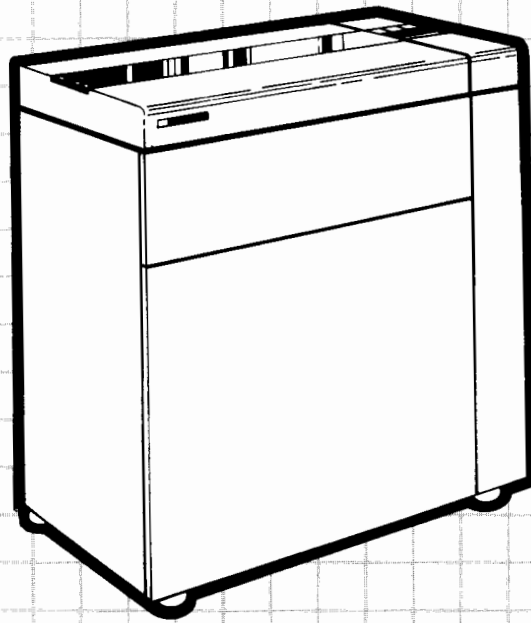
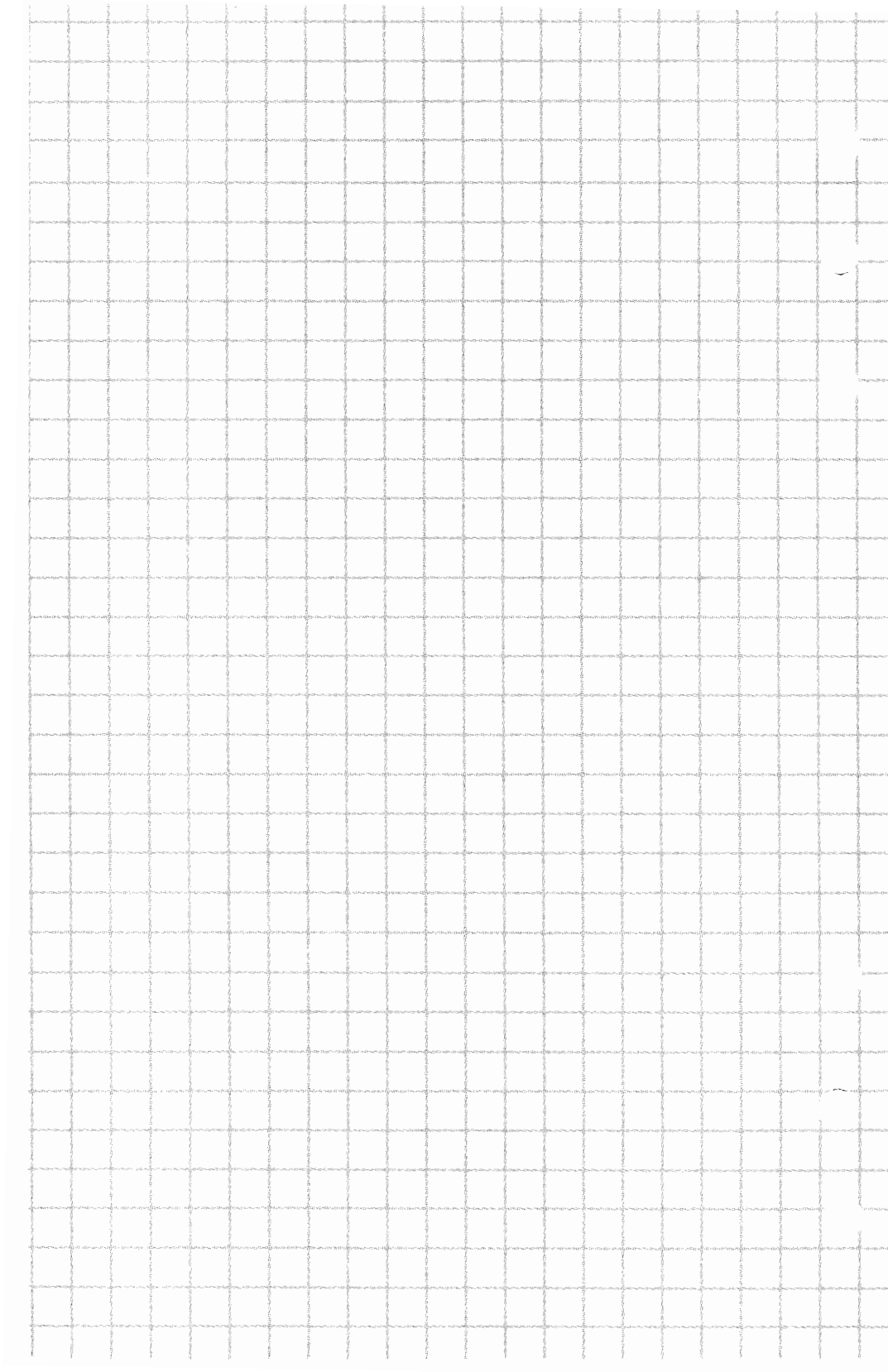


# HP 2565A HP 2566A



P/N 02566-90913

SEPTEMBER 1984



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# SECTION I: PRODUCT INFORMATION

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## OPTIONS

Table 1. HP 2565/66A OPTIONS

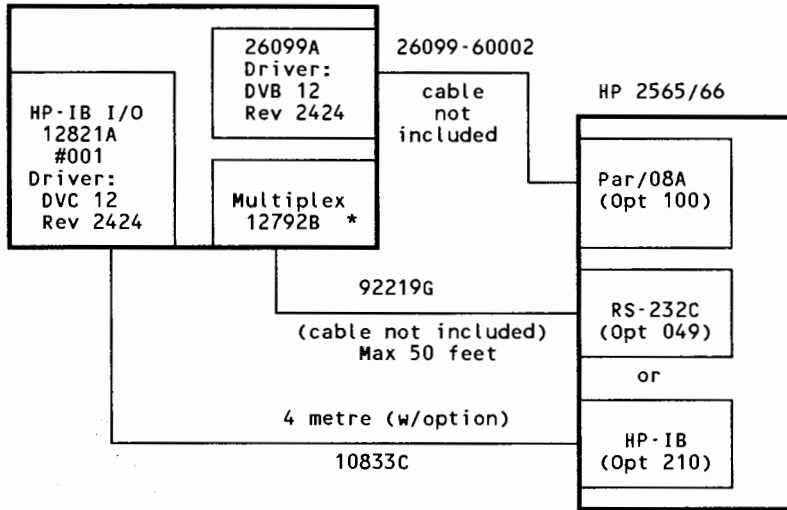
OPTION NO.	DESCRIPTION
001	Line Draw, Math, and Block character sets
002	Standard density KATAKANA8 character set
003	High density OCR-A and OCR-B character sets
004	High density ROMAN8 character set
005	High density italic ROMAN8 character set
006	High density KATAKANA8 character set
008	High density bar codes
010	High density and Draft Quality Arabic8 character set*
015	220 Vac, 50/60 Hz operation
016	100 Vac, 50/60 Hz operation
017	240 Vac, 50/60 Hz operation
022	Vector-Raster conversion (Graphics) PCA**
023	Vector Option (Graphics) PCA, High Density**
028	Extended language support*
049	RS 232C Interface
050	RS-422A Serial Interface
053	Centronics Parallel Interface
100	HP 2608A-Compatible Interface for HP 1000 M,E,F Series
115	Passive Paper Stacker
210	Configured for HP 1000 M, E, and F Series subsystem
214	Configured for HP 1000 A-Series subsystem
300	HP 2608A-Compatible Interface for HP 3000 Series III
337	Configured for HP 3000 Series 37 subsystems
340	Configured for HP 3000 39/40/42 subsystem
344	Configured for HP 3000 Series 44/48 subsystems
364	Configured for HP 3000 Series 64/68 subsystems
500	Printer packaged options (001,004,005,115)
715	Service Documentation

\*Options 010 and 028 must be ordered together.

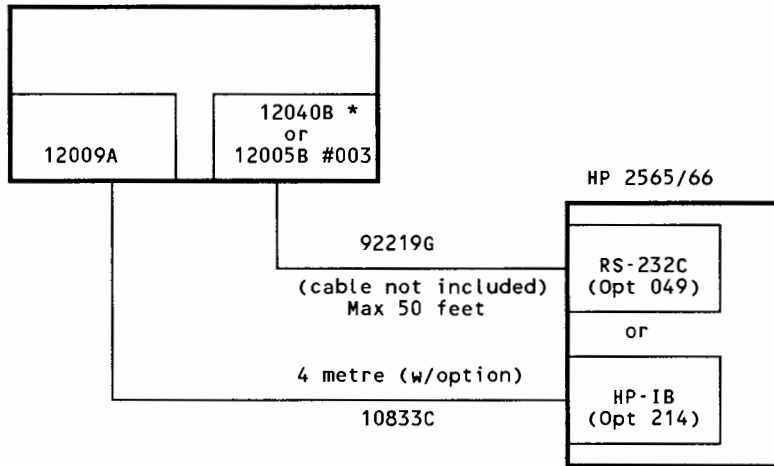
\*\*Not available at publication date.

# CONFIGURATION DIAGRAMS

HP 1000  
Series M,E, and F

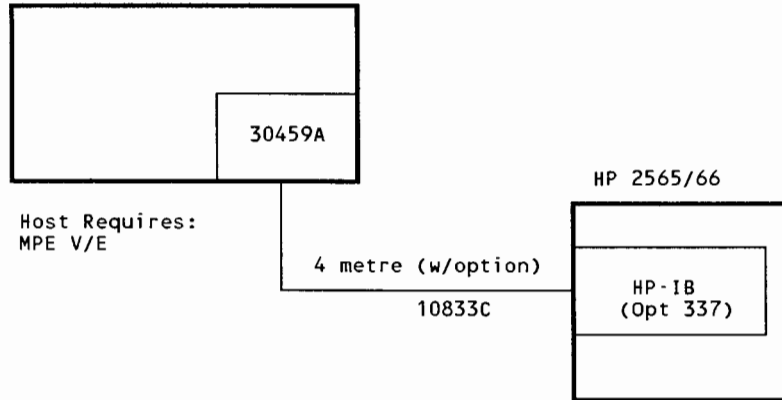


HP 1000 Series A

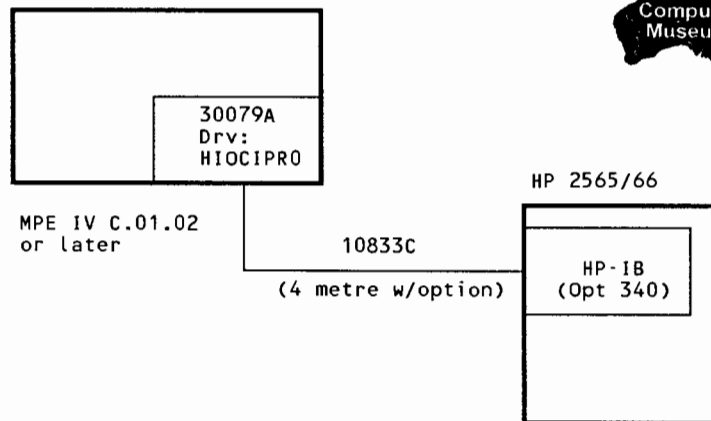


\* Requires a dedicated 12792B or 12040B when configured for 19.2 Kbaud.

