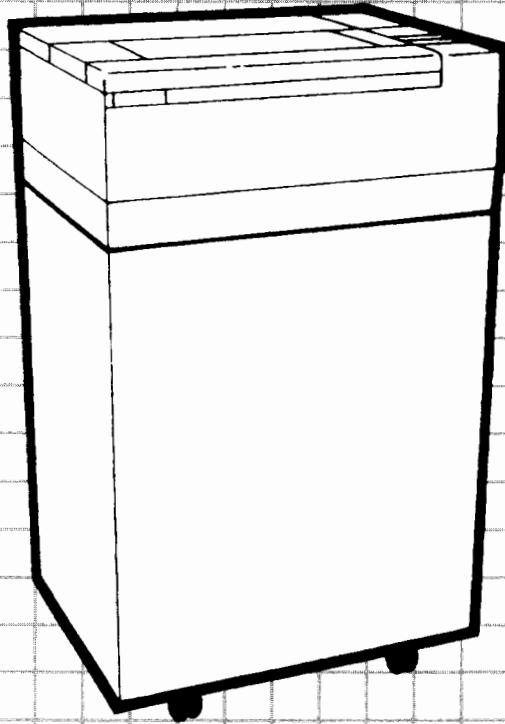
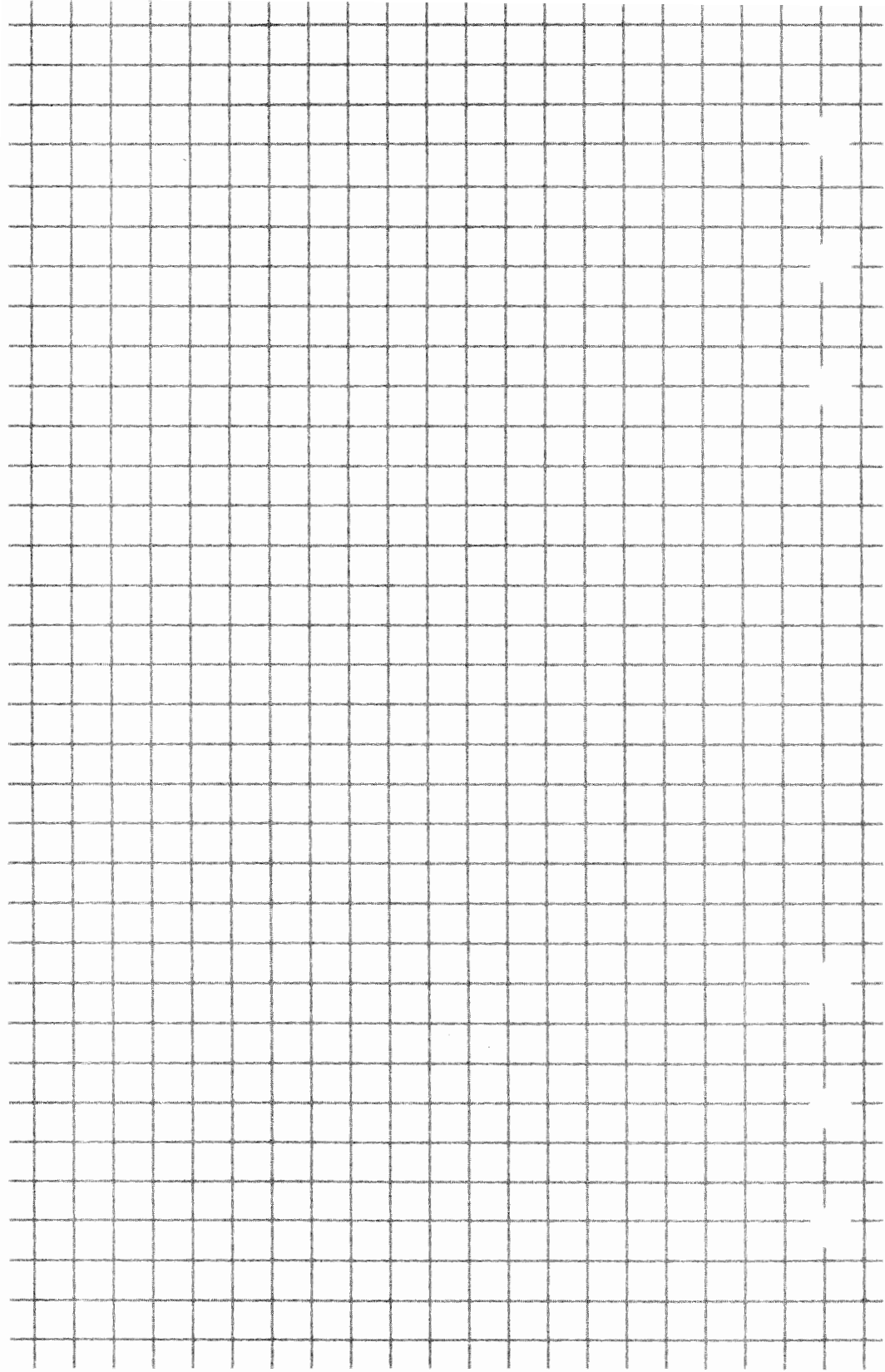


HP 2564 B



P/N 02564-90913

JUNE 1986



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SECTION I: PRODUCT INFORMATION

Table of Contents

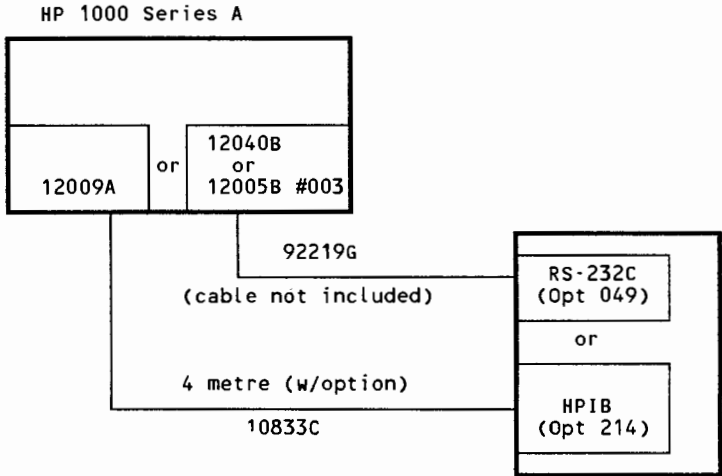
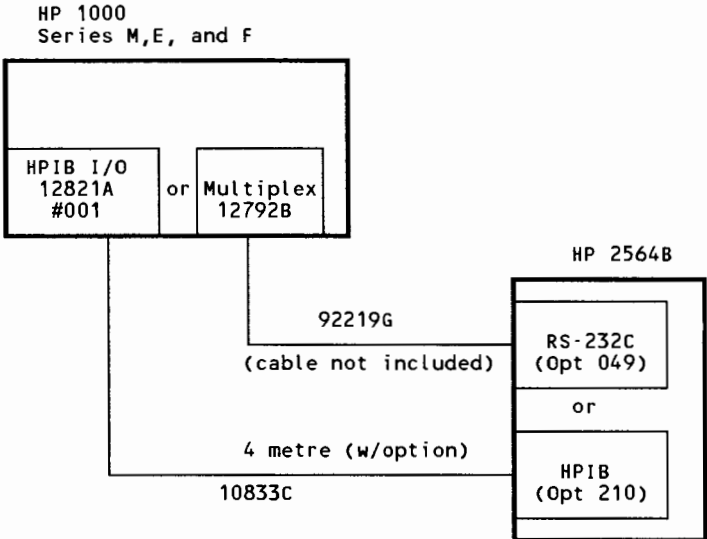
| | |
|------------------------------|---|
| Printer Options | 1 |
| Configuration Diagrams | 2 |

