ, FILE 4  
 14 RECORDS READ, FILE 5  
 6 RECORDS READ, FILE 6  
 3 RECORDS READ, FILE 7  
 90 RECORDS READ, FILE 8  
 121 RECORDS READ, FILE 9  
 97 RECORDS READ, FILE 10  
 65 RECORDS READ, FILE 11  
 146 RECORDS READ, FILE 12  
 10 RECORDS READ, FILE 13  
 170 RECORDS READ, FILE 14

14 FILES READ BEFORE EOD FOUND

Remove the FROM disc

Do you want to save the temporary file as permanent? yes

Running FLDCOPY

Enter file name:

Enter the filename that you choose.

Do you want the instructions to prepare the TO disc for copying? no  
press <Return> when disc is ready and inserted.



# DCU FUNCTIONS

APPENDIX

A

## DCU FUNCTION CONSIDERATIONS

The following are important considerations when accessing DCU functions:

1. Only one tape cartridge is simulated with the Communication Program. Therefore, READ and WRITE operations for both the left and right cassette tape map to the same virtual tape cartridge on Drive B of the HP 150. Any program that requires access to both the left and right tape drives concurrently will overwrite files intended for the right drive when writing to the left drive and vice versa.
2. The ASSIGN key of the HP 2647F is not implemented, so special device assignments (to HP-IB devices for example) are not possible.
3. Many other keys of the HP 2647F are not implemented. Any program that makes special use of HP 2647F functions that are not implemented will not work. For a complete list of the HP 2647F tape cartridge function keys and tape cartridge escape string functions, see the HP 2647F Reference Manual (02647-90037).

## DCU Functions That Do Not Use The Virtual Cartridge Tape

These DCU functions operate exactly as on the HP 2647F:

AR	Manual auto restart.
BA[se]	Set default base.
BY[e]	Remote operator disconnect.
CJ	Clear WCS jump.
CK	Send clocks to a board.
DC	DCU control.
DM	Display memory locations in dump format.
DP	Disable kernel diagnostic echo.
DU[mp]	Dump MPE system to indicated disk.
ED	Start execution of microdiagnostics.
EH	Enable hard stop mode for system.
EK	Start execution of kernel microdiagnostics.
EP	Enable kernel diagnostic echo.
ES	Enable soft system error handling.
EX[it]	Exit maintenance mode.
HA[lt]	Halt the system.
HE[lp]	HELP facility.
LD	Set DCU log->MPE dump parameters.
LG	List indicated DCU log.
LL	List LUT locations.
LM	List block of memory in default base.
LO[ad]	Load from tape device.
LS	List board string.

## DCU Functions

LW	List WCS location.
MB	Set memory breakpoint.
MC	Clear memory breakpoint.
MD	Set memory breakpoint data word.
ML	Modify LUT locations.
MM	Modify memory locations.
MR	Set memory breakpoint range.
MS	Modify indicated board string.
MT	List memory breakpoint tables.
MW	Modify WCS location.
PA[rt]	List DCU ROM part number and revisions.
RL	Reset DCU log.
RM	Enable remote diagnostic session.
RS	Reset all system shift strings.
RU[n]	Run the system.
RX	Reset DCU input buffers.
SC	List software or firmware register screen.
SP[eed]	Set DCU console baud rate.
SS	Single step.
ST[art]	Start system from disk.
SW	Switch register.
SY	Enable syncs to system boards.
TE[ll]	Local/remote message facility.
UH[alt]	Microhalt the system.
UP	Screen update enable and disable.
UR[un]	Microrun the system.
US[top]	Microstep the system.
VS	Verify shiftstrings.
WB	Set WCS breakpoint.
WC	Clear WCS breakpoint.
WJ	Set WCS jump in WCS location.
WS	Trace stack markers (walk stack).
WT	List WCS breakpoint table.
XA	List ALU A extended registers.
XB	List ALU B extended registers.
ZR	Perform self-test on remote hardware.
ZS	Perform self-test on DCU hardware.

## DCU Functions That Use The Virtual Cartridge Tape

The following functions refer to the "virtual cartridge tape". The Communication Program emulates the operation of the cartridge tape functions of the HP 2647F terminal:

CL	Set left cassette. (Refer to DCU Function Considerations.)
CR	Set right cassette. (Refer to DCU Function Considerations.)
DS	Dump board strings to floppy disc.
FL	Load the Fault Locating Diagnostic system from floppy disc.
TK	Text kernel diagnostic from floppy disc.
TL	Text LUT from floppy disc.
TW	Text WCS from floppy disc.

## VIRTUAL TAPE FUNCTIONS ACCESSED FROM ESCAPE CODES

The following functions are implemented:

1. Fast binary read, <esc> e, triggers a fast binary read from the virtual cartridge tape.
2. Hard Reset, <esc> E, rewinds virtual cartridge tape in addition to resetting the terminal.
3. SOME data path commands of the general form: <esc>&p...

COMMAND	FUNCTION
<esc>&p0B	Copy record.
<esc>&p0C	Rewind.
<esc>&p1C	Space p records.
<esc>&p2C	+/- p files find file p
<esc>&p3C	Locate EOD mark.
<esc>&p4C	Condition tape.
<esc>&p5C	Write file mark.
<esc>&p@D	Dest dev = @.
<esc>&p0F	Copy file.
<esc>&p0M	Copy all.
<esc>&p@P	Parm = @.
<esc>&p0R	Asc, read 1 rec.
<esc>&p1R	Asc, repeat rec.
<esc>&p2R	Bin, read 1 rec.
<esc>&p3R	Bin, repeat rec.
<esc>&p4R	Asc, read file.
<esc>&p6R	Bin, read file.
<esc>&p@S	Source dev = @.
<esc>&p@U	Unit dev = @.
<esc>&p0W	Asc, write rec.
<esc>&p@W	Bin, write @ chars.
<esc>&p@^	Ctu status of @.

