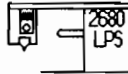


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2608S OPERATOR'S MANUAL

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PACKARD**

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TABLE OF CONTENTS

GENERAL INFORMATION

INTRODUCTION.....	1-1
DESCRIPTION.....	1-1
OPTIONS.....	1-2
SUPPLIES AND ACCESSORIES.....	1-4
SPECIFICATIONS.....	1-5
Physical.....	1-6
Clearance Requirements.....	1-6
Electrical Requirements.....	1-6
Performance.....	1-6
Environmental.....	1-7
Paper.....	1-7
SERVICE.....	1-8
OPERATOR SAFETY.....	1-8

OPERATING YOUR PRINTER

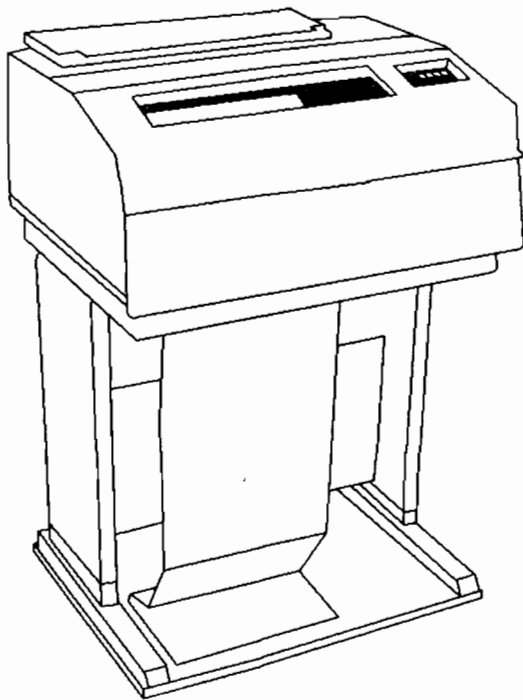
OPERATOR CONTROLS AND INDICATORS.....	2-1
RESET.....	2-11
POWER-ON PARAMETERS AND POWER FAIL.....	2-12
ON-LINE/OFF-LINE.....	2-12
PRINT MODE SELECTION.....	2-13
CHARACTER SET SELECTION.....	2-13
CHARACTER OVERSTRIKE AND UNDERLINING.....	2-15
VERTICAL LINE SPACING.....	2-15
STANDARD VERTICAL FORMS CONTROL (VFC).....	2-15
FAULT CONDITIONS.....	2-16
TEST FAIL Indicator.....	2-16
PAPER OUT Indicator.....	2-17
PLATEN/RIBBON Indicator.....	2-17
PAPER JAM Indicator.....	2-17

PREPARING YOUR PRINTER FOR USE

INTRODUCTION.....	3-1
POWER.....	3-1
HP-IB INTERFACE CONFIGURATION.....	3-2
RIBBON CARTRIDGE LOADING AND REMOVAL.....	3-3
PAPER LOADING AND ADJUSTMENT.....	3-5
ADJUSTING FORMS LENGTH.....	3-6
SETTING TOP OF FORM.....	3-7
SELF TEST.....	3-8
Complete Self Test.....	3-8
Specific Subtest Selection.....	3-9
Self Test Failure.....	3-9

OPERATOR MAINTENANCE

PREVENTIVE MAINTENANCE.....	4-1
IN CASE OF DIFFICULTY.....	4-1



SECTION I. GENERAL INFORMATION



INTRODUCTION

The 2608S Operator's Manual contains information concerning operating and maintaining the HP 2608S Line Printer. Reading this manual before using your HP 2608S will enable you to take best advantage of the printer's helpful features.

DESCRIPTION

The HP 2608S is a medium speed, dot matrix printer designed for use in many computer printing applications. You will find that this printer has many features which are particularly attractive. For example:

- ~ Microprocessor control for flexibility
- ~ Internal self-test mode
- ~ Conveniently located and easy-to-operate controls
- ~ Easy-to-load ribbon cartridge
- ~ High resolution printing with standard or multi-part forms
- ~ Multiple character sets requiring no mechanical font changes
- ~ 16-channel programmable VFC (Vertical Forms Control)
- ~ Standard, double size, graphics, and high density print modes under program control (the level of feature support will differ depending upon which Hewlett-Packard computer system the printer is communicating with)
- ~ Paper jam detection
- ~ Top of Form recovery following power failure

2608S OPERATOR'S MANUAL

- ~ Quiet operation
- ~ Restart/recovery ability following printer interrupts and power failure
- ~ Easy forms alignment
- ~ Paper stacker (optional)

These features combine to make the HP 2608S a flexible, high-quality, and easy-to-use printer.

OPTIONS

The HP 2608S Line Printer is available in several configurations to match your applications and needs. These configurations are stated as options--three digit suffixes to the model number. The option numbers are marked on an identification tag which is located near the ON/OFF switch on the back of the printer.

The standard HP 2608S is a 400 line per minute printer that features dot-matrix printing, a 128 USASCII character set (standard and high density) and a 16-channel programmable Vertical Format Control (VFC). The printer is configured for 120 Vac operation. An HP-IB interface is standard with the HP 2608S as is the open stand.

The printer comes equipped with a power cord, a stand assembly, one ribbon cartridge, a paper tray, and one pad of printer layout forms.

Following is a list of available options for the HP 2608S Printer.

Option 001

Option 001 adds the Arabic, Cyrillic, Katakana, and Draw character sets.

Option 002

Option 002 adds the European subset languages: French, German, Swedish/Finnish, Danish/Norwegian, Spanish, British; plus Japanese ASCII, Roman Extension Set, and APL (A Programming Language).

2608S OPERATOR'S MANUAL

Option 003

Option 003 adds the Block and Math character sets.

Option 015

Option 015 is configured for 220 Vac, 50/60 Hz operation.

Option 016

Option 016 is configured for 100 Vac, 50/60 Hz operation.

Option 017

Option 017 is configured for 240 Vac, 50/60 Hz operation.

Option 055

Option 055 is configured with a multipoint interface for use with the HP 3000 III, 30, 33, 40, 44, and 64 systems. This interface replaces the standard HP-IB interface.

Option 068

Option 068 includes a ribbon six-pack starter kit

Option 110

Option 110 adds the sound cover/static eliminator, reducing the operating noise level to 68 db (standard stand).

Option 113

Option 113 includes the optional enclosed stand, replacing the standard printer stand

Option 115

Option 115 includes the passive paper stacker for the optional enclosed printer stand.

Option 116

Option 116 includes the passive paper stacker for the standard printer stand.

Option 210

Option 210 is configured for use with the HP 1000 M, E, and F-Series Subsystems

Option 214

Option 214 is configured for use with the HP 1000 A600, A700 Series Subsystems.

Option 333

Option 333 is configured for use with the HP 3000 Series 30/33 Subsystem

2608S OPERATOR'S MANUAL

Option 340

Option 340 is configured for use with the HP 3000 Series 40 Subsystem

Option 344

Option 344 is configured for use with the HP 3000 Series 44 Subsystem

Option 364

Option 364 is configured for use with the HP 3000 Series 64 Subsystem

Option 715

Option 715 adds the HP 2608S Service Manual

Option 850

Option 850 is to be announced.

SUPPLIES AND ACCESSORIES

Supplies and accessories recommended for use with your printer and available from Hewlett-Packard are listed below.