PRINTER OPTIONS

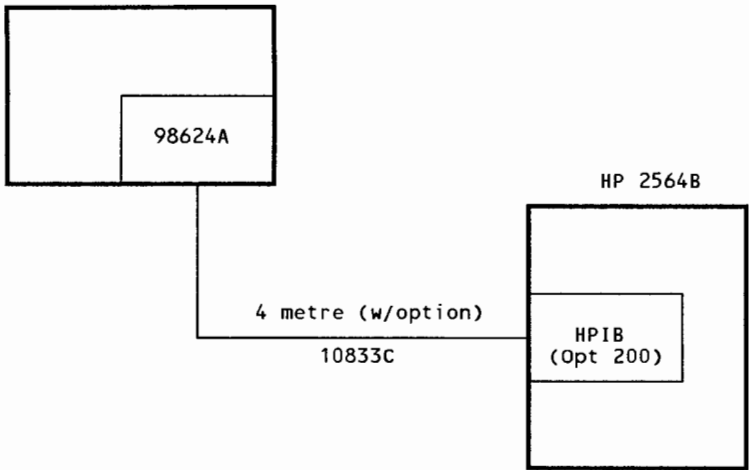
Table 1. HP 2564B OPTIONS

| OPTION NO. | DESCRIPTION |
|------------|---|
| 001 | Line Draw, Math and Block Character Sets |
| 002 | Standard density KATAKANA8 Character Set |
| 003 | High density OCR A and OCR B Character Sets |
| 004 | High density ROMAN8 Character Set |
| 005 | High density, Italic ROMAN8 Character Set |
| 006 | High density KATAKANA8 Character Set |
| 008 | Bar Code Printing and UPC/EAN |
| 009 | 12, 13.3 cpi Roman-8 Character Set |
| 012 | 12, 15 cpi Roman-8 Character Set |
| 013 | 13.3, 15 cpi Roman-8 Character Set |
| 015 | 220 Vac, 50/60 Hz operation |
| 016 | 100 Vac, 50/60 Hz operation |
| 017 | 240 Vac, 50/60 Hz operation |
| 022 | 128 Kb Vector Graphics Board |
| 023 | 512 Kb Vector Graphics Board |
| 049 | RS-232 Interface |
| 050 | RS-422 Interface |
| 053 | Centronics Interface |
| 065 | HP 3000 Printer Graphics Support Software |
| 068 | 3-Pack ribbon starter kit (92158A) |
| 110 | Sound Abatement Attachment |
| 111 | Quietized Cabinet |
| 115 | Passive paper stacker |
| 200 | Series 200 Basic/Pascal HPIB Interface System |
| 210 | Config. for HP 1000 Series M, E, and F Systems |
| 214 | Configured for HP 1000 A-Series System |
| 290 | HP 9000 Series 500 HPIB Subsystem |
| 337 | HP 3000 37 HPIB Interface Subsystem |
| 340 | Configured for HP 3000 39, 40, 42 Subsystems |
| 344 | Configured for HP 3000 44, 48 Subsystems |
| 364 | Configured for HP 3000 64, 68 Subsystems |
| 500 | Extended Capabilities Package: Printer Packaged Options #004,068,110 |
| 715 | HP 2564B Service Documentation |
| 850 | Configured for HP Desktop System |

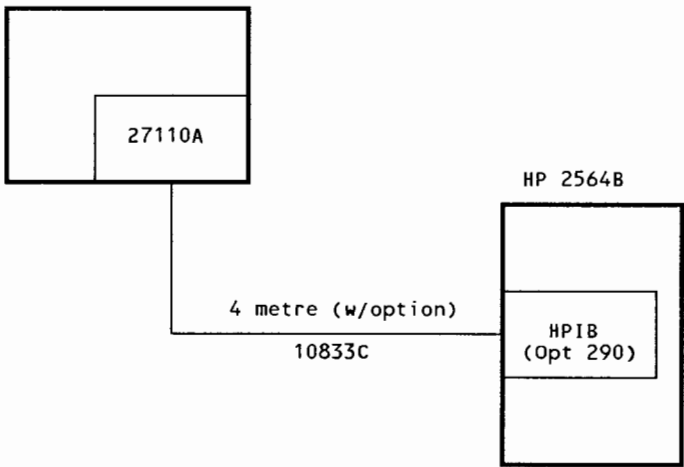
CONFIGURATION DIAGRAMS



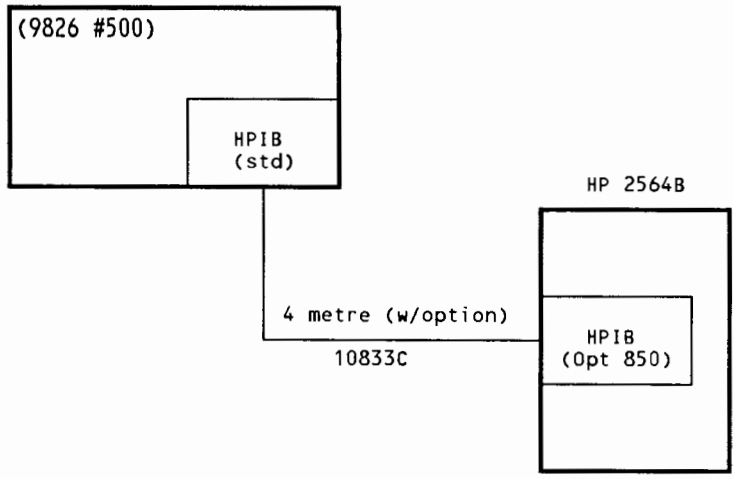
HP 9000 Series 200/300



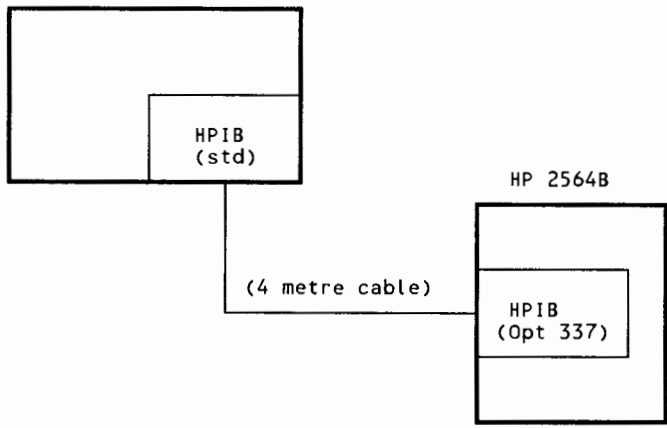
HP 9000 Series 500



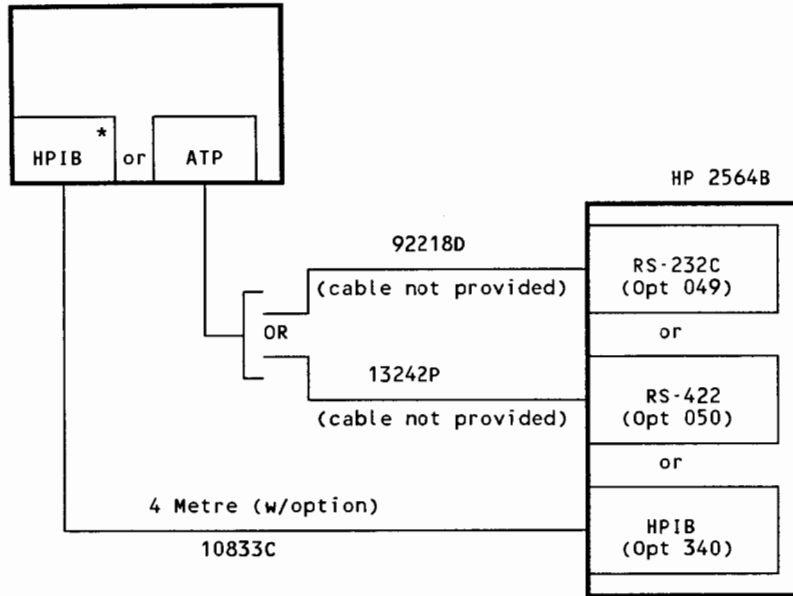
Shared Resource Manager



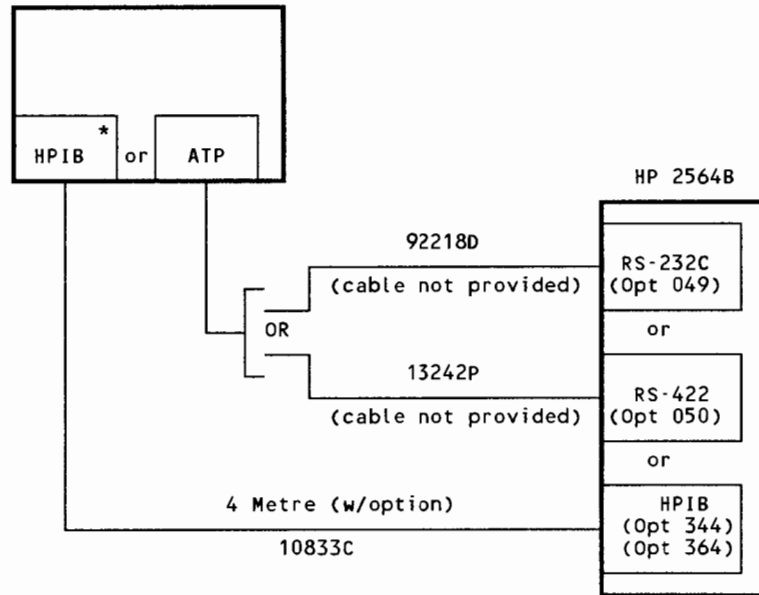
HP 3000 Series 37



HP 3000 Series 39,40,42



HP 3000 Series 44,48,58,64,68



SECTION II: ENVIRONMENT/INSTALLATION

Table of Contents

Printer Specifications 6

PRINTER SPECIFICATIONS

Physical Characteristics

Width: 60 cm (23.6 inches)
Depth: 45 cm (17.75 inches)
Height: 100 cm (39.37 inches)
Weight: 63.5 Kg (140 pounds)

Electrical Characteristics

Input Voltages

100,120 Vac (+5%, -10%), 50/60 Hz
220,240 Vac (+5%, -10%), 50/60 Hz

Power Consumption

110 Watts non-printing
245 Watts printing (typical)

Environmental

Temperature

Operating (printer plus ribbon) 10 to 50 degrees C
(50 to 122 F)
Storage (printer) -40 to 75 degrees C. (-40 to 167 F)
Survival (power-on) -20 to 60 degrees C. (-4 to 149 F)
Storage (ribbon) 10 to 50 degrees C. (50 to 122 F)

Relative Humidity

Non-Operating - 5% to 95% (non-condensing)
Operating - 30% to 80% (advised)

Audible Noise

Standard Configuration 65dBA
with sound attachment 60dBA
with Quietized Cabinet and sound attachment 55dBA

SECTION III: CONFIGURATION



Table of Contents

| | |
|--|----|
| Status Codes | 7 |
| Configuration Functions | 7 |
| I/O Configuration (HPIB) | 8 |
| Interface Configuration (RS-232/422) | 9 |
| I/O Configuration (Centronics) | 12 |

STATUS CODES

The printer's status code is displayed in either the ONLINE or OFFLINE modes and displays the printer's current status. The following table summarizes the printer status.