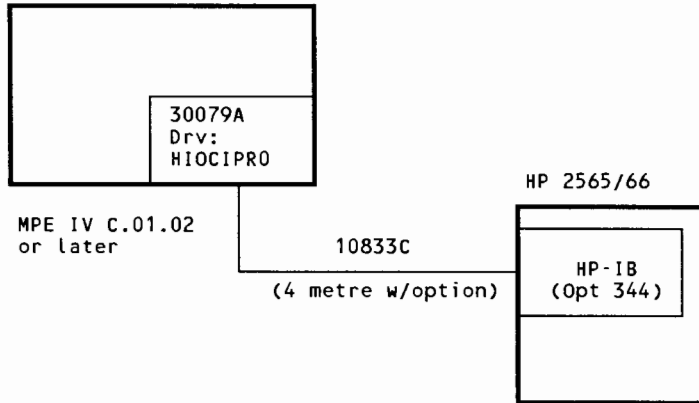
HP 3000 Series 37



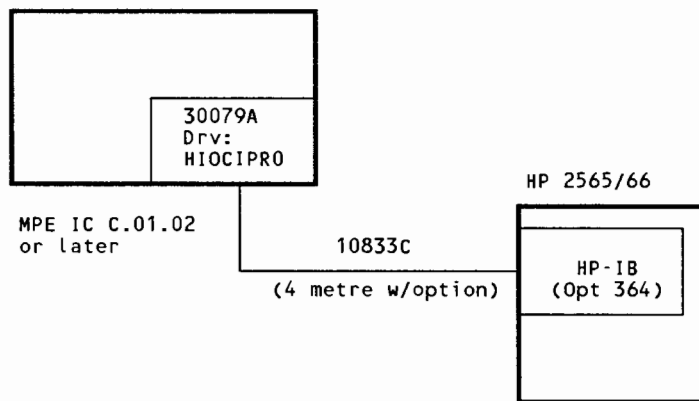
HP 3000 Series 39,40,42



HP 3000 Series 44,48



HP 3000 Series 64,68



# SECTION II: SPECIFICATIONS

## PRINTER SPECIFICATIONS

### Physical Characteristics

Width: 98.3cm (38.7 inches)  
Depth: 63.5cm (25 inches)  
Height: 110cm (43.3 inches)  
Weight: 204 Kg (450 pounds)

### Electrical Characteristics

#### Input Voltages

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

#### Power Consumption

150 Watts non-printing  
200 Watts printing (typical)  
550 Watts printing (peak)

### Environmental

#### Temperature

Operating (printer plus ribbon) +10 to +40 degrees C  
(+50 to +104 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) -55 to +75 degrees C. (-67 to +167 F)

#### Relative Humidity

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

#### Audible Noise

Non-operating <55 dBA  
Operating 65 dBA



# SECTION III: CONFIGURATION

## Contents:

Status Codes .....	6
Configuration Functions .....	6
Interface Configuration .....	9/11

## 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 2566A Printer Status

Display	Description
0	Printer ready
2	Silent Running
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 2565/66A printer is configured entirely from the Control Panel. Once established, the printer's configuration is stored in the Control PCA's non-volatile random access memory. The printer configuration should only be altered if a parameter change is necessary to complete a print job (i.e., change in page length) or if the Formatter PCA is replaced. Table 3 lists the configurable printer functions and their associated numbers. Each printer function has two or more possible parameters which can be altered as desired. To configure a printer function, perform the following:

- 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 the Configuration Mode.
- 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 (see Table 3).
- Release the **CONFIG** key. The display now shows the current parameter value for the function you desire to change.

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Operating 65 dBA

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- 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 (see Table 3).
- c. Release the **CONFIG** key. The display now shows the current parameter value for the function you desire to change.

- d. Using the FINE ADJUST keys, increment or decrement the parameter until the desired number is displayed.
- e. Press the ENTER key. The new parameter will be entered and the printer will return to the 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	
20-24	Configure I/O	See I/O	Manual
25-29	Configure I/O	See I/O	Manual
40	Flight Time Adjust	00-17	*
41	Corebar Turnaround time***		*
42	Graphics Amplitude Adj (course)	00-FF	*
43	Graphics Amplitude Adj (fine)	00-FF	*
50	Disconnect Modem	0,1	0
70	Print time (least significant hrs)	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 (last 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 may only be modified in CE Mode.

\*\* First half of display is the error number. To display the fail code (second half of the display), press either the FINE ADJ UP or DOWN keys.

\*\*\* This parameter should not be altered. If it is, a cold start will return the printer to default status.

### INTERFACE CONFIGURATION (HP-IB)

To configure the HP 2565/66A to HP-IB 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, see Section V.

- 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, SRM Systems (CIPER DRIVERS)
  - 1 = HP 64000 Systems or HP 250 Systems (NON CIPER)

### INTERFACE CONFIGURATION (RS-232/422)

To configure the HP 2565/66A printer for either the RS-232 or the RS-422 interface, function numbers 20 through 23 must be entered. The configuration values for the RS-232 interface are summarized in Table 4 and for the RS-422 interface in Table 5. (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 configuration for a spooled printer on a HP 3000 system:

FUNCTION NUMBER	CONFIGURATION NUMBER		Conditions Set
	RS-232	RS422	
		7-BIT 8-BIT	
20	31	13 01	XON/XOFF Protocol and Strip Null and Delete characters
21	00	00 00	Normal Operation
22	51	50 50	9600 Baud
23	03	03 00	Odd Parity, except for RS244 8-bit which requires parity disabled.

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)		Set to 1	
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

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

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 5. RS-422 Interface

FUNCTN NUMB	CONFIG NUMB	FUNCTION PARAMETER DESCRIPTION
20	01	NULL/DELETE CHARACTERS PASSED
	11	NULLS STRIPPED
	21	DELECTS 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



# SECTION IV: TROUBLESHOOTING

## Contents:

Error Codes .....	12/25
Print Quality .....	25/28

## 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.

### 10 SWING GATE OPEN

Implications: A switch mounted on the lower casting senses when the Swing Gate, housing the Corebar, is not latched into place. The printer is taken offline and printing is disabled when the swing gate is open.

Suspects: 1) Swing Gate not latched  
2) Swing Gate Switch/Cabling  
3) Power Supply PCA

### 11 PAPER OUT

Implications: A microswitch mounted on the lower left tractor checks for a paper out condition each time the machine begins printing. Paper out during printing should cause the machine to finish the current page and stop at Top-of-Form.

Suspects: 1) No paper  
2) Paper Out Switch/Cabling  
3) Power Supply PCA

### 12 RIBBON JAM

Implications: The ribbon is expected to tension during power up. If it does not, (NO RIBBON INSTALLED) will cause this error code. Also, any unexpected stall after power up will result in this error. (End of reel change in direction is an expected stall.)

Suspects: 1) Ribbon motor wiring reversed  
2) Ribbon motors/Cabling  
3) Motor Driver PCA

### 13 PAPER JAM

Implications: The two asynchronous processes, paper stepping and paper motion detection, have gotten too far out of sync. Paper motion is detected by a foam wheel in the upper left tractor, which produces an interrupt about every 43 half steps of paper motion. A paper jam is indicated if no interrupts were detected within the last 127 steps.

Suspects: 1) Paper motion sensor/Cabling  
2) Power Supply PCA

## 14 PRINT MECHANISM PROBLEMS

### 14-50 Linear motor fault from the motor driver

Implications: The motor driver has detected a short in the driver section of the servo control loop. This error can be accompanied by a blown fuse on the Motor Driver PCA.

Suspects: 1) Motor Driver PCA  
2) Linear Motor  
3) Wiring from Motor Driver PCA to Linear Motor

Tests: Inspect linear motor for scorch marks, then ohm out the motor from the motor driver end of the connecting cables.

### 14-51 Servo Communications Error

Implications: The Formatter processor has queried the Servo PCA for an ID and found it missing.

Suspects: 1) Servo PCA  
2) Power Supply PCA  
3) Formatter PCA

Test: Try reseating the Formatter PCA.

### 14-52 Servo Clock Failure

Implications: Clock generated by the Servo PCA isn't toggling. As this clock is used by some of the Interfaces, this error could be accompanied by Interface failures (service LED not blinking or 16-XX errors).

Suspects: 1) Servo PCA  
2) Backplane PCA

### 14-53 Period Measurement Failure

Implications: The Formatter PCA was unable to measure the servo system resonant frequency. This failure indicates that the servo system is not operating in a closed loop.

Suspects: 1) Platen Gap Too Small (binding)  
2) Velocity Transducer is:  
a) Disconnected from Servo PCA  
b) Open or Shorted  
c) Rubbing  
3) The Linear Motor is:  
a) Disconnected from the Motor Driver PCA  
b) Open or Shorted  
c) Rubbing  
4) Servo PCA  
5) Motor Driver PCA  
6) Power Supply PCA



### 14-54 Excessive Linear Motor Power

Implications: The Formatter PCA was unable to measure motor power at measured resonant servo frequency.

Suspects: 1) Servo PCA  
2) Motor Driver PCA  
3) Velocity Transducer Misaligned  
4) Broken Flexures

### 14-55 Settling Time Error

Implications: The servo system required more than 300 msec for transition from one steady state to another. This failure indicates a damping problem with the corebar or the "Q" of the system out of range. A damping problem will probably be caused by rubbing parts while a "Q" problem is a result of a misadjusted velocity transducer, loose flexures or an

unbalanced system.

- Suspects: 1) Platen Gap Too Small  
2) Linear Motor Rubbing  
3) Velocity Transducer Rubbing  
4) Loose Flexure Mounting  
5) Velocity Transducer Misaligned  
6) Motor Driver PCA  
7) Broken Flexures

#### 14-59 ILLEGAL ERROR CODE

Implications: An undefined servo error was reported to the error handling firmware.

- Suspects: 1) Formatter PCA

#### 14-61 RIBBON FAULT

Implications: The Motor Driver PCA has detected a hardware failure in the ribbon drive system. This error can be accompanied by a blown fuse on the Motor Driver PCA.