Ribbon Cartridges

Box of three standard ribbon cartridges (92158A)

Box of three ribbon cartridges (92158M)
(for optical mark recognition with the HP 307X OMR readers)

HP Printer Layout Form

250 Sheets on five pads (02608-60091)

Paper

The HP 2608S will accommodate continuous fan-fold edge-perforated paper varying in width from 1.5 to 16 inches. It will accommodate forms thickness variations up to a total pack thickness of 0.61 mm (0.025 inches). Forms thicker than 0.61 mm should be tested to verify that they will print successfully. Recommended paper weights are: 20 pounds minimum single part and 12 pounds multi-part forms. Some lighter papers have been used successfully, but all papers should be tried for satisfactory feeding, registration, and print quality. Multi-part forms must be held together without the use of metal or plastic fasteners.

2608S OPERATOR'S MANUAL

Forms should be tried at high humidity (greater than 80%) for satisfactory feeding and handling and at low humidity (less than 25%) to determine if static buildup must be eliminated for proper stacking.

SPECIFICATIONS



The HP 2608S Line Printer is listed by Underwriter's Laboratories, Inc. in the following categories with respective guide designations: Electronic Data Processing Equipment (EMRT), Teaching and Instruction Equipment (WYFW), and Office Appliances and Business Equipment (QAOT).

The Canadian Standards Association has certified this line printer as Data Processing Equipment.

In addition, this printer was designed to meet most European Safety and RFI/EMC standards for Electronic Data Processing Equipment effective December 1, 1981. Any questions concerning regulatory agency compliance should be directed to the local Hewlett-Packard Sales Office.

Federal Communications Commission Radio Frequency Interference Statement

The Federal Communications Commission (IN 47 CFR 15.818) has specified that the following notice be brought to the attention of the users of this product.

Warning: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

2608S OPERATOR'S MANUAL

Physical

Width: 69 cm (27 inches)
Depth: 56 cm (22 inches)
Height: 102 cm (40 inches)
Weight: 97 kg (215 pounds)

Clearance Requirements

Front and Rear: Adequate for operator access--
Front: stand door (if applicable)
Rear: paper stack

Bottom: Adequate to allow air flow for cooling
(if using the optional stand)

Side: One foot should be allowed on the right side of the
printer.

Electrical Characteristics

	Input (Vac)	Frequency (Hz)
Voltage Source:	100 (+5%, -10%)	50/60 (+10%, -5%)
	120 (+5%, -10%)	50/60 (+10%, -5%)
	220 (+5%, -10%)	50/60 (+10%, -5%)
	240 (+5%, -10%)	50/60 (+10%, -5%)

Power Cable Length: 1.8 metres (6 feet)

Power Consumption: 240 W non-printing
700 W printing (typical)
1375 W printing (maximum)

Performance

Character Formation: (5 x 7), (5 x 9), (7 x 7), and (7 x 9)
dot matrices

Line Length: Up to 132 characters (66 characters maximum in
double size letters)

2608S OPERATOR'S MANUAL

Print Speed:

LINES PER MINUTE	MATRIX SIZE	MODE
400	5 x 7	Normal (Upper Case)
320	5 x 9	Normal (Lower Case)
250	7 x 9	Graphics
350	7 x 7	High Density (Upper Case)
280	7 x 9	High Density (Lower Case)

Line Feed Rate (6/8 LPI): 15 ms/line

Form Feed Rate (6/8 LPI): 14 inches/sec.

Copies: 1-6 (up to 0.61 mm [0.025 inches] pack thickness)

Vertical Format Control

Number of Channels: 16 programmable

Environmental

Temperature

Operating (Printer): 0 to 55 degrees C (32 to 131 degrees F)

Non-operating (Printer): -55 to 75 degrees C (-67 to 167
degrees F)

Operating (Ribbon): 10 to 50 degrees C (50 to 122 degrees F)

Storage (Ribbon): 10 to 32 degrees C (50 to 89.6 degrees F)

Relative Humidity (Printer): Non-operating - 5% to 95% non-condensing
Operating - 30% to 80% (recommended)

Audible Noise Measured per ISO/DIS standard 3744.2

	PEDESTAL STAND	ENCLOSED STAND
Standby:	55 dBA	55 dBA
Operating:	70 dBA	68 dBA
With Low Noise Option:	68 dBA	66 dBA

Paper

Paper specification information is located in the SUPPLIES AND ACCESSORIES section of this manual.

2608S OPERATOR'S MANUAL

SERVICE

Hewlett-Packard offers maintenance agreements, "time and material" service, and other service agreements for the HP 2608S Printer. HP Sales and Service Offices are listed at the back of this manual. If you have a need for service or questions regarding service, contact the HP office nearest you.

OPERATOR SAFETY

For operator safety, the access cover should be closed when the printer is powered on and during operation. Keep hands, long hair, necklaces, and articles of clothing such as long sleeves out of the printer when operating conditions exist.

SECTION II. OPERATING YOUR PRINTER

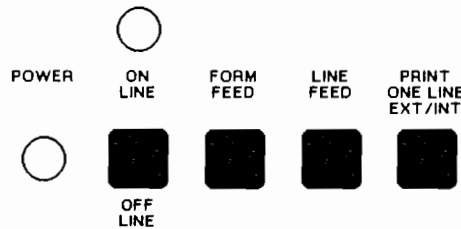


OPERATOR CONTROLS AND INDICATORS

Operating the HP 2608S Printer involves understanding the use and functions of the printer's controls and indicators. The printer's features are controlled via the Operator Control Panel and/or via control codes (such as ESCape sequences). The Operator Control Panel operation is detailed in this section and the control codes are explained in the HP 2608S Technical Reference Manual (02608-90910).

The following table and figures define the location and the function of the printer controls and indicators.