Table 2. HP 2564B Printer Status

| Display | Description |
|---------|---|
| 0 | Printer ready (and modem disconnected - for serial interfaces only) |
| 1 | Printer ready (and modem connected - for serial interfaces only) |
| 2 | Silent Run Mode (error recovery in progress) |
| 3 | Reserved |
| 4 | Performing a subtest in a continuous mode |
| 5 | Standard Selftest/Subtest active |
| 6 | Print One Line (file data) activated |
| 7 | Print One Line (test pattern) activated |

CONFIGURATION FUNCTIONS

The HP 2564B printer is configured entirely from the Operator Control Panel. Once established, the printer's configuration is stored in the Formatter PCA non-volatile random access memory (NV RAM). Once established, the printer's configuration does not need to be altered unless a parameter change is desired or necessary for a special print job (i.e., change in page length, etc.) or if the Formatter PCA is replaced. Table 3 lists the configurable printer functions and their associated configuration numbers and parameter ranges. To configure a printer function, perform the following steps:

- a. While the printer is OFFLINE, press the CONFIG key and either FINE ADJ key. Both decimal points on the printer's display will illuminate indicating the printer is in Configuration Mode.
- b. While continuing to press the CONFIG key, increment or decrement the function number by pressing the FINE ADJUST key until the desired function number is displayed.
- c. Release the CONFIG key and the display will show the current parameter value for the function number just selected.

- d. Using the FINE ADJUST keys, increment or decrement the parameter until the desired parameter value is displayed.

(To exit configuration mode at this point without changing the selected parameter, press either the CONFIG or ONLINE keys and the original value will be retained.)

- e. Press the ENTER key. The new parameter will be entered and the printer will return to STATUS mode.

Table 3. Configuration Functions

| Function Code | Function | Range | Default Value |
|---------------|-----------------------------------|---|---------------|
| 01 | Select Primary Character Set | 0-95 | 0 |
| 02 | Select Secondary Character Set | 0-95 | 0 |
| 20-29 | Configure Interface | Refer to specific I/O manual for values | |
| 40 | Flight Time Adjust | 0-35 | * 6*** |
| 41 | Turnaround Adjustment | 40-64 | * 56*** |
| 50 | Disconnect Modem | 0,1 | 0 |
| 51 | Graphics High Speed | 0,1 | 0 |
| 60 | Perforation Skip | 0,1 | 0 |
| 61 | Display Functions | 0,1 | 0 |
| 70 | Print time (1st significant hr) | 00-99 | * |
| 71 | Print time (hrs) | 00-99 | * |
| 72 | Print time (most significant hrs) | 00-99 | * |
| 73 | On time (least significant hrs) | 00-99 | * |
| 74 | On time (hrs) | 00-99 | * |
| 75 | On time (most significant hrs) | 00-99 | * |
| 90 | Error Log (current error) | ** | |
| 91 | Error Log (1st previous error) | ** | |
| 92 | Error Log (2nd previous error) | ** | |
| 93 | Error Log (3rd previous error) | ** | |
| 94 | Error Log (4th previous error) | ** | |
| 95 | Error Log (5th previous error) | ** | |
| 96 | Error Log (6th previous error) | ** | |
| 97 | Error Log (7th previous error) | ** | |
| 98 | Error Log (8th previous error) | ** | |
| 99 | Clear Error Log | 0-1 | |

* Configuration functions can be changed only in CE Mode.

** The first half of the error number is displayed. To display the fail code (second half of the display), press either FINE ADJ key.

*** May vary from printer to printer

I/O CONFIGURATION (HPIB)

To configure the HP 2564B to HPIB I/O device, two parameters need to be set: the device address and device driver identification. To configure the printer proceed as follows:

- a. In configuration mode, select function 20 (Device Address). Use the FINE ADJ keys to select the device address (0 - 7) and then press ENTER.
- b. Place the printer into CE MODE.
- c. In configuration mode, select function 25 (Operation System Identification). Use the FINE ADJ keys to select the type of operation system, and then press ENTER:
 0 = HP 3000, 1000, 9000, SRM Systems (CIPER DRIVERS)
 1 = HP 64000 Systems or HP 250 Systems (NON CIPER)

INTERFACE CONFIGURATION (RS-232 and RS-422)

To configure the HP 2564B printer for either the RS-232 or RS-422 interface, function numbers 20 through 23 must be entered. The configuration values for the RS-232 interface are summarized in Table 4. Table 4F summarizes the configuration values for the RS-422 interface. (Note: The configuration byte for the RS-232 interface must be converted to a hexadecimal number for entry into the Operator Control Panel.)

The following is a typical RS-232 configuration for a spooled printer on an HP 3000 system:

| FUNCTION NUMBER | PARAMETER ENTERED | Conditions Set |
|-----------------|-------------------|--|
| 20 | 31 | Strip Null Character, Strip Delete character and enable XON/XOFF |
| 21 | 00 | Normal Operation |
| 22 | 51 | 9600 Baud |
| 23 | 03 | Odd Parity |

To configure the printer proceed as follows:

- a. In configuration mode, select the desired function (20-23). After the function parameter bit values have been determined and converted to hexadecimal values, use the FINE ADJ keys to set the parameter value and press ENTER.

Table 4. RS-232 Interface

| | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|----|---------|--------------------------|---|-----------------|----------|-----------------------------|-----------------------------------|-----------------------|
| 20 | * Spare | | Strip Delete Char | Strip Null Char | Set to 0 | ETX/ACK*** | ENQ/ACK*** | XON/XOFF |
| 21 | * Spare | | | | | | Hardware Handshake (See Table 4A) | |
| 22 | * Spare | Baud Rate (See Table 4B) | | | * Spare | Modem Status (See Table 4C) | | CB(CTS) Hand-Shake** |
| 23 | * Spare | | Set Transmitted 8th Bit to 1/0 (See Table 4D) | | * Spare | Set RCV 8th Bit to 1 | | Parity (See Table 4E) |

0 = Disable
1 = Enable

* Spares are always set to 0

** For this bit ONLY: 0 = Enable
1 = Disable

*** Not used for RS-422

Table 4A. Hardware Handshake
(Data Terminal Ready Line)

| Bits | | Description |
|------|---|----------------------------|
| 1 | 0 | |
| 0 | 0 | Normal Operation |
| 0 | 1 | CD line busy Operation |
| 1 | 0 | CD Line Inverted Operation |
| 1 | 1 | On-Line/Off-Line Operation |

Table 4B. Baud Rate
Function number 22

| 6 | 5 | 4 | Baud Rate |
|---|---|---|-----------|
| 0 | 0 | 0 | 300 |
| 0 | 0 | 1 | 600 |
| 0 | 1 | 0 | 1200 |
| 0 | 1 | 1 | 2400 |
| 1 | 0 | 0 | 4800 |
| 1 | 0 | 1 | 9600 |
| 1 | 1 | 0 | 19200 |

Table 4C. Modem Status

| Bits 2 1 | | Description |
|-------------|---|---|
| 0 | 0 | Disable display "01" for active CC or CF signal |
| 0 | 1 | Display "01" when CC signal is active |
| 1 | 0 | Not Used, invalid selection |
| 1 | 1 | Display "01" when CF signal is active |

Table 4D. Transmitted 8th-Bit

| Bits 5 4 | | Description |
|-------------|---|------------------------------|
| 0 | 0 | Transmit 8th Bit as is |
| 0 | 1 | Set Transmitted 8th Bit to 0 |
| 1 | 0 | Set Transmitted 8th Bit to 1 |
| 1 | 1 | Not Used |

Table 4E. Parity

| Bits | | Description |
|------|---|--------------------|
| 1 | 0 | |
| 0 | 0 | Disable Parity |
| 0 | 1 | Enable Even Parity |
| 1 | 0 | Not Used |
| 1 | 1 | Enable Odd Parity |