- Suspects: 1) Motor Driver PCA  
2) Ribbon Motors  
3) Wiring from Ribbon Motors to Motor Driver PCA

Tests: Check ribbon motors for shorted or open windings and inspect the connections between motors for scorch marks and looseness.

#### 14-71 HAMMER DRIVER MALFUNCTION

Implications: A hammer or hammer driver has shorted while printing. A hardware interlock opens the relay when this condition occurs.

- Suspects: 1) Hammer Driver PCA  
2) Corebar

Tests: Power the machine off and then back on to close the relay and test for shorted hammers.

#### 14-80 STEPPER MALFUNCTION

Implications: The Stepper motor has drawn current in excess of 4.7 amps for an extended period of time. This indicates excessive power dissipation in the stepper motor, possibly due to a blown FET accompanied by a blown fuse on the Motor Driver PCA.

- Suspects: 1) Motor Driver PCA  
2) Stepper Motor  
3) Check 50V supply.

#### 14-90 HIGH RELAY VOLTAGE

Implications: The voltage across the relay has remained high, indicating that there is something preventing the Hammer Driver/Motor Drive capacitors from charging.

- Suspects: 1) Shorted Corebar Hammer coil  
2) Shorted motor coil/transistor  
3) Motor Driver PCA  
4) Hammer Driver PCA  
5) Power Supply PCA

## 15 GRAPHICS RUN TIME FAIL

### 15-00 Unrecognized non-packet request or response

Implications: The graphics board has sent a communication pattern that the Formatter processor can not recognize.

Suspects: 1) Graphics PCA  
2) Formatter PCA

Tests: 1) Run standard self-test  
2) Run graphics board self-test

### 15-01 Return status indicates failure from the graphics board

Implications: The graphics board detected a failure while attempting to execute a particular function.

Suspects: 1) Graphics PCA  
2) Formatter PCA

Tests: 1) Run standard self-test  
2) Run graphics self-test

### 15-02 Undefined return statement

Implications: There was a communication protocol error while the processor was attempting to communicate with the graphics board.

Suspects: 1) Graphics PCA  
2) Formatter PCA

Tests: 1) Run standard self-test  
2) Run graphics self-test

### 15-03 Undefined or unexpected graphics command

Implications: There was a communication protocol error while the processor was attempting to communicate with the graphics board.

Suspects: 1) Graphics PCA  
2) Formatter PCA

Tests: 1) Run standard self-test  
2) Run graphics self-test

### 15-05 Undefined buffer type

Implications: There was a communication protocol error while the Formatter processor was attempting to communicate with the graphics board.

Suspects: 1) Graphics PCA  
2) Formatter PCA

Tests: 1) Run standard self-test  
2) Run graphics self-test

### 15-07 Reset response time-out

Implications: The Graphics board is installed but failed to communicate within a given time window.

Suspects: 1) Graphics PCA  
2) Formatter PCA

Tests: Run graphics digital self-test  
Run standard self-test

### 15-08 Failure to delink packet

Implications: The Graphics board is not communicating properly with the control PCA.

Suspects: 1) Graphics PCA  
2) Formatter PCA

Tests: Run graphics digital self-test  
Run standard self-test

**15-09 Failure reported by Graphics PCA**

Implications: The Graphics PCA has experienced a hardware failure.

Suspects: 1) Graphics PCA  
2) Formatter PCA

Tests: 1) Run graphics digital self-test

**15-10 Graphics PCA dead**

Implications: The Graphics PCA failed to communicate with the control PCA.

Suspects: 1) Graphics PCA

Tests: 1) Reseat Graphics PCA and run digital graphics self-test.

**16 INTERFACE RUN TIME FAILURE****16-00 Unrecognized non-packet request or response**

Implications: Communication protocol error between the Formatter processor and the Interface.

Suspects: 1) Interface PCA  
2) Formatter PCA

**16-01 Return status indicates failure from Interface**

Implications: Interface detected a failure while attempting to execute a particular function.

Suspects: 1) Interface PCA  
2) Formatter PCA

**16-02 Undefined return status**

Implications: There was a communication protocol error while the Formatter processor was attempting to communicate with the Interface board.

Suspects: 1) Interface PCA  
2) Formatter PCA

**16-03 Undefined or unexpected Interface command**

Implications: Communication protocol error

Suspects: 1) Interface PCA  
2) Formatter PCA

**16-04 Unexpected data packet receive when non-ciper**

Implications: Communication protocol error

Suspects: 1) Interface PCA  
2) Formatter PCA

**16-05 Undefined buffer type**

Implications: Communication protocol error

Suspects: 1) Interface PCA  
2) Formatter PCA

**16-06 Power on self test failure**

Implications: The Interface board fails its power on self test when power first comes up or after a reset.

Suspects: 1) Interface PCA  
2) Formatter PCA

**16-07 Reset response timeout**

Implications: The Interface board is installed but failed to initiate communication with Formatter processor within a specified time limit.

Suspects: 1) Interface PCA  
2) Formatter PCA

## **17 PRINTER TIMED OUT**

### **17-01 Error location is in Data Processor**

Implications: Printing timeout  
Suspects: Formatter PCA

### **17-02 Error location is in QPRINT**

Implications: Printing timeout. The physical machine did not complete the printing of a line within 15 seconds of initialization.

Suspects: Formatter PCA

### **17-03 Print one line external timeout**

Implications: Timeout when print one line is being done with data from the host.

Suspects: Formatter PCA

### **17-05,06 Print one line internal timeout**

Implications: Timeout when print one line is done with data from self-test.

Suspects: Formatter PCA

## **19 ATTEMPT TO GO ONLINE IN CE MODE**

Implications: The CE Mode line is low when attempting to put the printer On Line.

Suspects: Jumper between CE mode test point and ground on the Formatter PCA.

Tests: Be sure the CE Mode strap is removed from the Formatter PCA before attempting to put the printer on-line.

## **29 CONFIGURATION PRINTOUT**

### **29-01 Printer timeout**

Implications: The printing of configuration parameters has not been started within 5 seconds.

Suspects: Formatter PCA

### **29-40 Failed to delink Interface packet pointer for status**

Suspects: 1) Interface PCA  
2) Formatter PCA

### **29-41 Could not send Interface packet pointer for status**

Suspects: 1) Interface PCA  
2) Formatter PCA

### **29-42 Failed to delink Interface pointer for configuration**

Suspects: 1) Interface PCA  
2) Formatter PCA

### **29-43 Could not send Interface packet pointer for configuration**

Suspects: 1) Interface PCA  
2) Formatter PCA

### **29-45 Failed to delink graphics packet for status**

Suspects: 1) Graphics PCA  
2) Formatter PCA



**29-46 Could not send graphics packet for status**

Suspects: 1) Graphics PCA  
2) Formatter PCA

**29-47 Failed to delink graphics packet for configuration**

Suspects: 1) Graphics PCA  
2) Formatter PCA

**29-48 Could not send graphics packet for configuration**

Suspects: 1) Graphics PCA  
2) Formatter PCA

**30-37 PRINTING SELF-TEST TIMEOUTS**

**30-01 Standard ripple print timeout**

Implications: Printing has not begun 5 seconds after a ripple print test was initiated.

Suspects: 1) Formatter PCA  
2) Print Mechanism

Tests: Run the standard self-test

**31-01 Double size ripple print timeout**

Implications: Printing has not begun 5 seconds after a double size ripple print test was initiated.

Suspects: 1) Formatter PCA  
2) Print Mechanism

Tests: Run the standard self-test

**32-01 Compressed ripple print timeout**

Implications: Printing has not begun 5 seconds after a compressed ripple print test was initiated

Suspects: 1) Formatter PCA  
2) Print Mechanism

Tests: Run the standard self-test

**33-01 High density ripple print timeout**

Implications: Printing has not begun 5 seconds after a high density ripple print test was initiated.

Suspects: 1) Formatter PCA  
2) Print Mechanism

Tests: Run the standard self-test

**34-01 Raster graphics print timeout**

Implications: Printing has not begun 5 seconds after a raster graphics test was initiated.

Suspects: 1) Formatter PCA  
2) Print Mechanism

Tests: Run the standard self-test

**37-01 Print quality test timeout**

Implications: Printing quit in the middle of Print Quality testing. This is not a selectable self-test. It only prints during standard self-test.

Suspects: 1) Formatter PCA  
2) Print Mechanism

Tests: Run the standard self-test

## **40 CHARACTER SET ROM CRC TEST**

### **40-01 Character set socket 1 failure**

Implications: The check code for the ROM in socket 1 is not correct.

Suspects: 1) Character set ROM in socket 1  
2) Formatter PCA

### **40-02 Character set socket 2 failure**

Implications: The check code for the ROM in socket 2 is not correct.

Suspects: 1) Character set ROM in Socket 2  
2) Formatter PCA

### **40-03 Character set socket 3 failure**

Implications: The check code for the ROM in socket 3 is not correct.

Suspects: 1) Character set ROM in Socket 3  
2) Formatter PCA

### **40-04 Character set socket 4 failure**

Implications: The check code for the ROM in socket 4 is not correct.

Suspects: 1) Character set ROM in Socket 4  
2) Formatter PCA

### **40-05 Character set socket 5 failure**

Implications: The check code for the ROM in socket 5 is not correct.

Suspects: 1) Character set ROM in Socket 5  
2) Formatter PCA

### **40-06 Character set socket 6 failure**

Implications: The check code for the ROM in socket 6 is not correct.

Suspects: 1) Character set ROM in Socket 6  
2) Formatter PCA

## **41 RAM TEST**

### **41-01 Self-test timeout**

Implications: Self test timed out waiting for the RAM test to complete.

Suspects: Formatter PCA

### **41-01 RAM 1 failure**

Implications: The Formatter processor can not write and read read back data from the RAM at adress U14.

Suspects: Formatter PCA

### **41-02 RAM 2 failure (non-volatile)**

Implications: The Formatter processor can not write and read back data from the CMOS RAM.

Suspects: Formatter PCA

### **41-03 RAM 3 failure**

Implications: The Formatter processor can not write and read data back from the RAM 3 (U34).