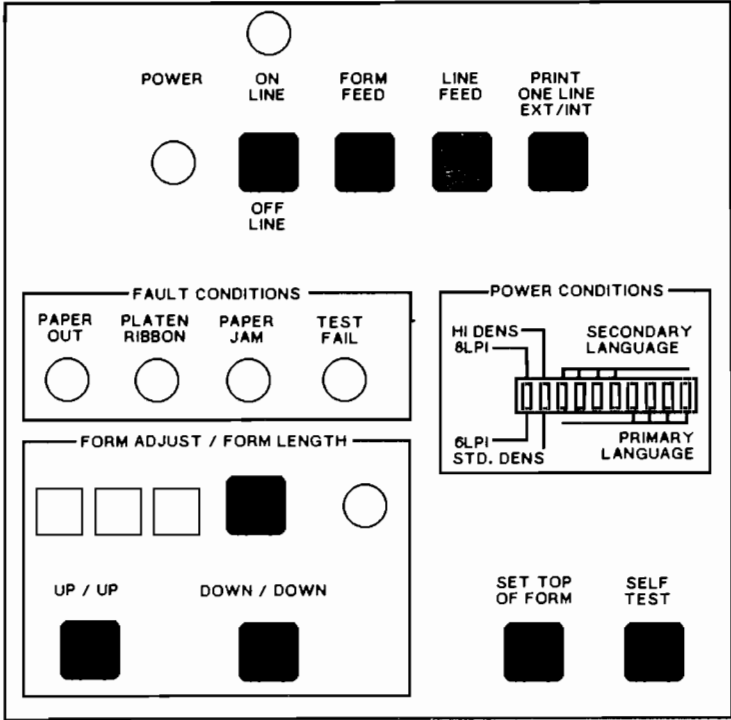
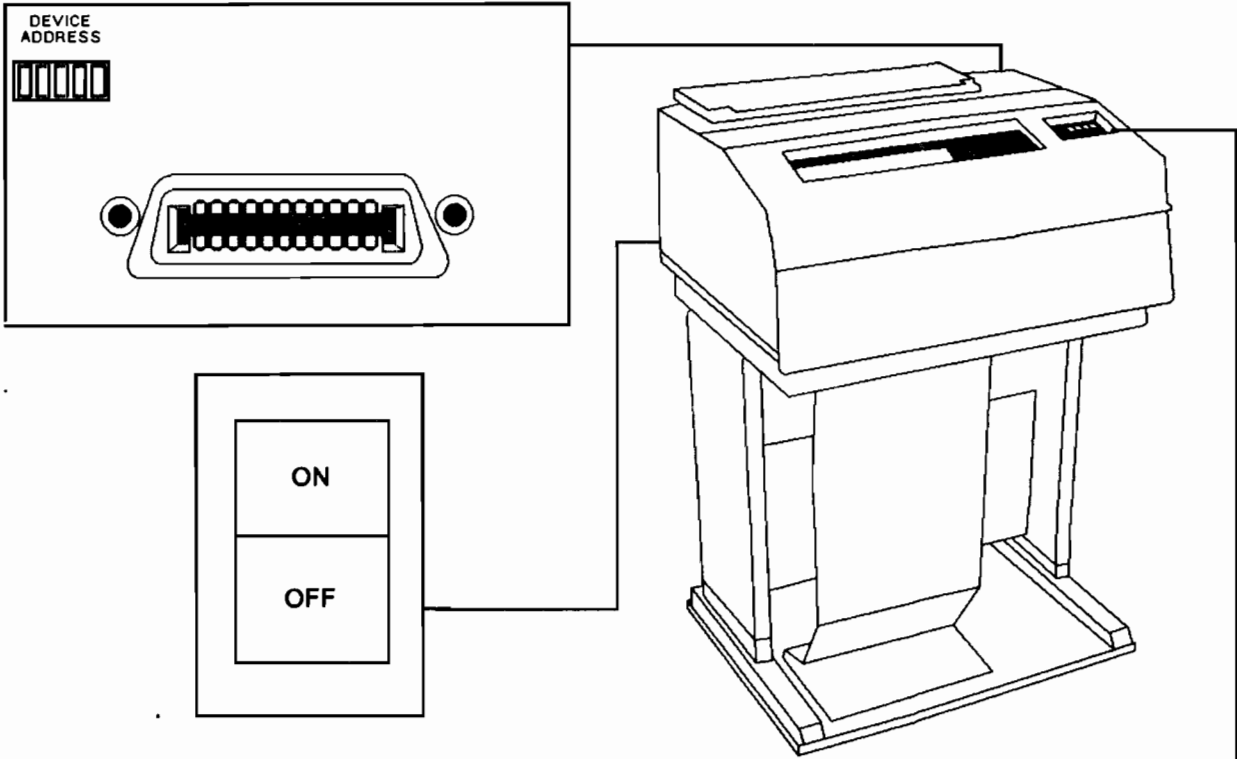
Control/Indicator	Description
MAIN POWER ON/OFF SWITCH	This rocker switch is located on the back of the printer, and is used to power-up or power-down the printer. This switch is also a circuit breaker and is used to restore power after the breaker has been tripped.



Top Portion of Control Panel

POWER ON INDICATOR	This LED (Light-Emitting Diode) is located on the Operator Control Panel and illuminates when the main power switch has been turned on and all power supplies are stable. Power On status is reached in approximately seven seconds.
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2608S OPERATOR'S MANUAL



Front Panel Detail, Main Power ON/OFF Switch, and Interface Connector

2608S OPERATOR'S MANUAL

ON/OFF-LINE SWITCH AND INDICATOR

This switch is used to give control of the printer to either the controlling device (on-line) or to the operator (off-line). The LED associated with this switch shows which mode has been selected. The HP 2608S has no programmatic ON/OFF-LINE capability and will be powered-up in the state it was in prior to removing power. The printer must be OFF-LINE to respond to the other push-button switches on the Operator Control Panel (except the RESET function).

FORM FEED SWITCH

This switch is used to advance the paper to the next Top of Form position. If pressed momentarily, the printer performs one form feed. If the switch is held down, the printer performs successive form feeds until pressure is released from the switch. This switch functions only when the printer is OFF-LINE and not in the Self Test Mode.

LINE FEED SWITCH

This switch is used to advance paper to the next print line using the line spacing increment which has been established by either the 6/8 LPI (lines per inch) rocker switch or via program control. If the LINE FEED switch remains held down, the printer will pause momentarily and then advance paper at an increased rate. This action will continue as long as the switch remains depressed. The LINE FEED switch functions only when the printer is OFF-LINE and not in the Self Test Mode.

2608S OPERATOR'S MANUAL

PRINT ONE LINE SWITCH

This switch is used to print one line of data on the installed form at the current line position. If the switch remains held down, successive lines of data will be printed until pressure is released from the switch.

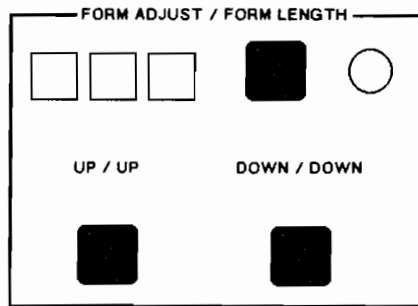
NOTE

If a single line is printed, use the line feed switch to advance the paper so that the line is visible above the ribbon shield. This is not necessary when printing multiple lines.

Two kinds of data may be printed using this switch, the type printed depending on which mode the printer is currently in. If the printer is in the FORM ADJUST mode, the HP 2608S will print one line of data from the controlling device. If there is no data currently ready to be printed, and no data is received within one second, the machine will not print anything until it receives another controlling command. If the printer is in the FORM LENGTH Mode, a full line of periods will be printed with the numbers 0 through 9 embedded in every tenth column as follows.

.....0.....1.....2.....3.....4.....5 etc.

2608S OPERATOR'S MANUAL



Form Adjust/Form Length and UP/DOWN Switches

FORM ADJUST/FORM LENGTH MODE SWITCH

This switch is used to alternate between the FORM ADJUST mode and the FORM LENGTH mode. The associated LED indicates that the printer is in the FORM LENGTH mode. This switch, in combination with the UP and DOWN switches and the 3-digit display, is used to set the form length and to adjust the paper position before setting Top of Form.

UP SWITCH

This switch performs two separate functions which are determined by which state the FORM ADJUST/FORM LENGTH switch is in.

When the printer is in the FORM ADJUST mode, pressing this switch causes the paper to advance one dot row. Holding the switch down advances the paper continuously until the switch is released.

When the printer is in the FORM LENGTH mode, pressing the UP switch increments by 0.5 inches the form length displayed on the 3-digit display. Holding the switch down increments the form length until the switch is released. When the form length reaches the maximum value (16 inches), pressing the UP switch causes the form length to change to the minimum form length value (2 inches).

2608S OPERATOR'S MANUAL

This switch does not change the Top of Form as stored in memory and functions only when the printer is off-line and not in the Self Test mode.

DOWN SWITCH

This switch performs two separate functions depending on which mode the FORM ADJUST/FORM LENGTH switch is in.

When in the FORM ADJUST mode, pressing the switch causes paper to be moved down one dot row. Holding the switch down causes the paper to move down until the switch is released.

NOTE

The DOWN switch retracts paper; however, the operator should tension the paper below the print mechanism (with the platen open) to allow it to move in the reverse direction.