Table 4F. RS-422 Interface

| FUCTN NUMB | CONFIG NUMB | FUNCTION PARAMETER DESCRIPTION |
|------------|-------------|---|
| 20 | 01 | NULL/DELETE CHARACTERS PASSED |
| | 11 | NULLS STRIPPED |
| | 21 | DELETES STRIPPED |
| | 31 | NULLS AND DELETES STRIPPED |
| 22 | 00 | 300 |
| | 10 | 600 |
| | 20 | 1200 B A U D |
| | 30 | 2400 |
| | 40 | 4800 R A T E |
| | 50 | 9600 |
| | 60 | 19200 |
| 23 | 00 | PARITY - DISABLED 8TH-BIT |
| | 01 | EVEN PARITY ENABLED PASSED |
| | 03 | ODD PARITY ENABLED AS IS |
| 23 | 04 | RECEIVED 8TH-BIT SET TO 0 |
| | 10 | TRANSMITTED 8TH-BIT SET TO 0 |
| | 14 | RECEIVED 8TH-BIT SET TO 0 & & TRANSMITTED 8TH-BIT SET TO 0 |
| | 20 | TRANSMITTED 8TH-BIT SET TO 1 |
| | 24 | RECEIVED 8TH-BIT SET TO 0 & TRANSMITTED 8TH-BIT SET TO 1 |

I/O CONFIGURATION (CENTRONICS)

To configure the HP 2564B printer to a Centronics I/O device function numbers 20 thru 23 must be entered. The configuration bytes for each function number are summarized in the following table. The configuration number must be converted to a hexadecimal when the printer is configured via the Operator Control Panel. A configuration example follows:

| Function Number | Config Number | Function | Explanation |
|-----------------|---------------|---|---|
| 20 | 00 | Signal Line Polarity (Data Lines 1-8) | Positive True |
| 21 | 00 | Control Line Polarity (Normal Operation) Not Acknowledge Busy Not Strobe Spare Not Fault Paper Out Select Spare | Negative True Positive True Negative True Negative True Positive True Positive True --- |
| 22 | 00 | 7-bit/8-bit Operation | 8-bit Operation |
| 23 | 00 | End-of-Line Termination LF after CR CR after LF CR after FF CR after VT | Disabled Disabled Disabled Disabled |

| | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|----|------------------------------|--------|-----------|-----------------------|-------|--------------------|--------------------|--------------------|
| 20 | DATA LINE SIGNAL POLARITY | | | | | | | |
| | - - - Spare - - - | | | - - Spare - - | | | Negative | |
| 21 | CONTROL SIGNAL LINE POLARITY | | | | | | | |
| | Spare | Select | Paper Out | NOT Fault | Spare | NOT Strobe | Busy | NOT ACK |
| 22 | 7-Bit/8-Bit OPERATION | | | | | | | |
| | - - - - - Spare - - - - - | | | | | | 7-BIT | |
| 23 | END OF LINE TERMININATION | | | | | | | |
| | - - Spare - - - | | | CR after VERTICAL TAB | Spare | CR after FORM FEED | CR after LINE FEED | LINE FEED after CR |

Normal Centronics configurations require that all configuration functions be set to zero.

SECTION IV: TROUBLESHOOTING

Table of Contents

| | |
|---------------------|----|
| Error Codes | 14 |
| Print Quality | 16 |

ERROR CODES

All error conditions are displayed on the printer's Control panel in the flashing mode. To display the "Fail Code", press the ENTER key.

Table 6. Error Code Listing

| ERROR | FAIL CODE | EXPLANATION |
|-------|-----------|--|
| 11 | | Out of Paper |
| 12 | | Platen Open or Ribbon Out |
| 13 | | Paper Advance Inoperative/Paper Jam |
| 14 | | Print Mechanism Problems |
| | 00 | Hardware Failure |
| | 01 | Corebar Driver Failure |
| | 02 | Paper Driver Fail |
| | 03 | Hammer Driver Fail |
| | 04 | Multiple Hardware Errors |
| | 07 | Corebar Motor Start Fault |
| | 08 | Corebar Speed Out of Specification |
| | 09 | Corebar Driver Overloaded (or Underloaded) |
| | 10 | Power Up Fault Corebar Driver Fail |
| | 11 | Power Up Fault Paper Driver Fail |
| | 12 | Power Up Fault Hammer Driver Fail |
| | 13 | Power Up Fault Multiple Errors |
| | 14 | 50 Volts did NOT power up |
| | 15 | 50 Volts Loop Back Status Showed Disabled |
| | 21 | Missing Non Maskable Interrupts (NMI) |
| | 22 | Missing Transducer Signal |
| | 53 | Corebar Frequency Out of Specification |
| 15 | | Graphics Run Time Failure |
| | 00 | Unrecognized Nonpacket Request or Response |
| | 01 | Return Status Indicates Failure from Graphics Board |
| | 02-05 | Communication Protocol Errors (during processor communication with graphics PCA) |
| | 07 | Reset Response Timeout |
| | 08 | Failure to Delink Packet |
| | 09 | Failure Reported by Graphics Board |
| | 10 | Graphics Board Dead |
| 16 | | I/O Run Time Failure |
| | 00 | Unrecognized Nonpacket Request or Response |
| | 01 | Return Status Indicates Failure from I/O |
| | 02 | Undefined Return Status |
| | 03-05 | Communication protocol errors |
| | 06 | Power On Self-Test Failure |
| | 07 | Reset Response Time-Out |
| 17 | | Printer Timed Out |
| | 01 | Error location is in Data Processor |

| | | |
|-------|-------|--|
| | 02 | Error location is in QPRINT |
| | 03 | Print One Line External Time-Out |
| | 05-06 | Print One Line Internal Time-Out |
| 19 | | Attempted to Go Online in CE Mode |
| 29 | | Configuration Print-Out |
| | 01 | Printer Time-Out |
| | 40-43 | Communications Failure I/O PCA to Control PCA |
| | 45-48 | Communications Failure Graphics PCA to Control PCA |
| | 50 | Can't Find a Character Set Rom in Slot 0 |
| 30-39 | | Printing Self-Test Time-Outs |
| 30 | 01 | Standard Ripple Print Time-Out |
| 31 | 01 | Double Size Ripple Print Time-Out |
| 32 | 01 | Compressed Ripple Print |
| 33 | 01 | High Density Ripple Print Time-Out |
| 34 | 01 | Raster Graphics Print Time-Out |
| 35 | 01 | Rubout Test Time-Out |
| 36 | 01 | Blackout Print Time-Out |
| 37 | 01 | Print Quality Test Time-Out |
| 39 | 01 | 600 LPM Print Time-Out |
| 40 | | Dot Generation Logic (DGL) ROM Test Failure |
| | 01 | Character Set Socket 1 Failure (U81 in 60008 Boards) |
| | 02 | Character Set Socket 2 Failure (U91 in 60008 Boards) |
| | 03 | Character Set Socket 3 Failure (U101 - 60008 Boards) |
| | 04 | Character Set Socket 4 Failure (U121 - 60008 Boards) |
| | 05 | Character Set Socket 5 Failure (U131 - 60008 Boards) |
| | 06 | Character Set Socket 6 Failure (U141 - 60008 Boards) |
| 41 | | RAM Test Failure |
| | 00 | Self-Test Time-Out |
| | 01 | RAM 1 Failure (U14) |
| | 02 | RAM 2 Failure (Nonvolatile, U24) |
| | 03 | RAM 3 Failure (U34) |
| | 04 | RAM 4 Failure (U54) |
| | 05 | RAM 5 Failure (Shared DGL, U71) |
| 42 | | Firmware ROM CRC Test |
| | 00 | Self-Test Time-Out |
| | 01 | Firmware ROM Failure (U13, U23, U33, U53, U63) |
| 43 | | Timer Test |
| | 01 | Intel 8253 Timer Failure (U55) |
| 44 | | Dot Generation Logic (DGL) Test |
| | 01-06 | DGL gate array is not properly extracting the descender/excursion from the character sets during status read-back. |
| | 11-16 | DGL gate array is not transferring the graphics image in the DGL RAM buffer to the LSI shift register properly for the indicated dot density and direction. |
| | 17-26 | DGL gate array is not creating the proper dot image in the LSI shift register based on the ASCII text in the DG RAM buffer. |
| 46 | | Corebar Coil Test |
| | 00 | Self-Test Time-Out |
| | 01-66 | Open Circuit on Hammer Coil |
| 50 | | I/O Errors: HPiB Interface |
| | 01 | RAM Failure |
| | 02 | ROM Failure |
| | 03 | HPiB Hardware Failure |
| | 04 | Multiple Errors (2 or more) |
| 50 | | I/O Errors: Centronics Interface |
| | 01 | RAM Failure |
| | 02 | ROM Failure |



| | | |
|-------|-------|--|
| | 03 | RAM and ROM Failure |
| 50 | | I/O Errors: RS-232 Interface |
| | 01 | ROM Error |
| | 02 | RAM Error |
| | 03 | Serial Hardware Failure |
| | 04 | Multiple Failures (two or more) |
| 60-66 | | Vector Graphics Error Codes - All of these failures imply a defective graphics PCA. |
| 80-83 | | Front Panel Operation Errors |
| 80 | 00-95 | Character Set Errors at Power On |
| | 96 | No Character Set ROM in Rom Socket 1 |
| 81 | | Slave Self-Test Select Error Using Up Button |
| 82 | | Slave Self-Test Select Error Using Down Button |
| 83 | | Internal Firmware Self-Test Table Problems |
| 86 | | Modem Disconnect Function |
| | 01 | Could Not Delink a Packet |
| | 02 | Could Not Send the Packet |
| | 03 | Error Encountered on I/O |
| 90 | | I/O Slave Time Outs |
| | 50 | Failed to Return Self-Test Description |
| | 51 | Failed to Return from Self-Test in Prescribed Time |
| | 52 | Returned with an Incorrect Command |
| | 53 | Failed to Delink a Packet |
| 91 | | Graphics Slave Time Outs |
| | 50 | Failed to Return Self-Test Description |
| | 51 | Failed to Return from Self-Test in Prescribed Time |
| | 52 | Returned with an Incorrect Command |
| | 53 | Failed to Delink a Packet |

PRINT QUALITY

Common Print Quality Problems: Dropped Dots
 Dot Slalom
 Dot Uniformity

Common Causes of Problems: Platen Adjust Knob Set Incorrectly
 Platen Mis-Adjusted

 Obstructions in Paper Path
 Incorrect Hammer Flight Time
 Incorrect Turnaround Time

NOTE

Refer to Appendix A and B of the
 Service Manual for an explanation
 and possible cause of the error.