Suspects: Formatter PCA

### **41-04 RAM 4 failure**

Implications: The Formatter processor can not write and read



data back from the RAM 4 (U54).  
Suspects: Formatter PCA

#### **41-05 RAM 5 failure**

Implications: The Formatter processor can not write and read data back from the shared DGL RAM (U71).  
Suspects: Formatter PCA

### **42 FIRMWARE ROM CRC TEST**

#### **42-00 Self-test time-out**

Implications: Self-test timed out waiting for the ROM test to be completed.  
Suspects: Formatter PCA

#### **42-01 Firmware ROM failure (U13,U23,U33,U53,U63)**

Implications: The CRC calculation has failed indicating that the firmware ROMs may be corrupted.  
Suspects: Formatter PCA

### **43 TIMER TEST**

#### **43-01 Intel 8253 timer failure (U55)**

Implications: The Intel 8253 timer chip has failed.  
Suspects: Formatter PCA

### **44 DOT GENERATION LOGIC (DGL) TEST**

#### **44-01 No descender scan 'A' failure**

#### **44-02 Excursion scan 'A' failure**

#### **44-03 Single descender scan 'A' failure**

#### **44-04 Excursion scan ',' failure**

#### **44-05 Double descender scan 'Null' failure**

#### **44-06 Excursion scan 'Null' failure**

Implications: The DGL gate array is not properly extracting the descender/excursion bits from the character sets during status read-back.  
Suspects: Formatter PCA (DGL gate array)

#### **44-11 70 dpi left direction graphics failure**

#### **44-12 70 dpi right direction graphics failure**

#### **44-13 100 dpi left direction graphics failure**

#### **44-14 100 dpi right direction graphics failure**

#### **44-15 140 dpi left direction graphics failure**

#### **44-16 140 dpi right direction graphics failure**

Implications: The DGL gate array is not transferring the graphics register image in the DGL RAM buffer to the LSI shift register properly for the indicated dot density and direction.  
Suspects: Formatter PCA

- 44-17 210 dpi, 10.0 cpi left direction text failure
- 44-18 210 dpi, 10.0 cpi right direction text failure
- 44-19 180 dpi, 12.0 cpi left direction text failure
- 44-20 180 dpi, 12.0 cpi right direction text failure
- 44-21 180 dpi, 15.0 cpi left direction text failure
- 44-22 180 dpi, 15.0 cpi right direction text failure
- 44-23 200 dpi, 16.7 cpi left direction text failure
- 44-24 200 dpi, 16.7 cpi right direction text failure
- 44-25 170 dpi, 17.0 cpi left direction text failure

**44-26 170 dpi, 17.0 cpi right direction text failure**

Implications: The DGL gate array is not creating the proper dot image in the LSI shift register based on the ASCII text in the DGL RAM buffer. The DGL gate array may be incorrectly accessing the character set ROMs.

Suspects: Formatter PCA

**45 TOO MANY DOTS (TMD) TEST**

**45-01 TMD selftest timeout**

Implications: The TMD printing test has not started after five seconds.

Suspects: Formatter PCA

**45-02 TMD stuck active**

Implications: The printer was already in 'slow' mode when the TMD test started.

Suspects: 1) Hammer driver PCA  
 2) Power supply PCA  
 3) Formatter PCA

**45-03 TMD stuck inactive**

Implications: The TMD did not go active within 120 dot rows of print. This condition can be caused by either a hardware failure or AC power problems. If the printer 'stuttered' while printing, the machine is suffering from low-line voltage. If the pattern printed smoothly, there could be a hardware problem.

Suspects: 1) Long power cord  
 2) Hammer driver PCA  
 3) Power supply PCA

Tests: Measure the AC-line voltage at the printer.

**45-04 TMD inactive-toggled active and stuck**

Implications: The TMD went active within 120 dot rows of raster blackout, then stayed active for the rest of the print pattern. This generally indicates an AC-line problem.

Suspects: 1) Long power cord  
 2) Power supply

#### **46-47 COREBAR COIL TEST**

**46-00 Self-test timeout**

**46-01 thru 99 (for hammers #1 to 99)**

**47-00 thru 32 (for hammers #100 to 132)**

Implications: The firmware attempts to fire each hammer #132 to #1 (right to left). If no current is sensed, a failure is indicated. If there are more than two failures, only the lowest number is displayed.

Suspects: 1) Corebar has open coil

2) Corebar to Hammer Driver board ribbon cable

Tests: Swap hammer cables at Hammer Driver board end. If bad bad hammer # changes by a factor of 11, then the corebar or cable is at fault, or replace the Hammer Driver board.

#### **50 INTERFACE ERRORS- HP-IB**

The following error codes apply only if HP-IB is installed.

**50-01 RAM failure**

Suspects: 1) Interface PCA

2) Formatter PCA

**50-02 ROM failure**

Suspects: 1) Interface PCA

2) Formatter PCA

**50-03 HP-IB Hardware failure**

Suspects: 1) Interface PCA

2) Formatter PCA

**50-04 Multiple errors (2 or more of above)**

Suspects: 1) Interface PCA

2) Formatter PCA

#### **50 INTERFACE ERRORS- CENTRONICS COMPATIBLE**

The following error codes apply only if the Centronics plug compatible interface board is installed.

**50-01 RAM failure**

Suspects: 1) Interface PCA

2) Formatter PCA

**50-02 ROM failure**

Suspects: 1) Interface PCA

2) Formatter PCA

**50-03 ROM and RAM failure**

Suspects: 1) Interface PCA

2) Formatter PCA

#### **50 INTERFACE ERRORS- RS232 SERIAL**

The following error codes apply only if the serial Interface is installed.

**50-01 RAM**

Implications: The RAM on the Interface PCA can not be written to and from correctly.

Suspects: 1) Interface PCA

2) Formatter PCA

#### 50-02 ROM

Implications: The check code in the Interface ROMs is not correct.

Suspects: 1) Interface PCA  
2) Formatter PCA

#### 50-03 Serial Hardware Failure

Suspects: 1) Interface PCA  
2) Interface Cable  
3) Formatter PCA



#### 50-04 Two or more of the above failures

Implications: Multiple failures  
Suspects: 1) Interface PCA  
2) Interface Cable  
3) Formatter PCA

### 60-66 SHADE GRAPHICS ERROR CODES

Implications: All these failures imply a defective graphics board.

60 Failed complete non-destructive test

61 Failed complete destructive test

62 Non-destructive ROM test

63 Non-destructive static RAM test

64 Destructive graphics controller test

65 Destructive dynamic RAM test

66 Failed to create self test image

### 80-86 FRONT PANEL OPERATION ERRORS

#### 80-00 thru 95 Character set errors at power on

Implications: Character set ROM information where--

- (1) character set number
  - > Quotient of FAIL\_POINT divided by 6
- (2) character set ROM information
  - > Remainder of FAIL\_POINT divided by 6
    - (a) character set flags = 0
    - (b) excursion = 1
    - (c) PPLT tables full = 2
    - (d) PPLT unidentified = 3
    - (e) PPLT RAM space full = 4
    - (f) Invalid frequency = 5

Suspects: 1) Character set ROM  
2) Formatter PCA

#### 80-96 No character set in ROM, Character set number 0

Implications: Character set ROM in socket 1 is missing or bad.

Suspects: 1) Character set in socket 1  
2) Formatter PCA

Tests: Be sure there is a normal density character set ROM in socket 1.

### **81 Slave self-test select error using up button**

Implications: Communication error with the slave when the Formatter processor asks if the self-test number reached by the up button exists.

Suspects: 1) Slave PCA (Interface or Graphics)  
2) Formatter PCA

Tests: 1) Run the Interface self-test (CE Mode test 30-38)  
2) Run the Graphics self-test (CE Mode test 40-48) if the Graphics PCA is installed.  
3) Run the Formatter PCA self-test (CE Mode test 11)

### **82 Slave self-test select error using down button**

Implications: Same as 81 except the self-test code was reached using the down button on the front panel.

Suspects: 1) Slave PCA (Interface) or Graphics  
2) Formatter PCA

Tests: 1) Run the Interface self-test (CE Mode test 30-38)  
2) Run the Graphics self-test (CE Mode test 40-48) if the Graphics PCA is installed.  
3) Run the Formatter PCA self-test (CE Mode test 11).

### **83 Internal firmware self-test table problems**

Implications: The table used to decode the self-test numbers is not set up properly in the machine control ROMS.

Suspects: 1) Firmware ROMS  
2) Formatter PCA

## **86 MODEM DISCONNECT FUNCTION**

### **86-01 Could not delink a packet**

Suspects: 1) Interface PCA  
2) Formatter PCA

Tests: 1) Try self-test 11 (CE Mode)  
2) Try the appropriate Interface self-test

### **86-02 Could not send the packet**

Suspects: 1) Interface PCA  
2) Formatter PCA

Tests: 1) Try self-test 11 (CE Mode)  
2) Try the appropriate Interface self-test

### **86-03 Error encountered on Interface**

Implications: The Interface PCA reports an on-board problem.

Suspects: 1) Interface PCA  
2) Formatter PCA

Tests: 1) Try self-test 11

## **90 INTERFACE SLAVE TIMEOUTS**

### **90-50 Failed to return self-test description**

Suspects: 1) Interface PCA  
2) Formatter PCA

### **90-51 Failed to return from a self-test in the prescribed time**

Suspects: 1) Interface PCA  
2) Formatter PCA

### **90-52 Returned with an incorrect command**

Suspects: 1) Interface PCA  
2) Formatter PCA

**90-53 Failed to delink a packet**  
Suspects: 1) Interface PCA  
          2) Formatter PCA

## **91 GRAPHICS SLAVE TIME OUTS**

**91-50 Failed to return self-test description**  
Suspects: 1) Graphics PCA  
          2) Formatter PCA

**91-51 Failed to return from a self-test in the prescribed time**  
Suspects: 1) Graphics PCA  
          2) Formatter PCA

**91-52 Returned with an incorrect command**  
Suspects: 1) Graphics PCA  
          2) Formatter PCA

**91-53 Failed to delink a packet**  
Suspects: 1) Graphics PCA  
          2) Formatter PCA

## **PROTOCOL ERRORS**

Protocol errors are communication errors between the HP 2565A/2566A and the host system. The problem is as likely to be in the host as in the printer. These errors are very hard to repair and are, fortunately, rare.

Suspects: 1) Formatter PCA  
          2) Interface PCA

Tests: 1) Formatter PCA self-test (self-test 11)  
       2) Interface PCA self-test (self-test 30-38 depending on Interface)

C6 Data Overrun  
C7 Transport service error  
C8 Illegal block label  
CA Illegal device dependent format number  
CB Undefined data type  
CC Undefined record code  
CD Illegal host/peripheral field  
CE Incorrect host to peripheral record number  
CF Illegal record header length

## **FIRMWARE TRAPS**

The firmware traps were put in to catch catastrophic system errors during firmware development. They were not really designed to aid in debugging the machine and should also be seen very rarely. Some of the failure codes can be caused by the system. These are noted in the failure code list below.