When the printer is in the FORM LENGTH mode, pressing the DOWN switch decrements by 0.5 inches the form length displayed on the 3-digit display. Holding this switch down causes the form length to be decremented continuously until the switch is released. If the form length is set at the minimum position (two inches), pressing the DOWN switch causes the form length to be changed to the maximum value (16 inches).

This switch does not change the Top of Form as stored in memory and functions only when the printer is off-line and not in the Self Test mode.

2608S OPERATOR'S MANUAL

SET TOP
OF FORM



SELF
TEST



Top of Form and Self Test Switch

SET TOP OF FORM SWITCH

This switch is used to align the Top of Form. Pressing this switch identifies the top of the ribbon shield as the bottom of the first line which is to be printed. This action also identifies this print location as the Top of Form. When the switch is pressed, the printer also advances paper one page length to the next Top of Form position. If a paper-out or paper jam condition has occurred, pressing this switch will clear the error. See the "Setting Top of Form" section in this manual for more information about Top of Form.

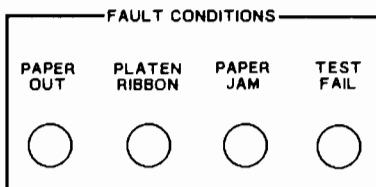
SELF TEST SWITCH

This switch is used to initiate a routine that tests the printer to determine if it is in proper operating condition. The complete self test or specific subtests can be executed using this switch. Failure of the self test is indicated with the TEST FAIL indicator and an error number in the 3-digit display. A detailed description of this routine is presented in the Self Test section of this manual. This switch functions only when the printer is off-line.

FAULT CONDITION INDICATORS

The purpose of these indicators is to assist the operator in identifying problems which prevent normal operation of the printer.

2608S OPERATOR'S MANUAL



Fault Condition Indicators

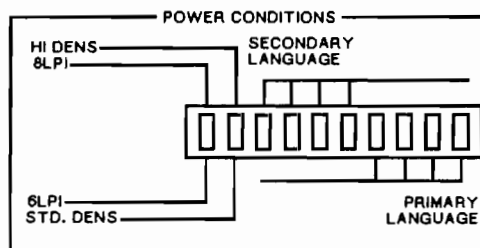
- ~ PAPER OUT This indicator illuminates when a paper-out condition occurs. It extinguishes when paper is inserted in the printer and either the SET TOP OF FORM switch is pressed or the printer is put on-line.
- ~ PLATEN/RIBBON This LED illuminates when either the platen is opened or the ribbon cartridge is not installed. It extinguishes when both the platen is closed and the ribbon is installed.
- ~ PAPER JAM This indicator illuminates when a paper jam is detected. It extinguishes when the SET TOP OF FORM switch is depressed.
- ~ TEST FAIL This LED illuminates when either a self test failure or a real time failure occurs. Real time failures include print mechanism errors and false data transfers from the interface. In conjunction with the indicator, the 3-digit display indicates the specific failure detected by displaying a unique failure code. This LED can only be cleared by resetting the printer. See the Self Test section of this manual for more information concerning test failure.

2608S OPERATOR'S MANUAL

POWER CONDITIONS SWITCHES

This ten-position rocker switch is used for character set, print density, and lines/inch selection following power-on and reset. The switch positions are read only when the printer undergoes a power-on, reset, programmatic clear, or when the printer is put on-line. All of the conditions that this rocker switch affects can also be set under program control.

If the printer is switched off-line and the rocker switch positions are changed, those positions which have changed will override any previous command or switch setting.



Power-On Condition Switches

~ 6/8 LPI SWITCH

This rocker switch sets the vertical line spacing to either 6 or 8 lines per inch.

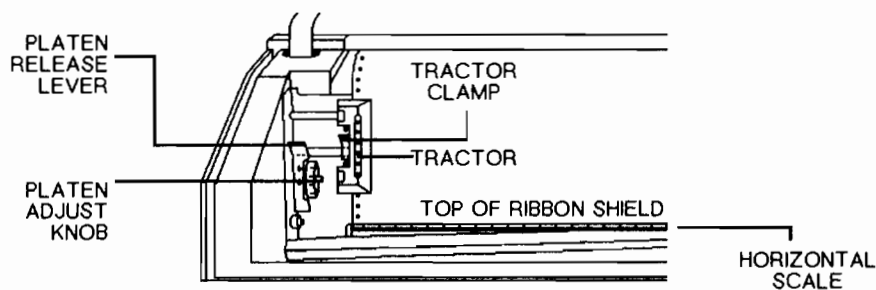
~ HIGH/STANDARD DENSITY

This switch sets the character density for the default condition.

2608S OPERATOR'S MANUAL

~ PRIMARY AND SECONDARY CHARACTER SET SELECTION

This part of the rocker switch is used to select the Primary and Secondary character sets to be used by your printer. A more detailed explanation is contained in the Character Set Selection section.



Forms Loading Controls

TRACTOR CLAMP

This lever locks the tractors in place after paper has been adjusted horizontally.

HORIZONTAL SCALE

This scale indicates column numbers (1-132) for the standard print mode.

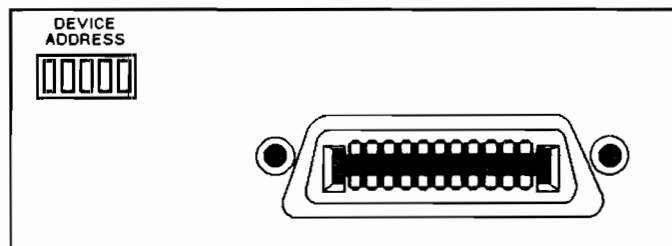
PLATEN RELEASE LEVER

This lever is located on the left side of the print mechanism and is used to open and close the platen so that paper and ribbon may be loaded or removed. Paper should not be pulled down through the platen gap when being removed. Tear paper off below the paper inlet and then eject the remaining paper by using the FORM FEED switch.

2608S OPERATOR'S MANUAL

PLATEN ADJUST KNOB

This rotary control is used to adjust the platen-to-hammer gap for the best print quality with different forms or thicknesses. Setting number 0 provides the minimum platen-to-hammer gap. Setting number 9 provides the maximum gap. These numbers do not necessarily correlate to the number of sheets in a multi-part form.



HP-IB Connector with Device Address Rocker Switches

DEVICE ADDRESS SWITCH

This five position switch is used to establish the printer's system address. Refer to the discussion of this switch in the HP-IB interface configuration section. This switch is located on the back of printers configured for HP-IB operation and is read by the printer only at power-on or during a reset.

RESET

The reset function causes the printer to default to the power-on conditions and to read the HP-IB address switches. Therefore, the reset function is intended to be used only in the case of a self test error or by a Hewlett-Packard Service Representative.

The reset function is performed by pressing the ON LINE/OFF LINE switch and the FORM ADJUST/FORM LENGTH switch simultaneously. When reset, the printer moves paper to the top of the page, reverts to the power-on conditions, and stays off-line. A programmable reset can also be performed. The programmable reset affects the printer the same as the control panel reset except that the printer remains on-line.

2608S OPERATOR'S MANUAL

POWER-ON PARAMETERS AND POWER FAIL

When the main power on/off switch (back of printer) is toggled on and off or a loss of power to the printer occurs, the printer is set to a known state as follows:

- ~ ON/OFF-LINE in same state as prior to power off
- ~ Primary and secondary character sets selected as specified by the control panel POWER CONDITIONS switch
- ~ Line spacing (6/8 LPI) as established by the POWER CONDITIONS switch
- ~ Paper moves to the next Top of Form position
- ~ Standard or High Density Print Mode selected as specified by the POWER CONDITIONS switch
- ~ Print buffer cleared
- ~ Standard VFC channel assignments selected
- ~ Left margin offset equals zero
- ~ Form length remains the same value as before the loss of power

The recoverability of the HP 2608S after a system power failure is dependent upon which system the printer is interfacing with. Refer to the appropriate system manual for more information on this subject. If only the printer loses power, the power-on parameters will be set as above.