SECTION V: DIAGNOSTICS/SELF TEST

Table of Contents

| | |
|---------------------------------------|----|
| Standard Self Test Sequence | 17 |
| Selectable Diagnostic Sub-Tests | 18 |
| CE Operation Mode | 20 |
| Clearing the Errorlog | 20 |

STANDARD SELF-TEST

To perform the standard Self-Test (excluding the I/O tests), press the TEST key and then press the ENTER key. One copy of the self-test print-out will be printed. To perform a continuous self-test press and hold the TEST key for two seconds (until a four appears in the status display) and then press the ENTER key. Exit the continuous Self-Test by pressing the TEST key until a "0" appears in the display. Note that the right decimal position LED flashes when any diagnostic test is executed.

The subtest routines listed in Table 7 are performed when the standard Self-Test is executed.

Table 7. Standard Self Test Routines

| | |
|--|---|
| Digital | This test is designed to test the Formatter PCA. It checks the CTC channels and performs a ROM CRC on all firmware ROM. A non-destructive read/write test is performed on both volatile and non-volatile RAM. Also a DGL test is performed to check the DGL logic and a CRC check is performed on all character set ROMs installed. |
| Hammer Driver (CE Mode Only) | This test checks for open hammer coils. All 66 hammers are fired individually. |
| Vector Graphics PCA (if installed) | This test performs a read/write operation on the graphics PCA's dynamic and static RAM. The test performed on the static RAM is non-destructive (the original data is not destroyed). A CRC test is performed on all Graphics ROM. A diagnostic is performed by the graphics PCA Controller to verify overall operation. |
| **** PRINTING SELF-TESTS **** | |
| Configuration Print-Out | During this test a description of I/O specifics are printed along with an example of the character sets loaded in the printer. |

| | |
|------------------------------|---|
| Raster graphics | A raster graphic print sample (diagonal line pattern) is printed. |
| Print Quality | A sample of vertical and horizontal lines are printed; these may be used to evaluate print quality. |
| Double Size Ripple Print | A sample of double size print. |
| Compressed Ripple Print | A sample of compressed print. |
| Standard Ripple Print | A sample of standard ripple print. |
| High Density Ripple Print | A sample of high density print. (If high-density ROM is installed) |

SELECTABLE DIAGNOSTIC SUB-TESTS

Individual sub-tests may be executed in the HP 2564B printer to verify operation of the specific functions of the printer's circuitry. To perform an individual sub-test, press the TEST key until the Operator Control Panel status display shows a "5" and then use the FINE ADJ keys to increment or decrement the printer's display to the desired sub-test routine. Press the ENTER key to execute the sub-test.

To execute a continuous subtest routine, press and hold the TEST key for two seconds (until the displayed status changes to "4"). Use the FINE ADJ keys to select the desired sub-test routine, and then press the ENTER key to execute the routine. Press the TEST key to exit the continuous sub-test operation.

Table 8. Selectable Diagnostic Sub-Tests

| Test Number | Test Title |
|-------------|--|
| 0 | Standard Self-Test |
| 1 | Standard Ripple Print |
| 2 | Double Size Ripple Print |
| 3 | Compressed Ripple Print |
| 4 | High Density Ripple Print (if installed) |
| 5 | Raster Graphics Print (herringbone) |
| 6 | High Density Raster Graphics (herringbone) |
| 7 * | Raster Graphics (blackout pattern) |
| 8 | Printer Configuration Printout |
| 9 | 600 LPM Ripple Print (upper-case) |
| 11 | Digital Control Board PCA |
| 15 | Flight Time Adjustment Pattern |
| 16 | Alternate Flight Time Adjustment Pattern |
| 25 * | Open Hammer Test |
| 30-39 | Interface tests (I/O dependent, see specific I/O manual for test descriptions) |
| 40-49 | Vector Graphics Option PCA Tests (if installed) |

* CE Mode Jumper Required

Loopback Connectors Required:

02620-60062 - RS-232 I/O (required for test 33)
5061-3248 - RS-422 I/O (required for test 32)
5061-1752 - Centronics I/O (required for test 32)



CE OPERATION MODE

The CE Mode of operation allows the Service Representative to perform several configuration functions, and to perform diagnostic subroutines that are not allowed in the Operator Mode of operation (see Tables 7 and 8). To place the printer in CE Mode proceed as follows:

- a. Set the printer's ON/OFF switch to the OFF (0) position.
- b. Remove the printer's top cover as follows:
 1. Open the printer's top cover; loosen the two captive pozidrive screws recessed below the top front edge of the printer's top cover.
 2. Loosen the two pozidrive screws which secure the printer's Control Panel to the top cover. Slide the Control Panel toward the center of the printer approximately one-half inch to the left.
 3. Unlatch the two top cover latches securing the top cover at the rear of the printer.
 4. Carefully lift-up on the top cover to remove from the printer.
- c. On the Formatter PCA, install a jumper from the "CE MODE" test point to TP1 (GND).
- d. Set the printer's ON/OFF switch to the ON (1) position.

To perform a CE Configuration function hold down on the CONFIG key. The right-most and middle LEDs should illuminate when in CE Configuration Mode. To perform a CE Configuration function, hold down on the CONFIG key and press either FINE ADJ key.

To perform a CE Subtest function, press the TEST and a FINE ADJ key. The right-most display panel LED should illuminate when in CE Subtest Mode of operation. Use the FINE ADJ UP/DOWN and ENTER keys to perform or select the appropriate configuration or subtest routine.

CLEARING THE ERRORLOG

To clear the errorlog, enter CE Mode, bring up configuration function 99, select (1) and press ENTER.

SECTION VI: ADJUSTMENTS

Table of Contents

| | |
|---------------------------------------|----|
| Platen Gap Adjustment | 21 |
| Crank Arm Phase Adjustment | 22 |
| Timing Adjustments | 24 |
| Flight Time Adjustment | 24 |
| Turnaround Time Adjustment | 26 |
| Cold Start | 27 |
| Character Set ROM Locations | 28 |
| Velocity Transducer Adjustments | 28 |
| Magnet Clearance Adjustment | 29 |
| Magnet Depth Adjustment | 30 |

PLATEN GAP ADJUSTMENT

The Platen Gap is the space between the platen assembly and the corebar hammer tines. This gap should be .013 +/- .001 inches and should be verified each time the corebar assembly or the platen is replaced or removed. Adjust the Platen Gap as follows:

- a. Remove the printer top cover.
- b. Remove the printer ribbon and paper.
- c. With the platen closed, remove the two platen tensioning springs on the right-side of the printer.
- d. Rotate the Platen Adjustment Knob fully counter-clockwise until it reaches its stop, then rotate it clockwise to the ninth (9) detent.
- e. Release and move the paper tractors toward the center of the tractor guides to allow access to the ends of the platen.
- f. Using a 3mm hexagonal driver (allen wrench), loosen the two screws which secure the platen assembly to the print mechanism (see Figure 1).

NOTE

To more easily view the positions of hammers #1 and #66 it may be necessary to push the ribbon shield back and visually observe the hammer positions on the corebar.

- g. To ensure that the platen is parallel to the corebar, position adjustment gauges at each end of the corebar at hammers #1 and #66 as shown in Figure 1. Position the platen until the gap is the same at each end of the corebar (.013 +/- .001) and securely tighten the platen adjust screws.

- h. Check the gap by sliding a feeler gauge in and out of each end of the platen. The gauge should slide in and out with a slight drag.
- i. Re-install the platen tensioning spring and printer top cover.
- j. Perform the printer Flight Time and Turnaround Time Adjustments.

NOTE

Ensure that the Platen Adjust Knob is returned to its original position prior to performing the Flight Time and Turnaround Time Adjustments.