# UPDATE COMMUNICATION PROGRAMS FROM HP 3000 DISTRIBUTION FILES

APPENDIX

B

Perform the following procedure to update the Console Disc from HP 3000 files distributed via the MIT process:

1. Insert a blank diskette in Drive B.
2. From the Main Menu, press the disc function key **F6**.
3. Press the FORMAT FLOPPY function key **F1**. The following message will be displayed:  
  
WARNING! THIS FUNCTION WILL FORMAT THE FLOPPY IN DRIVE B.  
ALL FILES (IF ANY) CURRENTLY STORED ON THE FLOPPY DISC IN  
DRIVE B WILL BE LOST.  
DO YOU WANT TO CONTINUE? (Y/N)
4. Enter "Y" and press **RETURN**. Wait for the "FORMAT DONE!" "Press <Return> to continue" message to be displayed. Press **RETURN** and the ":" prompt will be displayed.
5. Logon to the HP 3000 by entering "HELLO FIELD.SUPPORT,HP32342".
6. Enter "SETCATALOG UPDUDC" and press **RETURN**.
7. Enter "UPDATE" and press **RETURN**.
8. Slowly but repeatedly press **RETURN** until the message "FILE TRANSFER IS DONE" is displayed (ignore the "REMOVE \$CTUL..." and "INSERT \$CTUL..." messages).
9. Enter "SETCATALOG" and press **RETURN**.
10. Press the main menu function key **F8**.
11. Press the help & utility function key **F3**.
12. Press the utility function key **F1**.
13. Press the MAKE UPD DISC function key **F5**. The following will be displayed:  
  
WARNING! YOUR SYSTEM WILL BE UPDATED TO NEW SOFTWARE.  
INSERT THE DISC CONTAINING THE UPDATE FILES COPIED FROM THE  
HP3000 VIA THE UPDATE UDC INTO DRIVE B.  
DO YOU WANT TO CONTINUE? (Y/N)
14. Enter "Y" and press **RETURN**. Wait for the "UPDATE DONE PRESS RETURN TO CONTINUE" message to be displayed. Press **RETURN**.
15. Remove the diskette from Drive B and label it as the new master Communication Program Disc
16. Remove the diskette from Drive A and store it in a safe place for future use.

## Update Communication Programs From Distribution Files

17. Refer to Section 6, "CREATE THE COMMUNICATION PROGRAM DISC", for instructions on how to create a new Communication Program Disc using the new master Communication Program Disc.
18. Refer to Section 2, "POWER UP PROCEDURE", for instructions on how to power up the system using the new Console Disc created in Step 17.

### NOTE

When changing to a different Communication Program Disc, remember to execute a "hard reset" on the HP 150 (after inserting the new Communication Program Disc in Drive A hold down the CTRL and Shift keys and simultaneously press the Reset key). This will reload MS-DOS and start the new copy of the Communication Program. If you do not execute a hard reset when changing Communication Program Discs, the Communication Program will not operate properly.

# FILES ON THE DISTRIBUTION DISKETTE

APPENDIX

C

AUTOEXEC.BAT	Batch file that executes CONSOLE.EXE after MS-DOS boots.
CONSOLE.EXE	The Communication Program Application.
CON_MSG.MSG	Message file for CONSOLE.EXE (has local language text of all messages).
COMMAND.COM	MS-DOS command interpreter, used by CONSOLE.EXE.
FORMAT.EXE	MS-DOS disc format program. Used by CONSOLE.EXE, MAKECON.BAT, MAKEFLD.BAT, and MAKEUPD.BAT.
FORMAT.MSG	Message file for FORMAT.EXE.
CONSOLE.HLP	ASCII message file for console HELP facility (displayed with the CONSOLE HELP function key in the Help & Utility Menu).
DCU.HLP	ASCII message file for DCU HELP facility (displayed with the DCU HELP function key in the Help & Utility Menu).
MAKECON.BAT	Batch file that is executed with the MAKE CON DISC function key in the Utility Menu. It creates a Console Disc from a blank diskette in Drive B.
SYS.COM	Program used by MAKECON.BAT to transfer the MS-DOS operating system from the distribution diskette to the Console Disc.
MAKEUPD.BAT	Batch file that is executed with the MAKE UPD DISC function key in the Utility Menu. It makes a new distribution disc from a blank diskette in Drive B by copying files on the Series 68 (that were distributed by the MIT process) to the diskette in Drive B.
CONVERT.EXE	Program used by MAKEUPD.BAT to convert files between ASCII, binary, and CTU file types.
CONTOCTU.BAT	Batch file used to convert all console emulation files on Drive A into CTU files on Drive B so that they can be copied to the HP 3000 HP32342.SUPPORT group for distribution on the MIT tape.
IO.SYS	MS-DOS device drivers used for I/O. (This file is hidden.)
MSDOS.SYS	MS-DOS operating system. (This file is hidden.)
PRINTERS.SYS	MS-DOS printer support routines. (This file is hidden.)
UPD.BAT	Batch file used by MAKEUPD.BAT to convert the CTU files on disc B into the MS-DOS files necessary to complete a new Communication Program user disc

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