NOTE

The HP 2608S has no power fail indicator.

ON-LINE/OFF-LINE

When the printer is on-line, data and commands can be transmitted to it from a controlling device. When it is off-line, data and commands are ignored by the printer with the exception of the Device Specified Jump (HP-IB only) and Status Read commands.

2608S OPERATOR'S MANUAL

Off-Line is a state of the printer resulting from an operator reset, fault conditions (paper-out, platen open, etc.), or from use of the ON/OFF LINE switch on the Operator Control Panel. The printer must be off-line in order to use any of the switches on the Operator Control Panel.

When the printer is off-line, it may be returned to on-line status using the Operator Control Panel ON LINE/OFF LINE switch. The printer will not switch to an ON LINE state if any error conditions such as paper-out have not been corrected.

When the printer goes on-line, if any of the POWER CONDITIONS switches are in a different position than they were when the printer went off-line, the operating parameters will change to reflect the rocker switch settings.



PRINT MODE SELECTION

The HP 2608S has four print modes available: Standard Alphanumeric mode, Double Size Character mode, High Density Print mode, and Graphics mode. The Standard and High Density modes can be selected using the POWER CONDITIONS rocker switch on the Operator Control Panel. Any of the four print modes can be selected via escape (ESC) sequences.

Transmitted print mode commands will override the rocker switch selection. When taken off-line, the printer remains in the last mode commanded unless the POWER CONDITIONS (rocker switch) settings have been changed; the printer will default to the rocker switch setting for power-on and reset.

CHARACTER SET SELECTION

The character set in the standard HP 2608S is a 128 USASCII character set (Standard and High Density). The printer may contain up to 16 sets including a Draw character set. Your printer contains the sets which were specified in your purchase order.

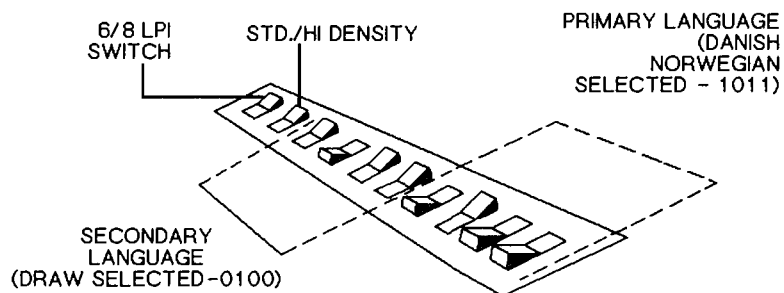
The following table contains the binary code information that is used to set the primary and secondary character sets via the POWER CONDITIONS rocker switch on the Operator Control Panel. To set the switch, enter the code by moving the switch to either the "zero" position (lower end depressed) or to the "one" position (upper end depressed).

2608S OPERATOR'S MANUAL

CHARACTER SET ASSIGNMENTS

LANGUAGE	BINARY CODE
STANDARD	
USASCII	0000
OPTION 001	
Arabic	0001
Cyrillic	0010
Katakana	0011
Draw	0100*
OPTION 002	
APL	0111
French	1000
German	1001
Swedish/Finnish	1010
Danish/Norwegian	1011
Spanish	1100
British	1101
Japanese ASCII	1110
Roman Extension	1111
OPTION 003	
Block	0101
Math	0110

* The HP 2608S should be operated at 8 LPI when using the Draw character set so that characters will connect vertically.



Setting the Rocker Switches

The codes in the above table may also be commanded remotely if character set selection is to be performed under program control. Character set selection commands will override the control panel setting. When taken off-line, the printer remains in the character set last commanded unless the POWER CONDITIONS rocker switch settings are changed.

2608S OPERATOR'S MANUAL

Any two character sets may be used within a print line--one designated as primary (eighth bit = 0), and the other designated as secondary (eighth bit = 1).

Standard ASCII shift-in and shift-out codes may also be used to select primary and secondary languages. Shift-out invokes the secondary language and shift-in returns the printer to the primary set. Shift-out is not cleared by the print command.

CHARACTER OVERSTRIKE AND UNDERLINING

To create special symbols and underline selected portions of output, the HP 2608S has the capability of overprinting one character with another on both a character-by-character and a line-by-line basis. This can be accomplished by either using the backspace control code or by performing a carriage return without a line feed. Consult the HP 2608S Technical Reference Manual (02608-90910) for more information on this subject.

VERTICAL LINE SPACING

Vertical line spacing may be manually selected at either 6 or 8 lines per inch using the POWER CONDITIONS rocker switch or by program control. Remotely transmitted line spacing commands will override the Operator Control Panel setting except under power-on or reset conditions.

STANDARD VERTICAL FORMS CONTROL

The HP 2608S printer is equipped with a standard and a programmable Vertical Forms Control (VFC). The standard VFC is defaulted to whenever the printer is reset or powered up.

Vertical Forms Control allows the user to skip to a predefined line on a page of print with typically one or two commands instead of using a number of line feeds. The printer can perform a print job more quickly using VFC than without it.

The standard VFC contained in the HP 2608S is a "computed VFC" meaning that the VFC automatically adjusts its skip lengths when the form length is changed.

The standard VFC Channel Definitions are listed in the following table. The terms Top of Form and Bottom of Form refer to the top and bottom of text on the page. More information about the programmable VFC is contained in the HP 2608S Technical Reference Manual (02608-90910).

2608S OPERATOR'S MANUAL

VFC CHANNEL DEFINITIONS

VFC Channel 0	Conditional top of physical page
VFC Channel 1	Top of Form (line 1)
VFC Channel 2	Bottom of Form (BOF (last line of text))
VFC Channel 3	Single space (lines 1,2,3,4,...)
VFC Channel 4	Double space (lines 1,3,5,7,...)
VFC Channel 5	Triple space (lines 1,4,7,10,...)
VFC Channel 6	Half form (lines 1, (BOF + 1)/2 + 1
VFC Channel 7	Quarter form (lines 1, (BOF + 3)/4 + 1, (BOF + 1)/2 + 1, 3(BOF + 1)/4 + 1
VFC Channel 8	Tenth space (lines 1,11,21,31,...)
VFC Channel 9	Bottom of Form (same as channel 2)
VFC Channel 10	BOF - one line (BOF - 1)
VFC Channel 11	TOF - one line (TOF - 1)
VFC Channel 12	Top of Form (same as channel 1)
VFC Channel 13	Seven space (lines 1,8,15,22,...)
VFC Channel 14	Six space (lines 1,7,13,19,...)
VFC Channel 15	Five space (lines 1,6,11,16,...)
VFC Channel 16	Four space (lines 1,5,9,13,...)

FAULT CONDITIONS

Four LED indicators located on the Operator Control Panel are provided to help you locate and possibly correct problems which prevent normal operations of the printer. When any fault condition exists, the printer automatically goes off-line and cannot be put on-line again until the fault is corrected.

TEST FAIL Indicator

When a segment of the self test routine fails or if a real time error occurs, this indicator illuminates. Refer to the Self Test section of this manual for a detailed description of self test. If a real time error occurs, check for possible obstructions which may prevent corebar motion. The printer must be reset to clear the failure indication. However, if the problem remains uncorrected, the indicator will illuminate again. If you cannot correct the problem and clear the indicator, contact your HP Service Representative.

