HEWLETT-PACKARD

2680A

OPERATOR'S HANDBOOK

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NOTE

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SECTION I.
GENERAL INFORMATION

PRODUCT DESCRIPTION

The Hewlett-Packard 2680A non-impact, page printer is the latest innovation in HP printer technology. This printer, using laser electrophotographic technology, not only provides the ultimate in print flexibility but, at the same time, provides excellent print quality at high rates of speed. Delivering a print resolution of 180 dots per inch, the 2680A creates almost any conceivable character or form on the printed page. In addition, the microprogrammable control features of the HP 2680A allow a degree of flexibility unmatched by any other HP printer. These features include: electronic form generation, multiple character sets per line of print, sixteen channel vertical forms control, 90 degree page rotation, and the ability to print up to four reduced pages of print on a single output page.

The "heart" of the printer is a rotating photosensitive drum. Various processing stations around the drum aid in the creation of printed output.

Data received by the printer is translated into "dot" image patterns to form print information. This data turns the laser beam on/off. The laser beam is a concentrated high intensity beam which is focused onto the drum to form a concise spot of light. Wherever the light strikes the drum, a voltage potential is developed. The laser beam scans the drum's horizontal axis and creates a raster line of dots and no dots which corresponds to the print data. As the drum rotates, the next raster scan line of dots is written on the drum's surface. This process continues until the entire recordable surface of the drum has been encoded with data.

As the drum rotates, the recorded area passes through the developer station where toner (a powdery dry black ink) is attracted to the laser exposed areas. Attraction occurs due to the opposite electrical charge of the toner and encoded surface of the drum. Once the drum passes through this station, a visible print image is formed on the drum's surface. The printer's paper movement is controlled for precise synchronization with the drum's rotation. When the developed image on the drum is in the correct position, a negative charge is applied to the rear surface of the paper. This causes the toner image from the drum to be transferred to the paper. At this time, the toner image is only held to the paper by its charge and can be easily smeared.

The paper is then moved past the review window on to the preheater and fuser. The preheater conditions the paper so that it may be more easily fused. The fuser is a high intensity quartz lamp which heats the toner enough to physically cause the toner to bond with the paper.

Following the fusing process the paper is moved through the output tractors into the power paper stacker. The paper stacker automatically adjusts to accommodate the height of the paper being stacked.

The printing process of the HP 2680A Page Printer is divided into two microprocessor controlled subsystems, the Data Control System and the Machine Control System. The Data Control System is specifically designed to accept, store and manipulate all incoming data sent to the printer. When the data is processed, the Data Control System generates the resulting dot signals used by the laser imaging system.

The Machine Control System controls all mechanical, electrical, and optical operations of the printer. These operations include: monitoring and controlling paper movement, stacker adjustment, monitoring the keyboard, and closed-loop monitoring of the print processes to ensure print quality.

USEFUL INFORMATION

Specifications

PAPER
Continuous single-ply, fanfold, bond paper with edges punched for tractor feed is recommended for use in the HP 2680A Page Printer. Refer to the Paper Specification Guide, HP Part Number 02682-90913, for additional information on specific paper applications.

NOTE

Avoid coated paper or paper containing plastic or carbon materials These materials are not compatible with the electrophotographic printing process. Paper should be free from cuts, grease spots, loose particles and wrinkles.

PAPER WEIGHT
Hewlett-Packard recommends 68g/m^2 to 75g/m^2 (18 to 20 pound) continuous bond, fanfold printer paper.

PERFORATIONS
Inter-page perforation (at the page boundaries) tensile strength should average greater than five pounds per square inch.

PAPER SIZE
Recommended paper size is 12 by 8.5 inches (with perforated pin feed strips attached). This size yields 11 by 8.5 inch finished pages when the pin feed strips are removed. In Europe, International Standards Organization (ISO) "A4" equivalent size paper is recommended.

Paper sizes up to 432 mm (17 inches) in length may be used in printing. Paper widths from 165 to 322 mm (6.5 to 12.7 inches) will operate in the printer. Sizes other than the recommended dimensions should be tested to verify performance.

PAPER CONDITIONING
Paper used in the HP 2680A Page Printer should be stored in the same room (same environment) a minimum of twenty four hours before use. It is recommended that the paper container be opened one hour before the paper is used for printing. The moisture content of the paper has a large effect on print quality. For best results, the paper should be stored and printed in an environment of approximately 45% relative humidity.

PAPER AND CONSUMABLES STORAGE

For best results it is recommended that the paper, toner and drum are stored in an environment of approximately 70 degrees F, (21 degrees C) and 45% relative humidity.

PRINT SPEED

The actual throughput of the HP 2680A Page Printer is based on number of pages printed per minute and is dependent on the physical length of each page and complexity of print environment.