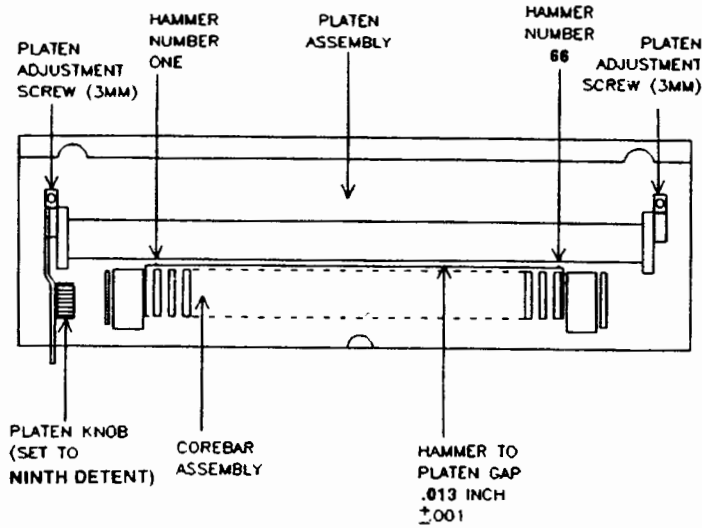


Figure 1. Platen Gap Adjustment

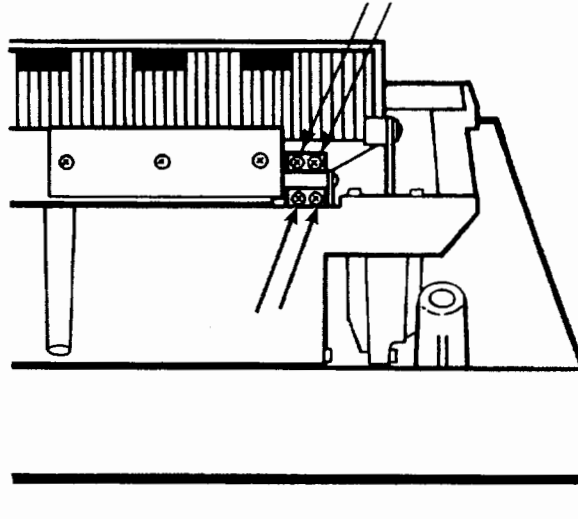
CRANK ARM PHASE ADJUSTMENT

This adjustment adjusts the position or phase of the crank arms in relation to the corebar flexures to allow proper mogation of the corebar and should be performed whenever the corebar or the corebar drive motor is replaced. The top cover, shroud and Hammer Driver PCA must be removed to perform this adjustment.

To phase the crank arms proceed as follows:

- a. Loosen the two screws in the end of each crank arm (see Figure 2).

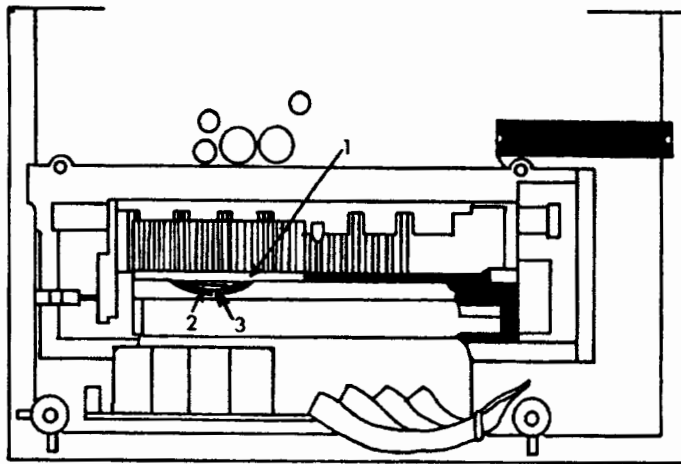
- b. If the counter weight is not visible (Figure 2), rotate the counter weight from under the corebar so the weight can be seen.



Front View of Printer

Figure 2. Crank Arm Phasing

- c. Place the phasing tool (part number 02564-00100) against the corebar fins, with the edge of the tool resting on top of the counter weight (see Figure 3). Rotate the counter weight slightly until the scribed line is parallel with the edge of the tool (see Figure 3), then tighten the screws in the ends of the corebar crank arms.
- d. Recheck the adjustment.



1. Phasing tool
2. Counter-weight
3. Scribe line

Top View of Printer

Figure 3. Crank Arm Adjustment

TIMING ADJUSTMENTS

There are two timing adjustments, the Flight Time Adjustment and the Turnaround Time Adjustment, which adjust the hammer dot placement for optimum print quality. These adjustments change circuit timing parameters and are made from the control panel with the printer in CE mode. The Flight Time Adjustment should be performed first, then the Turnaround Time Adjustment. Both should be performed whenever the platen, corebar, corebar drive motor or crank arms have been adjusted or removed.

NOTE

The Platen Gap and the crank arm adjustment **MUST** be set correctly before attempting to alter either timing parameter.

Flight Time Adjustment

The Flight Time Adjustment adjusts the printer hammer driver circuitry so that the hammers are fired at the proper time in order to place dots at the same position (in a vertical line) on the paper.

To determine if the flight time is adjusted correctly, observe the dot pattern produced by diagnostic subtest number 15 (see Figure 4). The vertical lines of this test should have the dots placed directly beneath each other. Any sawtooth effect indicates that the flight time is out of adjustment.

Subtest number 16 can also be used to verify flight time. The vertical bars should have all the same width. If one bar in each pair is wider than the other, the flight time needs adjustment.

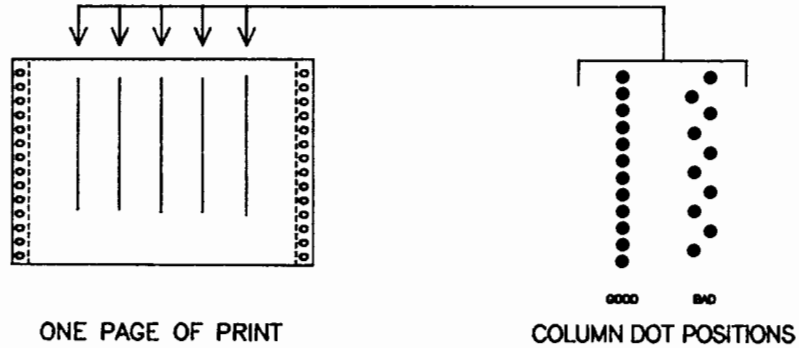


Figure 4. Subtest 15 - Flight Time Adjustment Printout.

To adjust the flight time complete the following steps:

- a. Place the printer in the CE Mode of operation.
- b. Place the printer into Configuration Mode by holding down on the CONFIG key. While holding down the CONFIG key, use the FINE ADJ keys until function number 40 is displayed. Release the key to display the current flight time parameter.
- c. Use the FINE ADJ keys to select the desired parameter value. Any number from 0 to 35 can be selected; the normal value for this parameter is 6. When the desired parameter has been selected, press ENTER to enter the value into non-volatile RAM.
- d. Check the results of the adjustment by performing the printer diagnostic Flight Time Test and observe the vertical lines of the test printout for any sawtooth effect (Figure 4). If the sawtooth effect is still evident, return to step "b" and increase the parameter, or if the sawtooth effect appears to have increased try varying the parameter in the opposite direction.

Turnaround Time Adjustment

The Turnaround Time Adjustment is designed to compensate for variations in the corebar turnaround time. If this adjustment is off, it causes the dots at the edges of the character cells to either leave a gap or to overlap into the next hammer's print area.

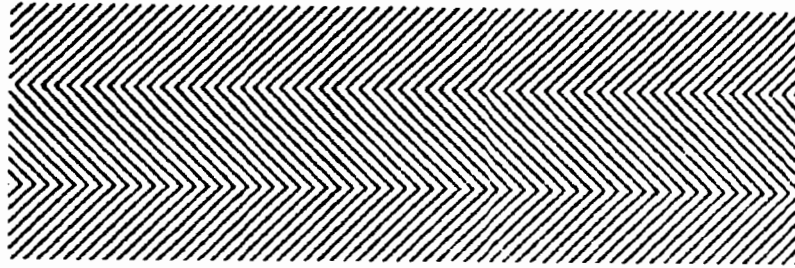
To determine if the turnaround time is adjusted correctly, observe the dot pattern created by diagnostic subtest number 5 (see Figure 5). If it is not adjusted correctly, faint white lines or slightly darker lines can be seen running vertically through the herringbone pattern.

To adjust the offset time, complete the following steps:

- a. Place the printer in the CE Mode of operation.
- b. Place the printer into Configuration Mode by holding down on CONFIG key. While holding down on the CONFIG key, use the FINE ADJ keys until function number 41 is displayed. Release the CONFIG key to display the flight time parameter.
- c. Use the FINE ADJ keys to select the desired parameter value. A value between 40 and 64 may be entered; the normal parameter is generally around 56. When the desired parameter has been selected press ENTER to enter the value into non-volatile RAM.
- d. Check the result of the adjustment by performing diagnostic test number 5 (see Figure 5). If faint vertical lines (either light or dark) can be seen running through the pattern, return to step "b" and either increase or decrease the value until the lines disappear.