NOTE

When the printer is reset, it is returned to power-on status.

2608S OPERATOR'S MANUAL

PAPER OUT Fault Indicator

When illuminated, this indicator shows that the printer is out of paper. The paper-out condition is detected by the absence of paper in print column 15. When paper-out is detected, the printer finishes printing the current page, slews to Top of Form, and goes off-line until paper is reloaded. The paper-out error is cleared when either the ON/OFF LINE or SET TOP OF FORM switch is pressed following paper reloading. No data is lost when paper out occurs. Refer to the Paper Loading and Adjustment section of this manual for paper loading instructions.

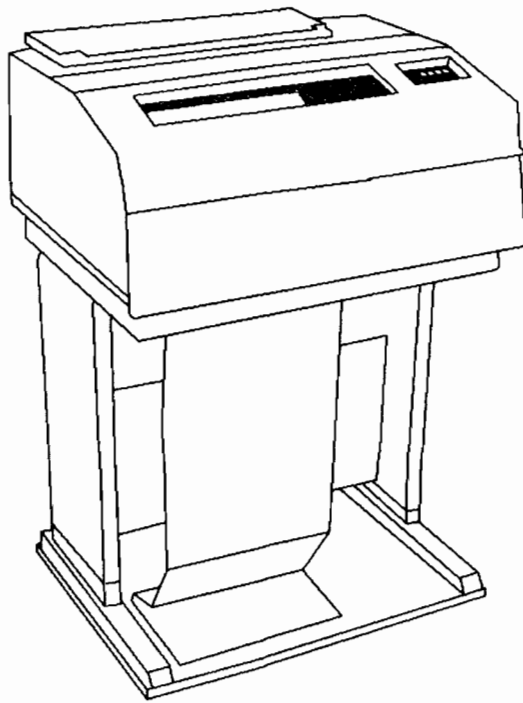
PLATEN/RIBBON Fault Indicator

When illuminated, this indicator shows that either a ribbon cartridge has not been loaded or the platen is open (release handle has not been returned to the vertical position). Refer to the Ribbon Cartridge Loading and Removal section for instructions to correct this fault.



PAPER JAM Indicator

When illuminated, this indicator shows that paper is not passing normally through the tractors. The paper jam must be corrected and the SET TOP OF FORM switch depressed to clear the error condition before the printer can be placed on-line.



SECTION III. PREPARING YOUR PRINTER FOR USE

INTRODUCTION

The procedures in this section should be followed closely so that your printer performs with maximum efficiency.

Your printer should be located in a clean, traffic-free environment, preferably an area not subjected to excessive shocks, vibrations or wide ranges of ambient temperature. Air conditioning is not required to ensure reliable operation of the HP 2608S; however, under no circumstances should the environmental specifications be exceeded.

The location of your printer must provide adequate operator access to both the front and rear of the printer. The area around the printer should be kept clean and dust free at all times so that the air used to cool the printer will not contain a large amount of dust particles.

If the printer will be operated in either high or low humidities, check with your HP representative for options or accessories which will help optimize paper handling.

POWER

The HP 2608S has a maximum power requirement of 1375 Watts. One of the following power sources must be available for operating the printer: 100, 120, 220, or 240 volts ac. Your printer has been shipped to match the power source at your location. If it becomes necessary to change to a different power source, contact your HP Service Representative.

The main power switch on the back of the printer also functions as a circuit breaker. The circuit breaker will be tripped when excessive current is being drawn through it. To restore normal operation, turn the switch on again.

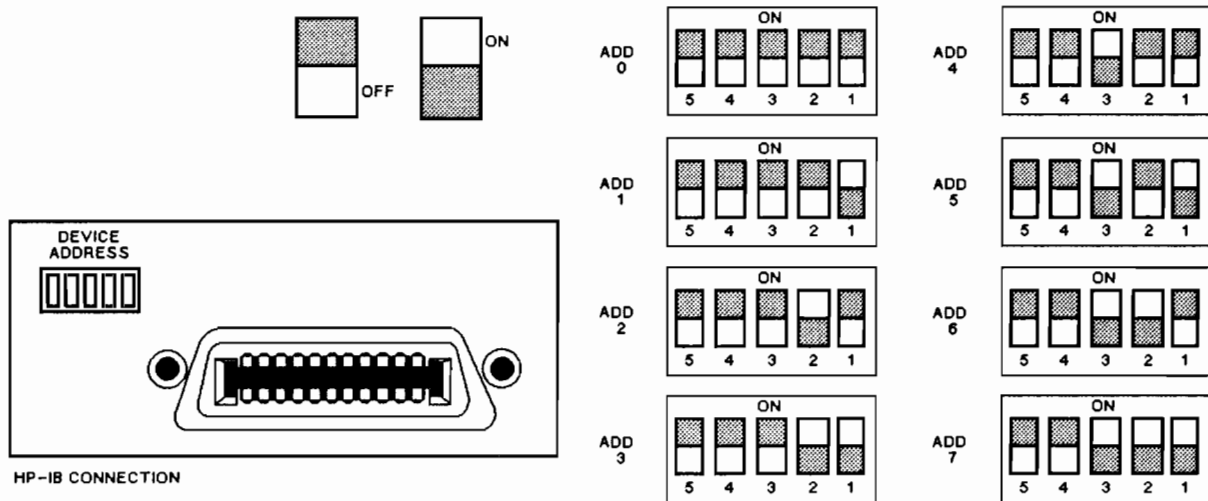
2608S OPERATOR'S MANUAL

CAUTION

If the circuit breaker trips repeatedly, check for obvious problems such as interference with print mechanism movement. If no obvious problems exist, contact your HP Service Representative.

HP-IB INTERFACE CONFIGURATION

If your printer has been configured for HP-IB operation, a five switch module located on the back of the printer is used to establish the printer's system address. Address bits are set (1 = high) when toggled to the ON position. Switch settings for address selection are illustrated in the following sketch. Switches 4 and 5 should always be set to the OFF position.



HP-IB Connector and Device Address Switches

NOTE

The HP 2608S can be configured to respond to addresses 0 through 7.

The printer is shipped standard with a 2 metre HP-IB interface cable. If a different length cable is desired, contact your HP Service Representative. Possible data loss could result if specific loading adjustments are not made when changing cable lengths.

2608S OPERATOR'S MANUAL

RIBBON CARTRIDGE LOADING AND REMOVAL

Tools are not required to install or remove the ribbon cartridge.

NOTE

An interlock prevents printing when either the ribbon cartridge is removed or the platen is open. A fault indication will be displayed on the control panel by the PLATEN/RIBBON Fault Indicator during ribbon removal and installation.