Suspects: (Unless otherwise noted)  
          1) Formatter PCA  
          2) Machine control firmware

Tests: Formatter PCA self-test (self-test 11)

C0 Unrecognized protocol error  
D1 Negative slew count  
D2 Formatter Mask too small- The host system and Interface board are also suspect. Try Interface self-test (30-38)  
D3 Left over data in control mask- The host system and the Interface are also suspect. Try Interface self-test  
F0 Spurious interrupt decode-

Suspects: 1) Interface PCA  
           2) Formatter PCA  
 Tests: 1) Interface self-test (30-38)  
         2) Power on self-test (20 in CE Mode)  
         3) Formatter PCA self-test (11)  
 F1 Illegal interrupt decode-  
    Suspects: 1) Interface PCA  
               2) Formatter PCA  
    Tests: 1) Interface self-test (30-38)  
           2) Power on self-test (20 in CE Mode)  
           3) Formatter PCA self-test (11)  
 F8 Negative page length  
 F9 Self-test abort crash  
 FC Paper motion failed on power up  
 FF Total system and/or illegal jump to RAM

## PRINT QUALITY PROBLEMS

To identify poor print quality, two methods (character scrunch and horizontal line sawtooths) are described below, along with possible causes and corrective measures.

### CHARACTER SCRUNCH

Characters appear to be squashed down from the top. 0's (the letter O) and 0's (zeros) are most sensitive. E's appear to have the center bar displaced towards the top of the character. In extreme cases, S's start to look like 5's. This problem is most likely to occur when using heavy paper (100 lb), or six part forms.

Possible causes:

- a. Vertical paper tension adjustment set too loose
- b. Loose (or worn) tractor belts.

Corrective Measures:

Hint 1: Adjust the vertical paper tension, as follows: With the swing-gate open and paper loaded, move the lever downward until the paper is slightly taut against the platen. Place your hand on the paper in the region of the platen and gently move paper up and down. If the paper has significant freedom to move (about 0.05" or more), the vertical paper tension is still too loose. When the tension is correct you will notice very little vertical looseness.

With the printer off-line, press the FORM FEED key two or three times to ensure that the paper moves freely over the platen. Excessive vertical paper tension will elongate the tractor holes in the paper, and may cause a paper jam. If either condition occurs, raise the tension lever slightly and use the FORM FEED key to test again.

Initiate a page of ripple print self-test (see Paragraph 4-3). Examine the print quality for improvement or elimination of the character "scrunch".

If there is insufficient range in the tension adjustment, the tractor drive belt "phasing" (belt tension between upper and lower tractor drive pulleys) must be corrected. Use the procedure detailed in Paragraph 5-7.

If paper jams persist in spite of adjustments to vertical paper tension, the tractor vertical alignment should be checked (detailed in Paragraph 5-8).

Hint 2: If the above steps do not correct the character "scrunch" problem, new tractors must be installed.

#### TO MEASURE SCRUNCH:

To measure scrunch use a Bishop Optical Comparitor, model 3500, with a 0.005 inch increment scale reticle (Bishop part number 3517).

Using the optical comparitor, measure the difference between the top and bottom half of the upper case character "E".

```
00000  ----
0      |
0      | TOP HALF
000    ----
0      |
0      | BOTTOM HALF
00000  ----
```

Subtract the two numbers. The result is the value of Character Scrunch. Using this method, the margin for error (best attainable accuracy) is in the range of +/- .003 inch. The acceptable limit for scrunch is 0.007 inch. If the value is obviously well under 0.01 inch (using the 0.005 inch increment reticle), the scrunch is probably under the limit and is acceptable.

#### HORIZONTAL LINE "SAWTOOTH"

Underlines or plain horizontal lines appear to be excessively jagged at 0.2 inch centers or "noisy" at 0.02 to 0.04 inch centers.

#### Possible Causes:

- a. Incorrect platen to corebar gap.
- b. Poor tractor vibration damping arms adjustment.
- c. Misaligned platen.

#### Corrective Measures:

Hint 1: Initiate self-test 15, which is a set of vertical and horizontal lines (see Paragraph 4-3). Examine the horizontal lines. If the length of the raised or lowered sections is 0.2 inch (or two 10 pitch character cells), then the platen/corebar gap is incorrect.

When there are 0.2 inch wide sawtooths, adjust the print gap lever (located on the lower right side of the



printer) one click at a time. Initiate self-test 15 again and see if there is a change. When the gap is adjusted correctly, the horizontal lines will have superimposed anomalies of 0.001 to 0.002 inch (an acceptable limit). If the adjustment cannot achieve this, then the platen/corebar gap must be adjusted (see Paragraph 5-3), or the corebar replaced (Paragraph 6-24).

Figure 1 illustrates the relationship of the interleaved hammer tine paths with the corebar/platen gap. If the gap is adjusted either too small or too large the dots printed by adjacent tines will not be aligned.

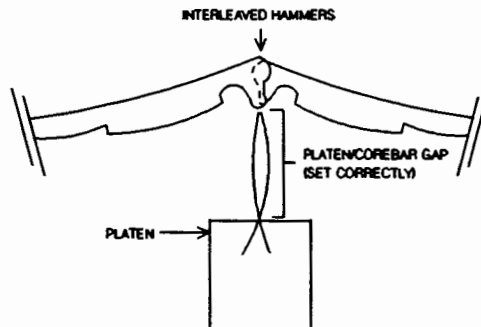


Figure 4-1. Platen/Corebar Gap

- Hint 2: For higher frequency noise across the horizontal line, the tractor dampening arms should be adjusted to damp vibrations on the drive shaft and slider rod (see Paragraph 5-6 for procedure).
- Hint 3: The vertical lines are also affected by print gap, since this changes the flight time of the hammer. If the vertical lines have sawtooths on dot row to dot row, the flight time should be readjusted. This is a CE Mode configuration function from the Operator Control Panel, as described in Paragraph 5-9.

**NOTE**

The platen/corebar gap adjustment must be made prior to flight time adjustment.

# SECTION V: DIAGNOSTICS/SELF TEST



## Contents:

Standard Self Test Sequence .....	29
Selectable Diagnostic Tests .....	31
Entering CE Mode .....	32
Clearing the Errorlog .....	32
Cold Start .....	32

## STANDARD SELF TEST

To perform the self-test (excluding the I/O tests), press the TEST key and then press the ENTER key. One copy of the self test printout should be printed. To perform a continuous self test press and hold the TEST key for longer than five seconds (until the displayed status, see Table 2, changes to a four) and press the ENTER key. Exit the continuous self-test by pressing the TEST key momentarily.

The subtest routines listed in Table 7 are performed when the standard self-test is run. It should be noted that the right decimal position LED flashes when any diagnostic test is executed.

Table 6. Standard Self Test Routines

TEST	DESCRIPTION
Power On	Verifies +50 volt regulated supply
Digital	A ROM CRC test is performed on all firmware ROM. A nondestructive read/write test is performed on volatile and non-volatile RAM. A DGL (Dot (Generation Logic) loopback test is performed to check the DGL logic. A CRC check is performed on all character set ROMs installed. A test is also performed on the triple timer chip.
Analog (non-printing)	Tests the ribbon and servo subsystems. The ribbon test verifies the four modes of ribbon operation: off, tension, supply to take-up and take-up to supply. The servo test, among other things, drives the system at measured resonate frequency and amplitude to measure power dissipation in the linear motor.

THE PRINTED PORTION OF THE SELF TEST FOLLOWS

TEST	DESCRIPTION
Configuration Print Out	This routine provides a printout of the printer's internal configuration.
Raster graphics	A raster graphic print sample (herring bone 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.
Normal Density Ripple Print	A sample of normal density ripple print.
High Density Ripple Print	A sample of high density print. (If high density ROM is installed)
Analog (printing) CE Mode only	This portion of the Analog test is divided into two parts, a test of Too Many Dots (TMD) circuitry and the open hammer coil test. Descriptions of these two tests follow:
Open hammer coil (CE Mode only)	Checks for current flow through each hammer coil. Each hammer is fired individually while the processor checks for current flow. If an error is detected, the test is repeated until the same hammer fails two times in a row. Only the last hammer coil failure is displayed in the failure code. Fail codes 46-01 through 46-99 correspond to hammers 1 to 99. Fail codes 47-00 through 47-32 correspond to hammers 100 to 132.
Too Many Dots (CE Mode only)	Verifies the operation of TMD circuitry on Hammer Driver board. Prints a blackout pattern until either TMD goes active or 120 lines have been printed. The test checks the TMD circuit for off before finishing.

## SELECTABLE DIAGNOSTIC TESTS

Individual sub-tests may be executed in the HP 2565/66A printer (see Table 8) to verify the operation of specific functions of the printer circuitry. To perform an individual sub-test, press the TEST key momentarily and then use the FINE ADJUST keys to either 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 five seconds (until the displayed status changes to four, see Table 2). Use the FINE ADJUST keys to select the desired subtest routine, and then press the ENTER key to execute the routine. Press the TEST key to exit the continuous subtest operation.

Table 7. 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
5	Raster Graphics Print (herring bone)
7 *	Raster Graphics (black out pattern)
8 *	Configuration Print-out
11 *	Digital
15	Flight Time/Platen Adj. Pattern
16 *	Amplitude Course Adjustment Pattern
20 *	Analog Test
21 *	Hammer Driver Test
23 *	Run Ribbon
24 *	Velocity Transducer Adjustment
30-38**	I/O Tests
40-48**	Graphics Tests (if installed)

\* CE Mode Jumper Required.

\*\* Refer to appropriate manual for test descriptions.

## ENTERING CE 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 right end panel.
- c. On the outside edge of the Formatter PCA, install a jumper from 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 and press on either FINE ADJ key. The right-most and middle LEDs should illuminate when in CE Configuration Mode.

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. The right-most LED will blink as the test is being executed.

## CLEARING THE ERRORLOG

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

## COLD START

The HP 2565/66A can be "Cold Started" to initialize all parameters in the printer. The cold start procedure functions as a hard reset and is helpful in cases when the printer's self-test will not run or when the Formatter PCA is swapped. To perform the Cold Start, proceed as follows:

- a. Set the printer's ON/OFF switch to the OFF (0) position.
- b. Remove the printer's right end panel as described in Paragraph 6-3.
- c. On the outside edge of the Formatter PCA, install a jumper from test point COLD START to GND (TP1) (see Figure 4-1). The jumper may be grounded on the cardcage's metal frame instead of using TP1.
- d. Set the printer's ON/OFF switch to the ON (1) position.