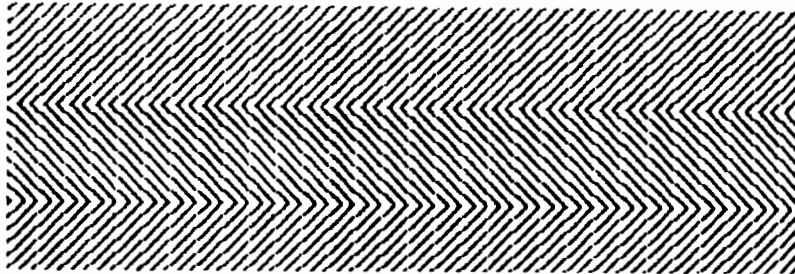


GOOD PRINT



BAD PRINT

Faint Vertical Lines



Darker Vertical Lines Running Vertically Through Herring Bone Pattern

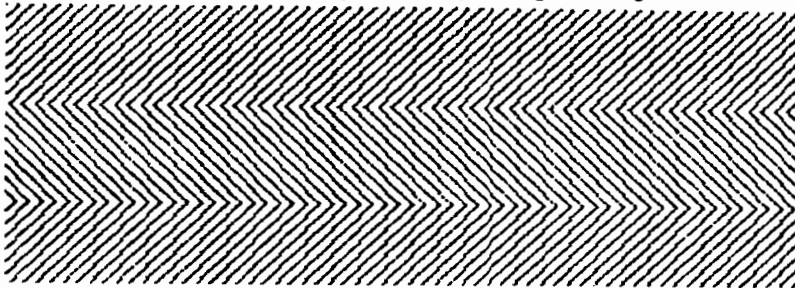


Figure 5. Subtest 5 - Turnaround Adjustment Printout.

COLD START

To "Cold Start" the HP 2564B, proceed as follows:

- a. Remove the printer's top cover.
- b. At the Formatter PCA, ground the test point labeled "Cold Start".
- c. Set the printer's ON/OFF switch to ON.



- d. At the printer's Control Panel, re-enter the PRINT TIME/ ON TIME functions (obtain these parameters from a copy of the most recent self test).
- e. Re-configure the interface to the operating system.
- f. Remove the cold start jumper and replace the printer's top covers.

CHARACTER SET ROM LOCATIONS

Formatter PCA

| | 02564-60008 | Density |
|----------|-------------|---------|
| Socket 1 | U81 | Normal |
| Socket 2 | U91 | Normal |
| Socket 3 | U101 | High |
| Socket 4 | U121 | High |
| Socket 5 | U131 | High |
| Socket 6 | U141 | High |

VELOCITY TRANSDUCER ADJUSTMENTS

There are two velocity transducer adjustments, the Magnet Clearance Adjustment and the Magnet Depth Adjustment. These adjustments need to be performed whenever the velocity transducer has been disconnected from the printer. The clearance adjustment should be made first, followed by the depth adjustment. These adjustments are described in the two sections following.

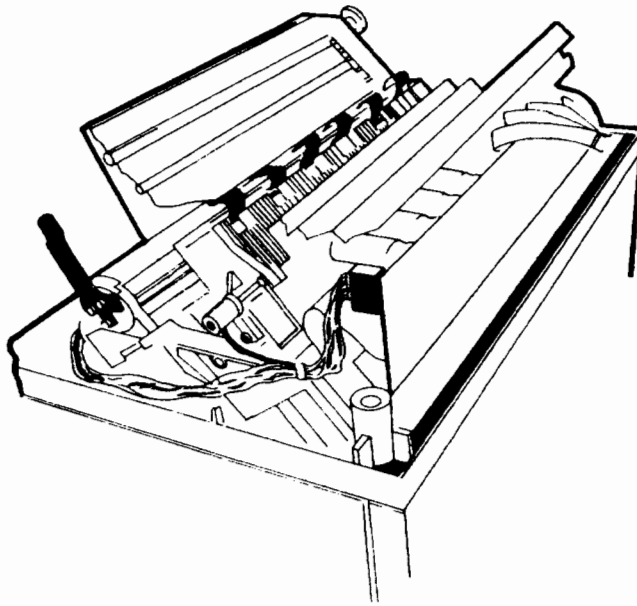


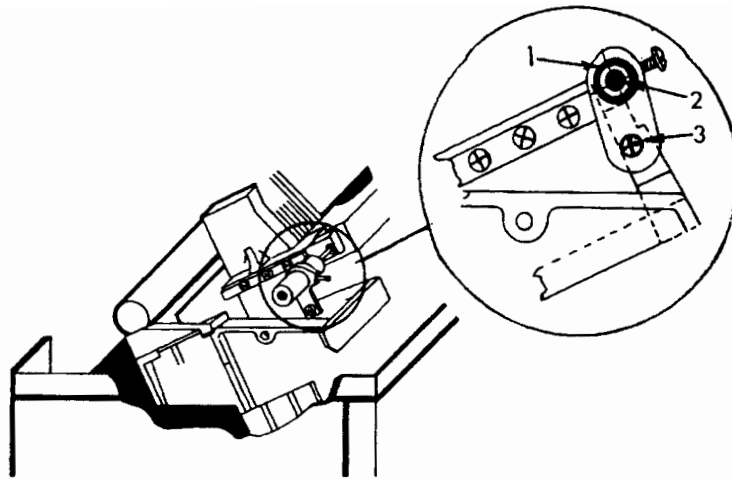
Figure 6. Velocity Transducer Location.

Magnet Clearance Adjustment

The clearance adjustment centers the magnet in the center of the velocity transducer body (see Figure 7) so that as the magnet moves in and out of the transducer body it does not scrape the sides. To make the adjustment, complete the following steps:

- a. Remove the printer top cover (ENSURE POWER TO THE PRINTER IS DISCONNECTED).
- b. Loosen the clearance adjustment screw (see Figure 7).
- c. View down the velocity transducer shaft to see the position of the magnet with respect to the shaft sides.
- d. Move the velocity transducer body until the magnet appears to be centered in the hole (Figure 7).
- e. Tighten the clearance adjustment screw.

TOOL No. 02566-20133



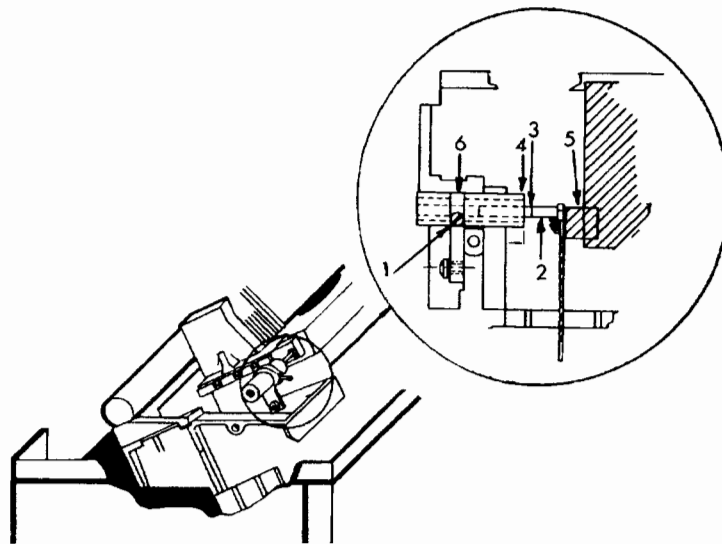
- | | |
|----------------------------|-------------------------------|
| 1. Transducer body | 3. Clearance adjustment screw |
| 2. Transducer magnet shaft | 4. Transducer magnet shaft |

Figure 7. Velocity Transducer Clearance Adjustment.

Magnet Depth Adjustment

The depth adjustment positions the velocity transducer magnet in the center of the linear range of the velocity transducer body (coil).

- a. Remove the printer top cover and shroud (ENSURE THAT POWER IS REMOVED FROM PRINTER).
- b. Loosen the plastic adjustment screw shown in Figure 8.
NOTE: The velocity transducer magnet should be secured to the corebar.
- c. Position the velocity transducer body by moving it in and out of the frame until the front edge of the body is aligned with the scribe line on the magnet (see Figure 8).
- d. Tighten the plastic screw.