Perform the following steps to install the ribbon cartridge:

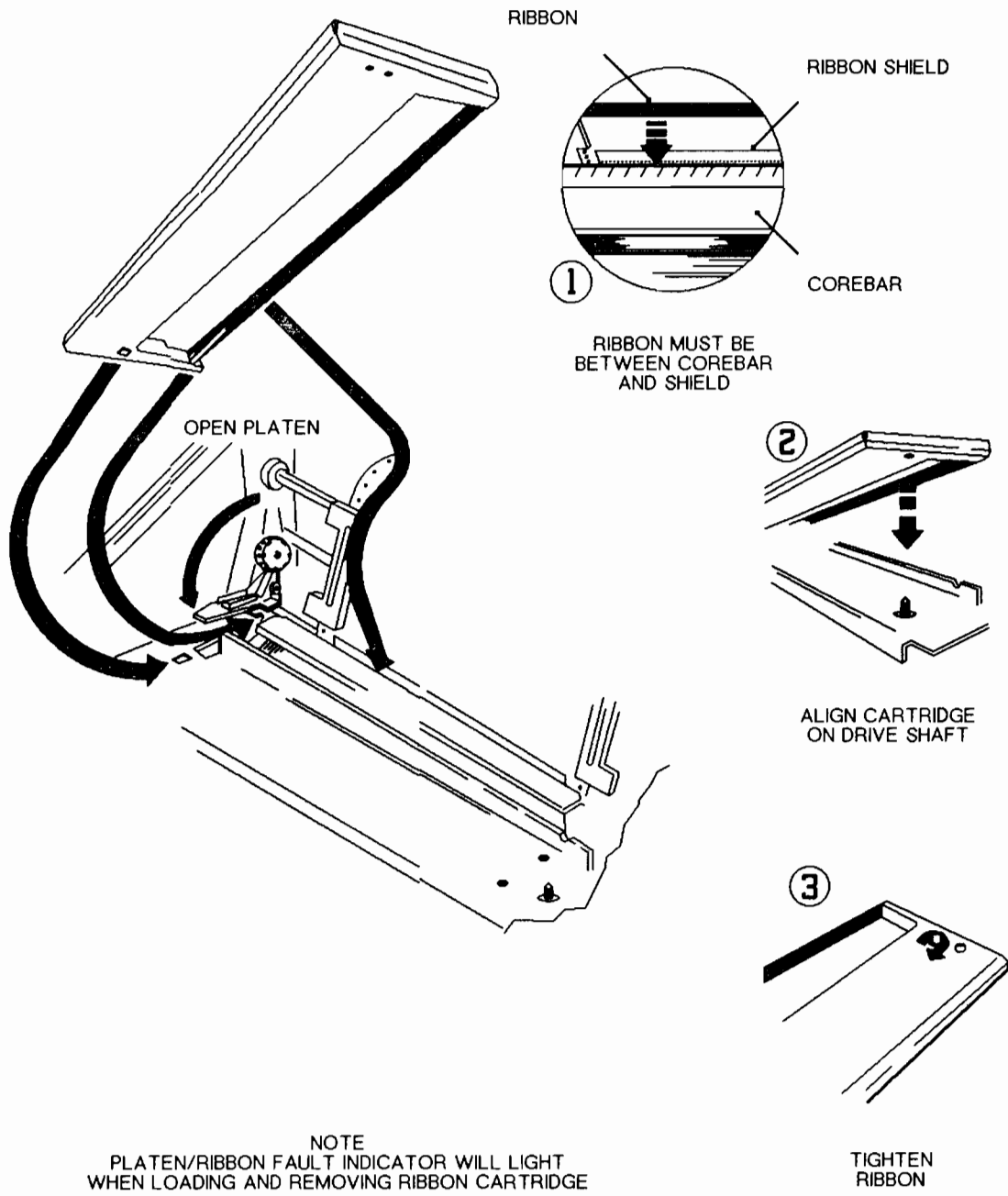
- a. Pull the platen release lever toward you to open the platen.
- b. Slide the ribbon into place between the print mechanism and the metal ribbon shield, as shown in the ribbon loading illustration.
- c. Fit the mounting lug on the lower left underside of the ribbon cartridge into the mounting slot on the metal base.
- d. Align the cartridge on the drive shaft and tension the ribbon using the knurled knob on the top right side of the cartridge.
- e. Make certain the cartridge is secured on both the left and right ends, and that the ribbon is completely positioned in front of the print mechanism.
- f. Close the platen.

Perform the following steps to remove the ribbon cartridge:

- a. Pull the platen release lever toward you to open the platen.
- b. Lift the back side of the ribbon cartridge until you have removed it from the drive shaft and the mounting slot in the metal base.
- c. Use the knurled knob on the top right side of the cartridge to maintain tension on the ribbon and remove the ribbon from the print mechanism by pushing it slightly forward and then lifting it upward and out of the printer.
- d. Discard the used ribbon cartridge.
- e. Close the platen and clean any paper, dust or residue from the area under the ribbon cartridge.



2608S OPERATOR'S MANUAL



Ribbon Loading

PAPER LOADING AND ADJUSTMENT

Paper loading and adjustment involves adjusting the forms length and setting Top of Form in addition to the loading of the paper.

Perform the following steps to load paper into the HP 2608S:

- a. Position the paper supply underneath the printer so that the paper can feed easily into the printer.
- b. Open the access cover.
- c. Pull the platen release lever toward you to open the platen.
- d. Open both tractors. If a different form or horizontal position is required, unclamp both tractors so they may be adjusted to a different width. The tractors should be positioned so that paper may be pushed up into the printer without hitting the open tractor doors.

NOTE

An interlock prevents printing when the platen is open. A fault indication is displayed on the control panel by the PLATEN/RIBBON Fault Indicator during paper loading and adjustment.

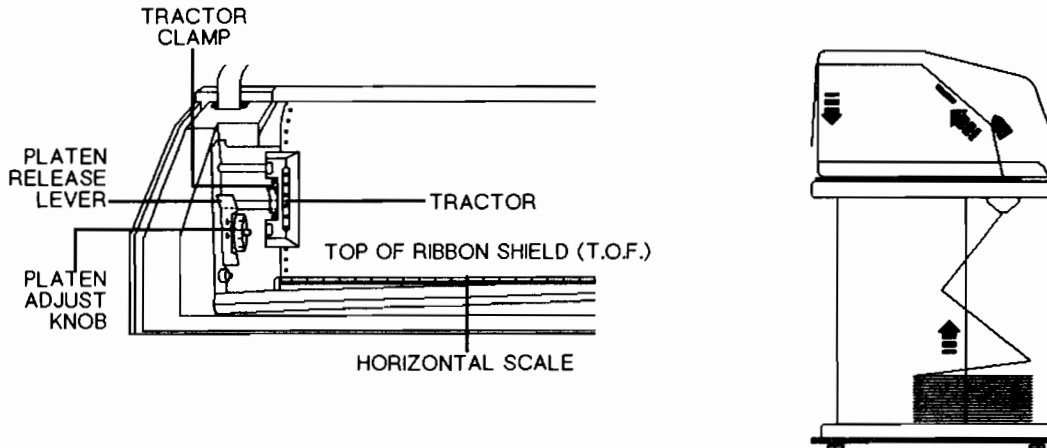
- e. Push the paper up into the printer from below until it appears above the print mechanism; then pull the paper up until the holes can be matched to the tractor lugs. Make certain the paper is not skewed to either side. Close the tractors. Push the platen release lever to close the platen. If the forms thickness has been changed, use the platen adjust knob to adjust the gap for maximum print quality.
- f. Clamp the tractors in place on the tractor guide shaft if previously released.

NOTE

When the printer runs out of paper, it retains Top of Form information. It is only necessary to set the Top of Form if the paper length is changed or a different Top of Form is required.

2608S OPERATOR'S MANUAL

- g. If the forms length has changed, or if a new Top of Form position is desired, proceed to the following sections. Otherwise, press the FORM FEED switch to reach the next Top of Form and press the ON/OFF LINE switch to resume normal printing.



Paper Loading and Paper Path

ADJUSTING FORMS LENGTH

If the length of the currently loaded paper differs from that which was previously used, the form length must be changed correspondingly.