# SECTION VI: ADJUSTMENTS

## Contents:

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## PLATEN/COREBAR GAP

Adjustment of the hammer-to-platen gap is necessary whenever the corebar is replaced, the platen is replaced, or the paper thickness adjustment is out of range (i.e. maximum adjustment one way or the other does not produce correct setting). In order to perform this adjustment, there must be no paper loaded and the ribbon should be removed from the printer. Platen adjustment procedure is as follows:

- a. Raise the print assembly swing-gate into the open position.
- b. Check the paper shield to ensure that the long slot is aligned to the hammers. If it is not aligned, then the corebar has probably been improperly installed.
- c. Loosen the stop screw located on the right side of the paper thickness adjusting lever and move the lever into the "A" (adjust) position (see Figure 5-1).
- d. Retighten the stop screw so that it is located in detent on lever, holding it in the "A" position.
- e. Lower the swing-gate halfway down and loosen the three 4 mm allen screws located on top of the platen assembly (see Figure 5-2). Loosen just enough to allow the assembly to slide in and out (approximately 3/4 turn counterclockwise). The adjustment springs should push the assembly out. Press on the face of the paper guide/platen assembly to verify that it moves in and out freely.

### CAUTION

Do not force the swing-gate into the latched position when the platen is out of adjustment. Be sure that the platen assembly is free to slide in when latching the swing-gate.

- f. While watching the platen to verify movement, secure the swing-gate into the fully closed position. This will push the corebar mechanism against the platen, which will slide back against the tension springs. Open and close the

swing-gate once or twice to make sure it is fully latched down.

- g. First snug down and then tighten the three screws in the following sequence, being careful not to skew the platen assembly from its current position: 1) Snug down the center screw. 2) Snug down the left screw. 3) Snug down the right screw. Go back and tighten in the same sequence.
- h. Move the paper thickness adjusting lever back into a normal position and retighten the stop screw. Do not overtighten. The spring loaded ball plunger on the end of the stop screw should just engage the detents on the lever assembly, providing a ratchet-like feel.
- i. Making this adjustment may cause the tractor dampening bearings to come off their tracks on the rear of the platen/paper guide assembly (see Paragraph 5-6). Reach behind the platen/paper guide to verify that the bearings are riding properly on that surface.

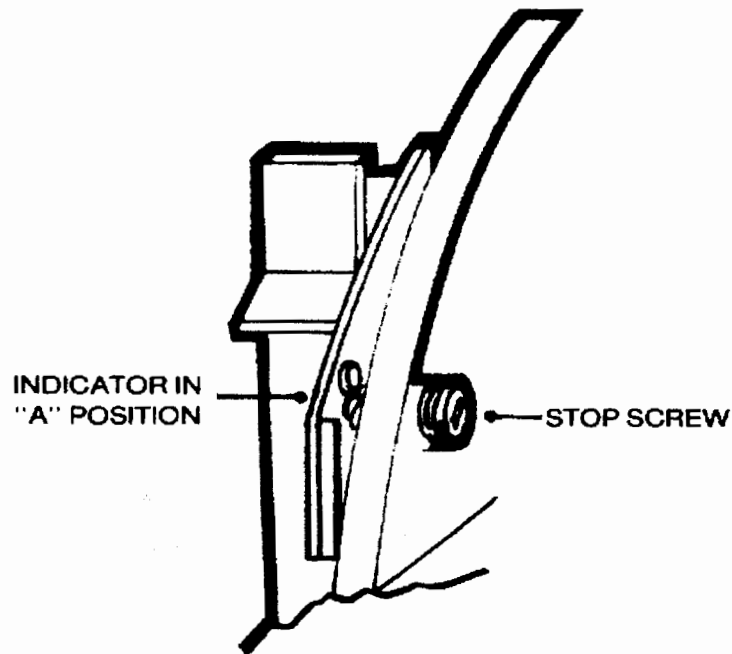


Figure 5-1. Paper Thickness Lever (In "A" Position)

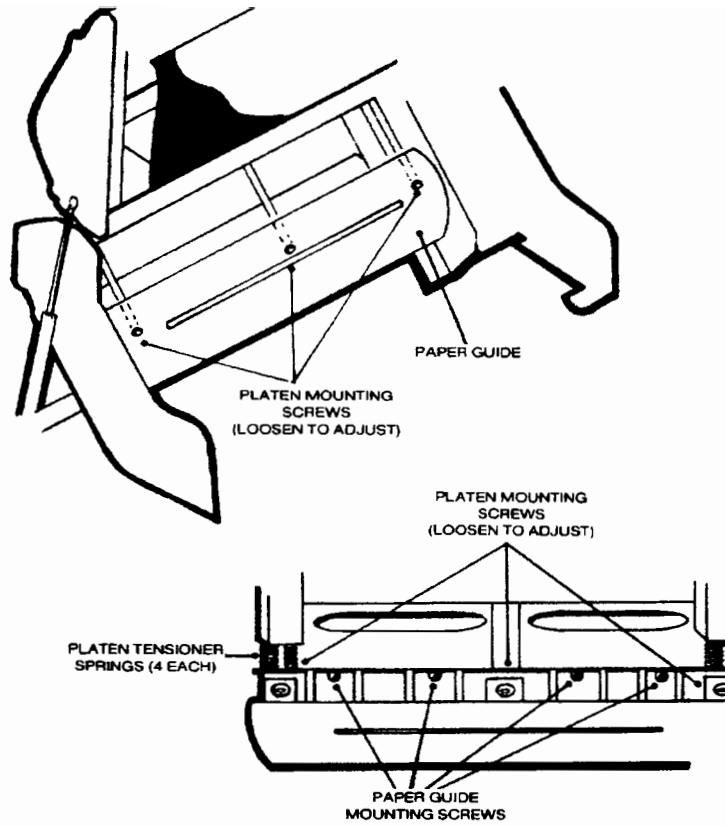


Figure 5-2 Platen Adjusting Screws





## VELOCITY TRANSDUCER

The velocity transducer has two basic adjustments: magnetic pin depth and magnetic pin clearance. Both these adjustments should be performed upon replacement, and should be checked as a troubleshooting measure for poor print quality, excessive linear motor current and/or settling time error (fail codes 14-54 or 14-55, Appendix B).

### MAGNETIC PIN CLEARANCE:

It is important that the magnetic velocity pin (attached to the left end of the corebar assembly) does not rub along the inside surface of the transducer. To adjust this clearance, proceed as follows:

- a. Switch the printer OFFLINE, and the ON/OFF switch to the OFF (0) position.
- b. Raise the print mechanism swing-gate into the open position.
- c. From the left end of the print mechanism, loosen the two 3mm allen mounting screws located on the transducer base.
- d. Sight through the left end of the transducer while shining a small light (like a penlight) through from the other end. Adjust transducer so that an equal amount of light can be seen all the way around the magnetic pin (see Figure 5-3).
- e. Continue sighting into the end of the transducer while tightening the mounting screws. Tighten each screw a little at a time to keep the transducer clamp from skewing back out of adjustment.
- f. Recheck after tightening to ensure clearance all the way around the pin.

TOOL NO. 02566-20133

### PIN DEPTH SETTING:

The depth that the magnetic pin inserts into the transducer body can be rough adjusted mechanically, then fine adjusted using the main control panel in a CE self test mode, as follows:

- a. While the printer is powered off, loosen the 3mm allen screw which holds the transducer in the mounting clamp (see Figure 5-3). Loosen just enough to allow the transducer body to slide in and out but tight enough to hold in a desired location before performing the control panel adjustment.
- b. Using a scale, set the distance from the edge of the mounting clamp to the outside (left) end of the transducer at approximately 3/8 inch (9 mm).
- c. Place the printer in CE Mode as described in Paragraph 4-5 of this manual.
- d. Close the print mechanism swing-gate and switch the printer's ON/OFF switch to the ON (1) position.
- e. Execute the Continuous Subtest routine number 24 (Velocity Transducer Adjustment). See "Selectable Diagnostic

Subtests" under Paragraph 4-3 for instructions. This will cause the corebar to oscillate.

- f. Raise the print mechanism swing-gate into the open position.
- g. Carefully slide the transducer in and out on its mounting clamp while watching the display panel to obtain the lowest possible reading. Some fluttering may occur.
- h. Tighten the 3mm screw on the mounting clamp when the display is at its lowest reading.

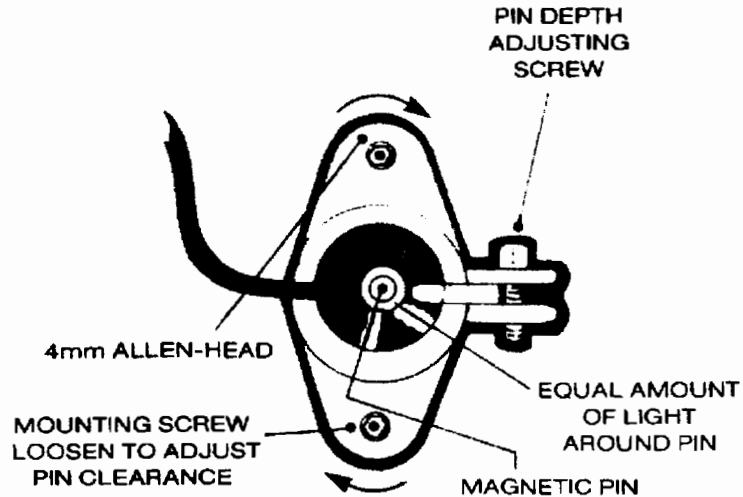


Figure 5-3 Velocity Transducer Adjustment

#### LINEAR MOTOR COIL

The linear motor coil provides drive to the corebar. It can be adjusted without removal of the corebar assembly. Sufficient clearance must be maintained to prevent the coil assembly from rubbing the magnet. The adjustment procedure requires the use of a special plastic adjustment shim (P/N 02608-00217):

- a. Switch the printer OFFLINE, and the ON/OFF switch to the OFF (0) position.
- b. Verify that the coil assembly is mounted securely in place.
- c. Raise the print mechanism swing-gate and lower the paper shield.
- d. Slightly loosen the four 3mm allen screws mounting the coil to the machined aluminum bracket (see Figure 5-4). Loosen just enough to allow for adjustment.

- e. Slide the plastic adjustment shim between the coil and the magnet until it wraps around the entire body of the coil.
- f. Retighten the four mounting/adjustment screws.
- g. Remove the adjustment shim.
- h. A quick check for freedom of linear motor within the magnet follows: Place left hand lightly at left end of corebar and tap with right hand on the mountings for the motors magnet. A ringing vibration should be felt at the left end.