- | | |
|---------------------------|--------------------------------|
| 1. Depth adjustment screw | 4. Mark aligned at end of body |
| 2. Magnet | 5. Corebar |
| 3. Magnet Alignment mark | 6. Transducer frame |

Figure 8. Velocity Transducer Adjustment.



| HP PART NUMBER | ASSEMBLY DESCRIPTION | EXCHANGE PART NO. | REPLACEMENT PART NO. | WHERE USED |
|----------------|------------------------|-------------------|----------------------|------------|
| 02564-40013 | PIVOT: PLATEN | 02564-69003 | | |
| 02564-60003 | PCA: HAMMER DRIVER | 02564-69004 | | |
| 02564-60004 | TESTED PAINTBAR | 02564-69006 | | |
| 02564-60006 | PCA: ANALOG | 02564-69008 | | |
| 02564-60008 | PCA: FORMATTER | | | |
| 02564-60112 | ASSY: STRUCT WELD | | | |
| 02564-60113 | ASSY: CBL HMR DRVR | | | |
| 02564-60114 | ASSY: CBL HMR DRVR PWR | | | |
| 02564-60117 | ASSY: BASE | | | |
| 02564-60118 | ASSY: VELOC TRANS | | | |
| 02564-60119 | MT: RIBBON DRV | | | |
| 02564-60120 | ASSY: STAND FAN CBL | | | |
| 02564-60121 | ASSY: BASE FAN CBL | | | |
| 02564-60122 | CBL: SENSOR | | | |
| 02564-60123 | CBL: DC MOTOR | | | |
| 02564-60130 | ASSY: PAPER GUIDE | | | |
| 02564-60131 | ASSY: COVER | | | |
| 02564-60132 | ASSY: PAPER GUIDE | | | |
| 02564-60135 | ASSY: CBL COREBAR | | | |
| 02564-60136 | CRANKSHAFT ASSY | | | |
| 02564-60137 | PLATEN ASSY | | | |
| 02564-60147 | TINSEL | | | |
| 267618 #001 | LINE DRW, LRG BLK | | 5062-0465 | |
| 267618 #002 | KATAKANA 8 | | 5062-0466 | |
| 267618 #003 | OCR-A, OCR-B | | 5062-0467 | |
| 267618 #004 | HD ROMAN 8 | | 5062-0468 | |
| 267618 #005 | HD ITALIC ROMAN 8 | | 5062-0469 | |
| 267618 #006 | HD KATAKANA 8 | | 5062-0470 | |
| 267618 #008 | UPC BARCODE | | 5062-0471 | |
| 267618 #009 | PROM: 12&13.3 CPI | | 02566-60276 | |
| 267618 #012 | PROM: 12&15 CPI | | 02566-60277 | |
| 267618 #013 | PROM: 13.5&15 CPI | | 02566-60278 | |



2564B PARTS/JUNE 1986

| HP PART NUMBER | ASSEMBLY DESCRIPTION | EXCHANGE PART NO. | REPLACEMENT PART NO. | WHERE USED |
|----------------|-----------------------|-------------------|----------------------|------------|
| 8120-1369 | POWER CABLE (AUSTR) | | | |
| 8120-1378 | POWER CABLE (U.K.) | | | |
| 8120-1689 | POWER CABLE (GER/SWE) | | | |
| 8120-2956 | POWER CABLE (DEN) | | | |
| 9100-4468 | ASSY: TRANSFORMER | | | |
| 02563-00049 | LBL: WHEEL | | | |
| 02563-00055 | PPR OUTPUT BAIL | | | |
| 02563-00072 | LBL: FORM LOADING | | | |
| 02563-00075 | PLATE NUT | | | |
| 02563-00090 | SPRING PLATEN | | | |
| 02563-20002 | SHAFT: TRACTOR DRIVE | | | |
| 02563-20003 | SHAFT: TRACTOR GUIDE | | | |
| 02563-20006 | SHAFT: PLATEN KNOB | | | |
| 02563-20033 | BEZEL: CONTROL PANEL | | | |
| 02563-40004 | COVER, WINDOW ACCESS | | | |
| 02563-40027 | CLIP, INTERLOCK | | | |
| 02563-60156 | PAPER MOTION ASSY | | | |
| 02563-60163 | PICKUP BRACKET | | | |
| 02564-00002 | RIBBON SHIELD | | | |
| 02564-00011 | PPR GUIDE: FRONT | | | |
| 02564-00015 | BRKT: FAN MOUNTING | | | |
| 02564-00020 | PLATE: SPRING HOOK | | | |
| 02564-00021 | CABLE CLIP | | | |
| 02564-00023 | PLATE: SPRING HOOK | | | |
| 02564-00038 | NAME PLATE LABEL | | | |
| 02564-00048 | BRKT: LOWER FAN | | | |
| 02564-00052 | PAPER TRAY | | | |
| 02564-00053 | SPRING: PAPER PATH | | | |
| 02564-00058 | FOAM: FAN | | | |
| 02564-00082 | SHIELD: PAPER DUST | | | |
| 02564-00096 | WSHR: L DAMPER | | | |
| 02564-20012 | MNT: VEL TRANSDUCER | | | |
| 02564-40008 | BLOCK: CLAMP | | | |

2564B PARTS/JUNE 1986

| HP PART NUMBER | ASSEMBLY DESCRIPTION | EXCHANGE PART NO. | REPLACEMENT PART NO. | WHERE USED |
|----------------|---------------------------|-------------------|----------------------|------------|
| 1390-0034 | FSTNR: SNAP-IN | | | |
| 1390-0635 | FSTNR: SNAP-IN | | | |
| 1400-0249 | TIE CBL SMALL | | | |
| 1400-0493 | TIE CBL LRG | | | |
| 1400-0611 | CLIP CABLE | | | |
| 1410-0632 | BRG: FLG BALL | | | |
| 1530-2202 | TRACTOR RH | | | |
| 1530-2203 | TRACTOR LH | | | |
| 2190-0023 | WSHR: LK HLCL 25" | | | |
| 2190-0584 | WSHR: M3 SPL LOCK | | | |
| 2190-0586 | WSHR: M4 SPL LOCK | | | |
| 2190-0592 | WSHR: SPL LOCK | | | |
| 2200-0103 | SCR: PAN 4-40 | | | |
| 3050-0002 | WSHR: FL#10 | | | |
| 3050-0180 | WSHR: FL MN | | | |
| 3050-0891 | WASHR: M3 FLAT | | | |
| 3050-0893 | WASHR: M4 FLAT | | | |
| 3101-2859 | SWTCH: SENSOR | | | |
| 3140-0678 | MOTOR: DC | | | |
| 3140-0690 | ASSY: STEPPER MOTOR | | | |
| 3160-0097 | FAN TBAX 120FM | | | |
| 5040-9002 | KEYPAD: SIL RUBR | | | |
| 5040-9003 | WINDOW: BEZEL | | | |
| 5061-1702 | PCA: HP1B I/O | 26067-69002 | | |
| 5061-1703 | PCA: MULTIPPOINT I/O | 26067-69003 | | |
| 5061-1707 | PCA: SERIAL RS-232 | 26067-69007 | | |
| 5061-1708 | PCA: PARALLEL I/O (CEN) | 26067-69008 | | |
| 5061-1709 | PCA: FRONT PANEL | | | |
| 5061-1721 | PCA: PAR/DIFF I/O | 26067-69021 | | |
| 5061-1723 | PCA: RS-422 I/O | 26067-69023 | | |
| 5062-0474 | ROM: STD CHARACTER SET #0 | | | |
| 5062-0476 | CBL: FRONT PANEL | | | |
| 8120-1351 | POWER CABLE (U.S.) | | | |

2564B PARTS/JUNE 1986

| HP PART NUMBER | ASSEMBLY DESCRIPTION | EXCHANGE PART NO. | REPLACEMENT PART NO. | WHERE USED |
|----------------|------------------------|-------------------|----------------------|------------|
| 0510-0598 | COLLAR | | | |
| 0515-0136 | SCREW: M4 X 12 | | | |
| 0515-0241 | SCREW: MCH M4 X 10 SLT | | | |
| 0515-0335 | SCREW: MAC M4 X 0.7 | | | |
| 0515-0484 | SCR-SKT-HP-CP | | | |
| 0515-0501 | SHDSCR: M6 X 12 LG | | | |
| 0515-0656 | SCREW: SET M5 X 10 LG | | | |
| 0515-0758 | SCREW: M5 X 12 PAN | | | |
| 0515-0760 | NUT | | | |
| 0515-0803 | SCR: MACHINE ASSY | | | |
| 0515-0825 | SCREW: M4 X 7 POZI | | | |
| 0515-0838 | SCREW: BTIN HD M4 | | | |
| 0515-0868 | SCREW: MACH ASSY | | | |
| 0515-0875 | SCREW: M4 X 12 SEM | | | |
| 0515-0878 | SCREW: SKT HD CAP | | | |
| 0515-0909 | SCREW: MCH M4 X 12 LG | | | |
| 0515-0912 | SCREW: MCH M3 X 8 LG | | | |
| 0515-0919 | SCREW: MACH 3M X 0.5 | | | |
| 0515-0924 | SCREW: MACH M3 X 6 LG | | | |
| 0515-0983 | SCREW: MACH M4 X 0.7 | | | |
| 0515-1013 | SCR MCH M4 X 0.7 | | | |
| 0515-1064 | SCREW: ASSY M4 X 16 LG | | | |
| 0515-1074 | SCREW: MACH M3 X 14 LG | | | |
| 0535-0006 | NUT: M4 HEX | | | |
| 0570-1258 | PLGR: M4 BALL | | | |
| 0624-0400 | SCREW, POZ, 6-19 | | | |
| 0624-0413 | SCR-TPG 8-16 | | | |
| 0624-0585 | SCREW, TPG, 10-16 | | | |
| 0624-0594 | SCREW: THRD RLG | | | |
| 0624-0618 | SCREW, TPG, 4-24 | | | |
| 0960-0585 | ASSY: TINSEL | | | |

02566-20137 TRANSDUCER ALIGNMENT TOOL
2564B PARTS/JUNE 1986