Proceed as follows to set the forms length:

- a. Switch the printer into the FORMS LENGTH mode. The indicator next to the FORMS ADJUST/FORMS LENGTH switch will illuminate and the 3-digit display will indicate the form length (in inches) currently stored in memory.
- b. Adjust the form length by depressing the UP or DOWN switches until the desired form length is visible in the 3-digit display.
- c. Switch the printer to the FORMS ADJUST mode.

SETTING TOP OF FORM

The Top of Form (TOF) position is an arbitrary indicator of the first line of printing. Once the Top of Form is set, any succeeding FORM FEED command will advance paper until the same relative position on the next page is reached. This indicator enables the user to move swiftly to the first print line on the succeeding page without performing single line feeds.

The HP 2608S prints such that the bottom of each line is positioned directly above the top of the ribbon shield.

Perform the following steps to set the Top of Form position:

- a. Switch the printer into the FORMS ADJUST mode. The indicator next to the FORMS ADJUST/FORMS LENGTH switch should be extinguished.
- b. Adjust the paper using the UP and DOWN switches so that the top of the ribbon shield is at the desired position of the bottom of the first print line on the page.

NOTE

The DOWN switch retracts paper; however, if the platen is not open, you must tension the paper below the printer (or release the platen) to allow it to move in the reverse direction.

- c. Depress the SET TOP OF FORM switch. Paper will advance one page length to the next form with the hammers aligned exactly at the desired Top of Form. If a paper-out error was in effect before the SET TOP OF FORM switch was pushed, setting the Top of Form clears the error.

NOTE

If the actual length of the form is not equal to the forms length stored in memory, the printer will not advance paper to the correct Top of Form.

- d. Move the paper upward with the platen closed to ensure proper tensioning of the paper.
- e. Press the ON/OFF LINE switch to resume normal printing.



2608S OPERATOR'S MANUAL

SELF TEST

The SELF TEST switch on the Operator Control Panel is used to initiate a routine which tests the printer to verify its operational status. This self test function may also be performed under program control using the ESC z sequence. The self test can be run in its entirety, or specific subtests can be performed and run continuously as desired (individual subtests can be executed from the control panel only).

To perform self test from the Operator Control Panel, the printer must be off-line. If a paper-out or platen/ribbon fault condition exists, none of the printing tests will execute.

Complete Self Test

To perform the Complete Self Test (excluding I/O tests), depress the SELF TEST switch once. When the switch is pressed, the following tests 1-10 are performed:

TEST PERFORMED	SUBTEST NUMBER
Complete Self Test (tests 1-10)	0
CRC on Control PCA ROMs	1
RAM and Buses	2
CPC and Interrupts	3
Front Panel	4
Dot Generation Self Test	5
Print Mechanism	6
Print Configuration Information	7
Print Graphics	8
Print Double Size	9
Print Regular Size	10
Internal I/O Self Test (no loopback)	11
Internal I/O Self Test plus loopback test number 1	12
Internal I/O Self Test plus loopback test number 2	13
Internal I/O Self Test plus loopback test number 3	14
All Printing Subtests	15
All Non-printing Subtests	16
Modem Disconnect (Serial PCA Only)	17

After tests 001 through 006 have been performed, a one page printout is completed as shown in the Self Test Printout

2608S OPERATOR'S MANUAL

illustration. In the first portion of the printout, the character sets which are installed in the printer are printed, followed by samples of the graphics, double size, and regular print modes. The I/O (interface) is tested only by specifically selecting test numbers 11, 12, 13, or 14.

When self test has been completed, the printer returns to its prior status and is ready for normal operation.

Specific Subtest Selection

When executing self test from the Operator Control Panel, individual subtests can be selected by pressing the SELF TEST switch twice rapidly. This action causes the number of the last subtest that was individually selected to be displayed. The UP and DOWN switches can be used to increment or decrement the displayed number until the desired subtest number is reached. Momentarily pressing the SELF TEST switch again causes the desired subtest to be executed. If the SELF TEST switch is depressed for approximately one second, the desired subtest is executed continuously until the SELF TEST switch is pressed again to exit the test mode. In the continuous mode, the 3-digit display blinks.

CAUTION

When testing the I/O, the printer must not be communicating with the host system. Disconnecting the interface cable before performing I/O self testing ensures that no communication will occur.

Following any of the I/O subtests, the I/O returns to a power-up state. If the test passes, the page length is displayed on the 3-digit display. Otherwise, the failure number is displayed.

Self Test Failure

If a detectable problem exists within the printer, the TEST FAIL indicator illuminates and the 3-digit self test error number is displayed on the Operator Control Panel.

2608S OPERATOR'S MANUAL

SELF TEST AND REAL TIME ERROR TABLE

NUMBER	FAILURE
100	CRC on Control PCA ROM
101	Control PCA Scratch RAM
102	Control PCA I/O Buffer RAM
103	Control PCA CTC
204	Dot Generation PCA RAM or Dot Generation PCA Not Installed
205	Dot Generation PCA Interrupt
206	Control PCA to Dot Generation PCA Interface Logic
207	CRC on Dot Generation PCA Program ROM
208	Dot Generation PCA Internal RAM
209	CRC on Dot Generation PCA Character ROMs
210	Tail or Wide Flag
211	Dot Accumulation
212	Return Dot
213	Combinational
314	Front Panel
415	I/O Buffer Interrupt, Dead, or Not Installed
416	Control PCA to I/O PCA Interface Logic
417	CRC on I/O PCA ROM
418	I/O Buffer DMA Path
419	I/O PCA RAM
420	I/O Hardware
421	External Loopback
522	Too Many Dots
523	High Voltage Feedback
624	Print Mechanism
625	Can't Home Corebar
626	Servo PCA Interrupt
627	Printing Timeout
728	High Voltage

If the self test routine fails, press RESET and try the test again. If self test fails to perform the second time, report the test number of the failure to your HP Service Representative.

NOTE

Refer to the HP 2608S Service Manual (02608-90909) for a more detailed description of self test errors.

See the Self-Test Printout included in this manual.

SECTION IV. OPERATOR MAINTENANCE

PREVENTIVE MAINTENANCE

Maintain the printer in a state of general cleanliness. Accumulated dust, bits of paper, and lint can lead to serious problems.

Watch for indications of physical damage and report problems or potential problems to service personnel.



IN CASE OF DIFFICULTY

You should not attempt to perform any maintenance of this printer except routine operator maintenance and limited maintenance of the print mechanism. However, if the printer fails to function properly, review the following chart for a possible solution before contacting the HP Service Representative.

Trouble	Cause(s)
POWER ON INDICATOR DOES NOT ILLUMINATE	Power cord is not plugged in. Current is not coming from the power outlet. Circuit breaker is tripped. ON/OFF switch is not in the ON position (refer to Power section of this manual).
PAPER DOES NOT ADVANCE	Paper is not properly loaded. Check tractors, paper alignment, and platen gap setting. Holes in paper are damaged. Paper is caught in the paper box. Paper folds do not match horizontal perforations. Check the paper and remove the damaged sheets. Reload paper (see Paper Loading section of this manual).

2608S OPERATOR'S MANUAL

PAPER TEARING OR SEPARATING
OF MULTI-PART FORMS

Tension on paper is not correct.
Check platen gap setting and
tractors. Check paper for
binding or dragging. Reload if
necessary.

PRINT QUALITY BECOMES ERRATIC,
VERY LIGHT, OR SMUDGED

Adjust platen gap. Replace
ribbon cartridge (see Ribbon
Cartridge Loading and Removal
section of this manual).