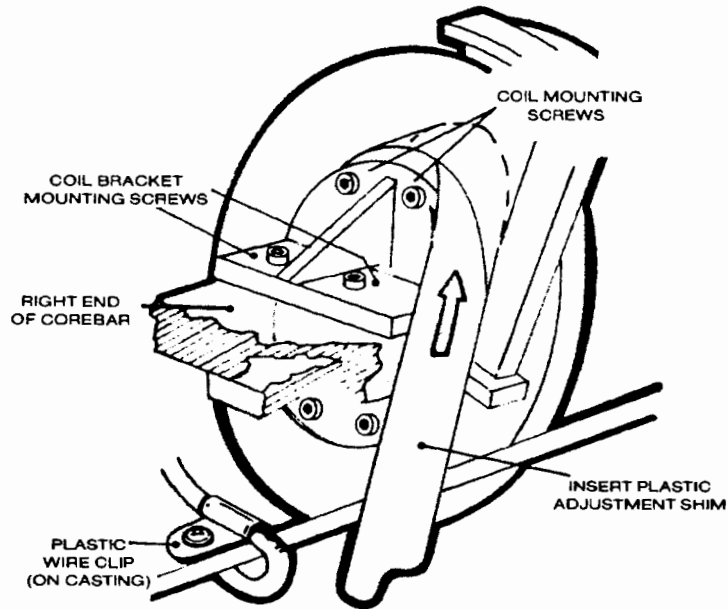


Figure 5-4 Linear Motor Coil Adjustment

## TRACTOR VIBRATION DAMPENING ARMS

.These arms and their associated bearings are located on the rear side of each tractor. The bearings ride on a lip provided on the rear of the platen/paper guide assembly. These arms add more support for the paper tractors and help to damp vibrations caused by the corebar oscillation.

### NOTE

This adjustment can be performed only when the platen is in its fixed position and properly adjusted.

### ADJUSTMENT PROCEDURE:

- a. Raise the swing-gate to the open position.
- b. Verify that the bearings on the end of the tractor arms are riding along the surface of the lip on the paper guide and not on the rear edge.
- c. Use the tractor control keys to move all tractors out as wide as possible (move right tractors to the right, left tractors to the left).
- d. Open the tractor covers and slightly loosen the two slotted screws located on the face of the tractor just enough to allow the dampening bracket to move.
- e. Push the arm toward the paper guide while pushing the tractor assembly away from the paper guide, simultaneously tightening the screws. Very little pressure is needed. Too much force will cause undue friction in horizontal tractor movement causing the tractor alignment cables to slip on their pulleys, not positioning the tractors.
- f. Try the FORMS ALIGNMENT and FORMS WIDTH adjustments to verify proper tractor horizontal movement. While moving tractors, watch the spring located in the upper right area of the cable path. If the dampening arms are adjusted too tight the spring movement will be jerky as the cables move the tractors.

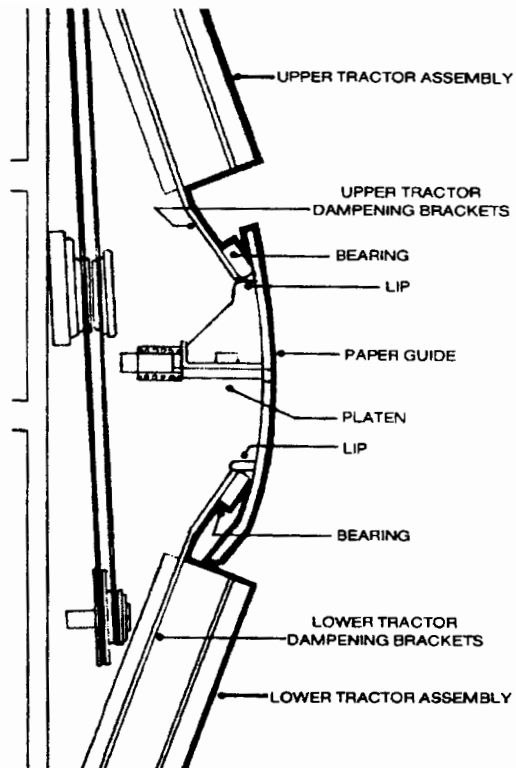


Figure 5-5. Tractor Dampening Brackets (side view)

### TRACTOR DRIVE BELT

The tractor drive belt serves as the drive mechanism for the lower tractors. The drive originates in a stepper motor which is attached to the upper tractor drive shaft. This belt adjustment varies the phasing of the paper teeth of the lower tractors with respect to the upper tractors. Poor phasing can cause "character scrunch" or paper jam problems. There is a limited amount of operator controlled adjustment available through usage of the vertical paper tension lever. To determine if additional adjustment is needed, follow steps 1 through 3:

1. Load some new, single-part paper in the tractors.
2. Place the vertical paper tension lever all the way down in the fully increased position (see Figure 5-6). If the lever will not stay in place, the detent plunger may need to be tightened.
3. Check the condition of the paper. If full tensioning of the vertical paper tension lever has torn the tractor strip holes in the paper, or if paper will not become taut between upper and lower tractors then adjustment is needed. Do not adjust if paper holes are only slightly elongated and paper is taut.

Once it has been determined that adjustment is necessary, perform the following:

- a. Remove the sound shroud, rear panel and left end panel as described in Paragraphs 6-4 and 6-5.
- b. Power up the printer. This locks the upper drive shaft in position.
- c. Use the FORM FEED or LINE FEED key to run more paper into the tractors until the tractor holes are clean (in new condition).
- d. Move the vertical forms adjustment lever to a few notches above the fully increase (down) position.

#### **WARNING**

Exercise caution when moving the tractor drive belt as there is a slight possibility that the idler arm may snap upwards causing possible injury.

- e. Relieve the tractor drive belt tension by pulling the idler arm upwards and against the dowel pin, which will hold it in place (see Figure 5-6).
- f. Rotate the lower tractor drive shaft until tractor teeth fit properly into paper holes.
- g. Rotate lower drive shaft further until paper is taut. Do not allow paper to distort at this point.
- h. Holding lower drive shaft in place with right hand, gently re-engage the idler arm onto the drive belt. This should place more tension on the paper and distort the holes. If it does not, more tension is needed. Return to step "c" and try again.



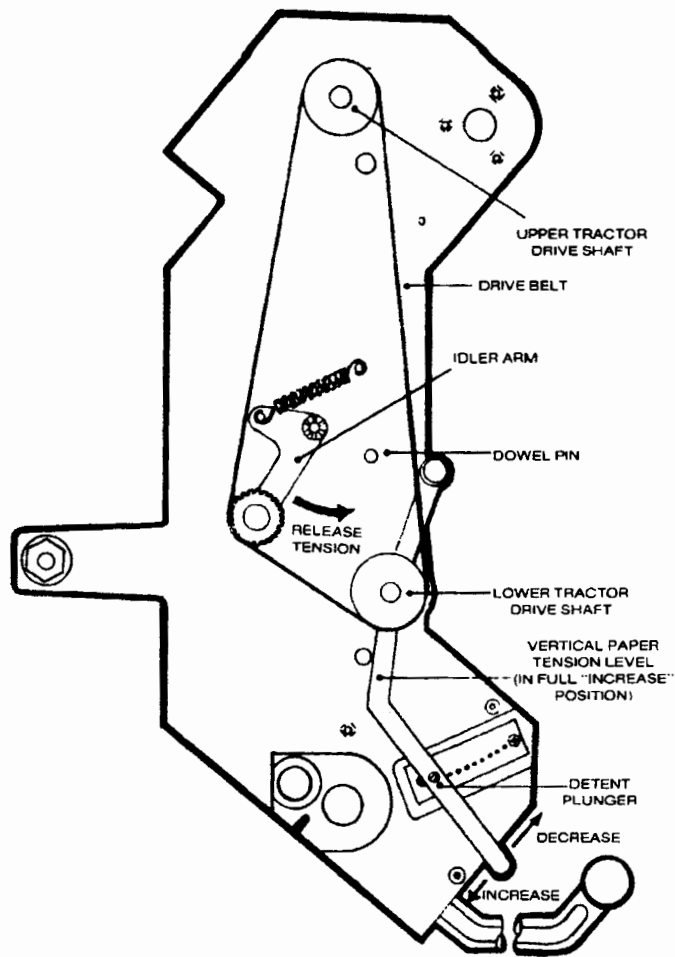


Figure 5-6. Tractor Drive Belt "Phasing"

## VERTICAL TRACTOR ALIGNMENT

The upper and lower tractors must be aligned on a vertical plane perpendicular to the platen and corebar. In other words, the centerline of either left or right upper and lower tractors should be 90 degrees in relation to the platen.

### ADJUSTMENT LOCATION:

The tractor alignment drive cables attach to a bracket on the rear of each paper tractor. The upper right and lower left tractors are stationary in relation to the cable. The upper left and lower right tractors have a set screw on the cable collar (see Figure 5-7). This set screw is used to adjust tractor positioning on the cable. Adjustment procedures follow:

- a. With unit powered up, raise the print mechanism swing-gate.
- b. Open the four tractor top pressure plates ("lids").
- c. Using single part lined forms, install paper on the lower left and upper right tractors only. (Some FORMS WIDTH and vertical paper tension adjustment may be necessary to obtain proper alignment and tension.)
- d. Use the LINE FEED key to step paper until a horizontal line comes up directly over the platen.
- e. Run a fingernail along the face of the paper directly over the gap between the platen and the paper guide, causing a crease in the face of the paper.
- f. Check the location of the crease to verify that it runs parallel to the paper lines. If not, use the FORMS WIDTH adjustment (lower tractor control keys) to slowly move tractors right or left as needed.
- g. Return the tractor position knob to the FORMS ALIGNMENT position and check again for parallelism (steps "e" and "f").
- h. When parallelism is achieved, loosen the 1.5 mm set screw on the lower right tractor cable (access by punching a hole through the paper over the set screw).
- i. Move the lower right tractor sideways left or right to horizontally center the tractor teeth in the paper's tractor strip holes.
- j. Tighten the set screw.
- k. Repeat steps "h" through "j" for the upper left tractor.
- l. Verify proper adjustment by using the FORM FEED key, checking for no distortion of the paper holes.



## CONTROL PANEL TIMING ADJUSTMENTS

This section contains procedures for Hammer Flight Time and Graphics Amplitude adjustments. In general, these adjustments become necessary if a corebar or linear motor coil has been replaced.

Adjustment procedures follow:

### HAMMER FLIGHT TIME:

- a. With the printer powered up and set OFFLINE, press the SELF TEST key. The right-most decimal point of the display panel should come on.
- b. Use the FINE ADJ UP key to increment the display to test 15. Press ENTER.
- c. Examine the test print pattern (vertical and horizontal lines). Adjust the platen gap (paper thickness lever) and re-run the test until the horizontal lines are as straight as possible.
- d. Examine the vertical bars. Hammer Flight Time will need to be adjusted if there is some waviness in lines.
- e. Place printer in CE Mode (see Paragraph 4-5).
- f. Configure printer to function 40 (see Paragraph 4-2).
- g. Increment the display panel readout backward or forward one number (using FINE ADJ UP/DOWN) and press ENTER.
- h. Perform steps a through d. Repeat steps "f" and "g" until vertical lines are straight.

### AMPLITUDE ADJUSTMENTS:

- a. With the printer powered up and set OFFLINE, press the SELF TEST key. The right-most decimal point of the display panel should come on.
- b. Use the FINE ADJ UP key to increment the display to test 15. Press ENTER.
- c. Examine the test print pattern (vertical and horizontal lines). Adjust the platen gap (paper thickness lever) and re-run the test until the horizontal lines are as straight as possible.
- d. Press SELF TEST and use FINE ADJ to call up test 16.
- e. Examine the print pattern. If the bars are not of equal thickness, then the amplitude needs adjustment, as follows:
  1. Place the printer in CE Mode (see Paragraph 4-5).

2. Configure the printer to function 42 (see Paragraph 4-2).
3. Change readout up or down and press ENTER.
4. Repeat steps d and e, then 2 and 3 until bars are of equal thickness.
5. To fine adjust (function 43), press SELF TEST, call test 5 and press ENTER.
6. Examine the test pattern (herring bone) and repeat step 3 until the diagonal lines are not wavy (see Figure 5-7).

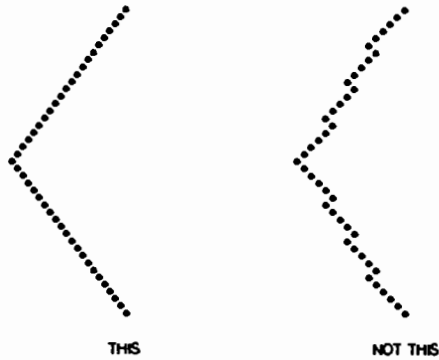


Figure 5-7. Herring Bone Pattern



HP PART NUMBER	ASSEMBLY DESCRIPTION	EXCHANGE PART	REPLACEMENT PART NO.
* TOP LEVEL, PRINTER *			
1530-2185	GAS SPRING		
1460-1679	SPRING CLIP		
02566-60136	DOOR, FRONT		
02566-60137	PANEL, LEFT SIDE		
02566-60140	PANEL, RIGHT SIDE		
02566-00082	PANEL, FRONT		
02566-00168	PANEL, REAR		
02566-60199	SOUND SHROUD		
* TOP LEVEL, RIGHT SIDE *			
02566-60005	PCA:POWER SUPPL		02566-69005
2110-0030	FUSE 5A 250V		
02566-60006	PCA:MOTOR DRIVE		02566-69003
2110-0002	FUSE 2A 250V		
2110-0055	FUSE 4A 250V		
2110-0051	FUSE 10A 250V		
02566-60003	PCA:SERVO CNTRL		02566-69003
02566-60008	PCA:EDP FRMTR		02566-69008
5061-17XX	PCA: I/O		02566-690XX
02566-60007	PCA:HAMMER DRVR		02566-69007
* TOP COVER *			
02566-60115	ASSY:WLD TOP CVR		
02566-40029	ENDCAP:TOP COVER		
02566-40033	WINDOW ACCESS CV		
1460-1679	SPRING-CLIP		

HP2565/66A PARTS/MAY 1984

HP PART NUMBER	ASSEMBLY DESCRIPTION	EXCHANGE PART	REPLACEMENT PART NO.
02566-60175	DRIVE COIL ASSY		
02566-20064	COIL ADAPTER		
02566-00159	PLT: COIL ADP NUT		
02566-00201	BARRIER: TERMINAL		
0400-0018	GROM: CHAN.052		

\* PRINT MECH GAS SPRINGS/PRINT MECH SHOCK MOUNTS \*

1530-2186	GAS SPRING 70LB		
1460-1679	SPRING CLIP		
1530-2185	GAS SPRING 38LB		
1520-0203	MOUNT: SHOCK		
02566-00181	MOUNT: GROUNDING		

\* PAPER TRACTOR ASSY \*

3140-0681	MOTOR: STEPPER		
02566-20045	SHAFT: SUPPORT		
02566-60222	ASSY:UPPR DRSHF		
02566-60117	ASSY:PPR MOTION		
02566-60164	ASSY:UPR RIGHT T		
0510-0598	COLLAR		
02566-60223	ASSY:LWR DR SHF		
02566-60114	ASSY:LWR LFT TR		
02566-60165	ASSY:LWR RIGHT T		
02566-60219	ASSY:SHFT JRNL		
1460-2073	SPRING:EXT		
1500-0651	BELT:GEAR		
02566-60214	CBL:GROUND		
0510-0083	RTNR R E-R EXT		

HP2565/66A PARTS/MAY 1984

HP PART NUMBER	ASSEMBLY DESCRIPTION	EXCHANGE PART	REPLACEMENT PART NO.
02566-00195	SHROUD:INNER		
0960-0585	ASSY:TINSEL		
02566-40032	GUIDE:PAPER		
* OPERATOR CONTROL PANEL *			
02566-40030	BEZEL:KEYBOARD		
5040-9002	KEYPAD:SIL RBR		
5061-1709	PCA:FRONT PANEL		
02566-60141	ASY:CONT CVR WL		
02566-00172	CLAMP:SPR BEZEL		
02566-00171	CLAMP:SPR BEZEL		
0590-1529	1/4 TURN LATCH		
02566-00227	MNTG BRKT:LATCH		
02566-20115	GUIDE:LATCH		
0340-0554	GROM-SNAP		
02566-60146	CABLE, OPER CNTL		
* BLOWER ASSY AND PAPER GUIDE *			
02566-40032	GUIDE:PAPER		
02566-40035	AIRDUCT:COREBAR		
	TUB-FLEXR2X4		
1400-0566	CLAMP-HOSE		
* BLOWER/DOOR AND COVER HINGES *			

HP2565/66A PARTS/MAY 1984

HP PART NUMBER	ASSEMBLY DESCRIPTION	EXCHANGE PART	REPLACEMENT PART NO.
	CABINET CABLING *		
02566-60148	CBL:VEL XDUCER		
02566-60159	CBL:FAN		
02566-60160	CBL:HMR DRVR PW		
02566-60151	CBL:MTR DRVR II		
02566-60149	CBL:MTR DRVR I		
02566-60150	CBL:MTR DRVR II		
02566-60148	CBL:VEL XDUCER		
02566-60155	CBL:SENSOR		
02566-60112	CBL ASSY:RBN DRV		
02566-60119	CBL:AY LINEAR MT		
02682-20435	COVER:PRI SCREEN		
02566-60145	CBL:COREBAR		

HP PART NUMBER	ASSEMBLY DESCRIPTION	EXCHANGE PART	REPLACEMENT PART NO.
02566-60221	ASSY: BELT IDLER		
02566-60156	CBL:RIBON SENSE		
02566-60153	CBL:SKEW SNS		
02566-00100	LINKAGE:KNOB		
02566-40024	KNOB:SELECT		
02566-00119	COVER:BELT		
* PAPER TRACTORS, PAPER MOTION AND PAPER OUT SENSORS, AND LOWER TRACTOR CONTROL ASSY			
02566-00011	COVER:SWITCH		
02566-60020	PCA:LWR TRCT CNT		
02566-60117	ASSY:TOP LF TRCT		
02566-60211	ASSY:PAPER OUT SW		
02566-60210	ASSY:PAPER MOTION		
3101-2650	SM:INTLK SPDT		
02566-60117	ASSY LWR LF TRCT		
* PAPER TRACTOR CABLE, IDLER ARMS, AND PULLEYS *			
02566-20037	PULLEY:DRIVER		
02566-60102	CBL ASSY:TRACT#		
02566-60103	CBL ASSY:TRACT#		
1460-0648	SPRING-EXT.75LG		
1460-1323	SPNG-EXT 2-IN-L		
02566-60220	ASSY:IDLER		
02566-60218	ASSY:LRG PULLEY		
02566-60217	ASSY:SM/PULLEY		
0510-0235	RTNR-R E-R EXT		
3140-0677	MOTOR:DC GEAR		

HP2565/66A PARTS/MAY 1984

HP PART NUMBER	ASSEMBLY DESCRIPTION	EXCHANGE PART	REPLACEMENT PART NO.
02566-20102	HINGE:LOWER		
02566-00108	NUTPLATE:HINGE		
02566-00115	HINGE:TOP		
3160-0451	FAN:CENT		
0490-1373	SOLID STATE REL		
02566-00112	HINGE:COVER		
02566-00219	STRAP:GROUNDING		
1492-0096	CASTER, SHIVL		
* FANS/TRANSFORMER/RIGHT SIDE BRACKETS *			
9100-4328	TRANSFORMER:PWR		
3160-0056	FAN:TBAX 115-CF		
3160-0092	FINGER GUARD		
02566-60209	ASSY: MRT DR CC		
0403-0271	GUIDE:PC BD.07-		
* INPUT POWER ASSY/CARDCAGE/I-O COVER *			
02566-60162	ASSY:CARD CAGE		
0403-0271	GUIDE:PC BD.07-		
02566-60004	PCA:BACKPLANE		
* INPUT POWER ASSY *			
02566-60185	110/120 INPUT POWER ASSY		
02566-60186	220/240 INPUT POWER ASSY		
02566-00158	BRKT:FILTER MTG		
02566-60190	ASSY:INPUT PWR CONN		
9135-0235	ASSY:LINE FILTER		



HP2565/66A PARTS/MAY 1984



HP PART NUMBER	ASSEMBLY DESCRIPTION	EXCHANGE PART	REPLACEMENT PART NO.
02566-60171	CBL AY:STRAP BRN		
02566-60172	CBL AY:STRAP BLU		
3105-0144	C-B 20 12.5A 250V		
02566-00157	SHIELD:FILTER		
* RIBBON DRIVE ASSEMBLY TO CASTING/RIBBON-PAPER SHIELD			
02566-00190	LID:DEFLECTOR		
02566-40019	BRKT:LOADER		
02566-00054	LINK:LOADER		
1460-1207	SPNG-EXT 1IN LG		
02566-20095	HINGE:STOP		
02566-60212	CBL AY:GROUND		
02566-60213	CBL AY: GROUND		
* RIBBON DRIVE ASSY *			
1410-0721	BSHG-PNL.265ID		
02566-20054	HANDLE		
02566-20057	SHAFT:DSKW DR		
02566-20076	CAM:DESKW		
1500-0664	COUP:SHFT RIGID		
02566-20056	SHAFT:DSKW SENS		
02566-40065	LEVER:ACTUATOR		
02566-20111	SLEVE, GUIDE		
02566-20051	SPACER, THREADED		
02566-20112	WASHER, SHOULDER		
* RIBBON DRIVE MOTOR ASSY *			

HP2565/66A PARTS/MAY 1984