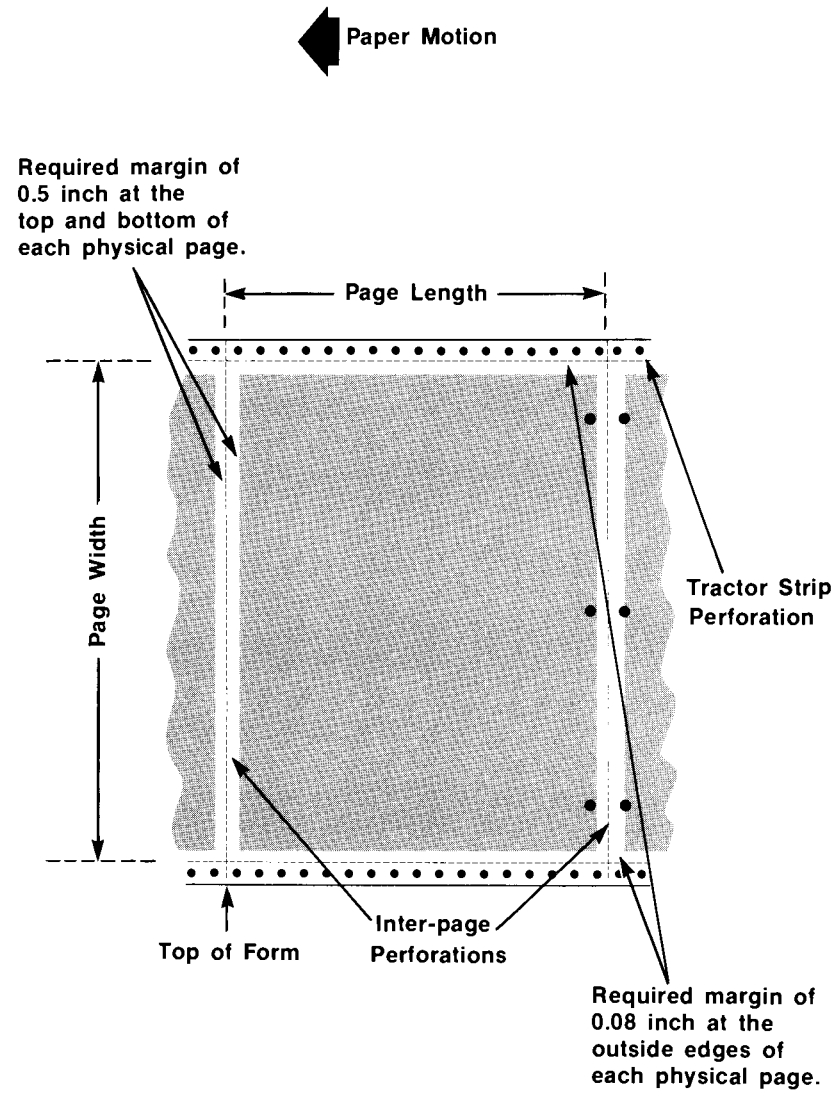
Page Length		Maximum Print Speed
mm	Inches	(pages per minute)
76.2	3.0*	113.7
88.9 to 101.6	3.5 to 4.0*	91.0
114.3 to 139.7	4.5 to 5.5*	68.3
152.4 to 215.9	6.0 to 8.5*	45.5
228.6 to 431.8	9.0 to 17.0	22.7

*minimum length between folds is 152 mm (6 inches).

During the printing process, the HP 2680A Page Printer first forms an image of the printed page on the surface of the photoconductive drum and then transfers the image to paper. The recordable surface area of the drum is approximately seventeen inches in length, therefore more than one page may be printed during one drum rotation (i.e., two 8.5 inch pages, three 5.5 inch pages etc.). The operator should take this into consideration in formatting the print job so that the number of drum rotations can be minimized while the data throughput is maximized. This saves the operator time and paper.

PRINT IMAGE AREA

The physical page is defined as the sheet of paper surrounded by the tractor feed strip and page perforations. Page length is defined as the paper length between inter-page perforations. Page width is defined as the paper width between tractor strip perforations. The print image area relative to the physical page for the HP 2680A Page Printer is shown in Figure 1-1. One-half inch margins are required at the bottom and top of each physical page. A 0.08 inch margin is required between the print image area and the tractor strip perforations.



2680A-01-D

Figure 1-1. Print Image Area

Supplies and Accessories

CONSUMABLE SUPPLIES

Toner	92180A Box of 12 Kg bags
Toner Disposal Bottles	92181A Box of 6 bottles
Carrier	92182A Box of 24, 50 gram bottles
Splice Tape	92183A Box of 6 rolls
Paper	92184A 12 by 8.5 inch, 18 pound bond fanfold
Paper	92184M ISO "A4" 68 gram/square meter bond fanfold

ACCESSORIES

Corona Shield Number 1	(02682-40162)
Corona Shield Number 2	(02682-40163)
Corona Shield Number 3	(02682-40164)
Corona Shield Number 4	(02682-40165)
Corona Shield Number 5	(02682-40166)
Corona Shield Number 6	(02682-40167)
Corona Shield Number 7	(02682-40168)

Refer to Corona Shield Installation in Section III of this manual to determine which corona shield is to be used for which paper width.

Related Manuals

The following materials provide additional information concerning the 2680A printer.

HP 2680A Service Manual	(02682-90904)
HP 2680A Site Preparation Guide	(02682-90906)
HP 2680A Paper Specification Guide	(02682-90913)

Consumable supplies and accessories may be ordered directly from the HP Computer Supplies Center. Direct phone service is available to HP customers within the continental U.S. Orders may be taken from 9 a.m. to 5 p.m. in all time zones. If it is more convenient, orders may be placed with the local HP sales office. In Europe, orders may also be placed with the local HP sales office.

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OPERATOR SAFETY

Safety is a principal rule in working with all electromechanical equipment. While operating the HP 2680A Page Printer, the operator should always keep safety in mind. Although the machine has been designed to comply with industrial safety standards, as listed in Table 1-1, it is still the operator's responsibility to be knowledgeable of safety practices and procedures and to heed all safety labels and indicators.

Caution and warning messages are included throughout this manual. These messages are included to make the operator more aware of potential hazards whether they be electrical or mechanical. The WARNING messages indicate when a specific procedure or practice is not followed correctly, injury to personnel could occur. The CAUTION messages precede procedures which if not observed, could result in damage or destruction to equipment.

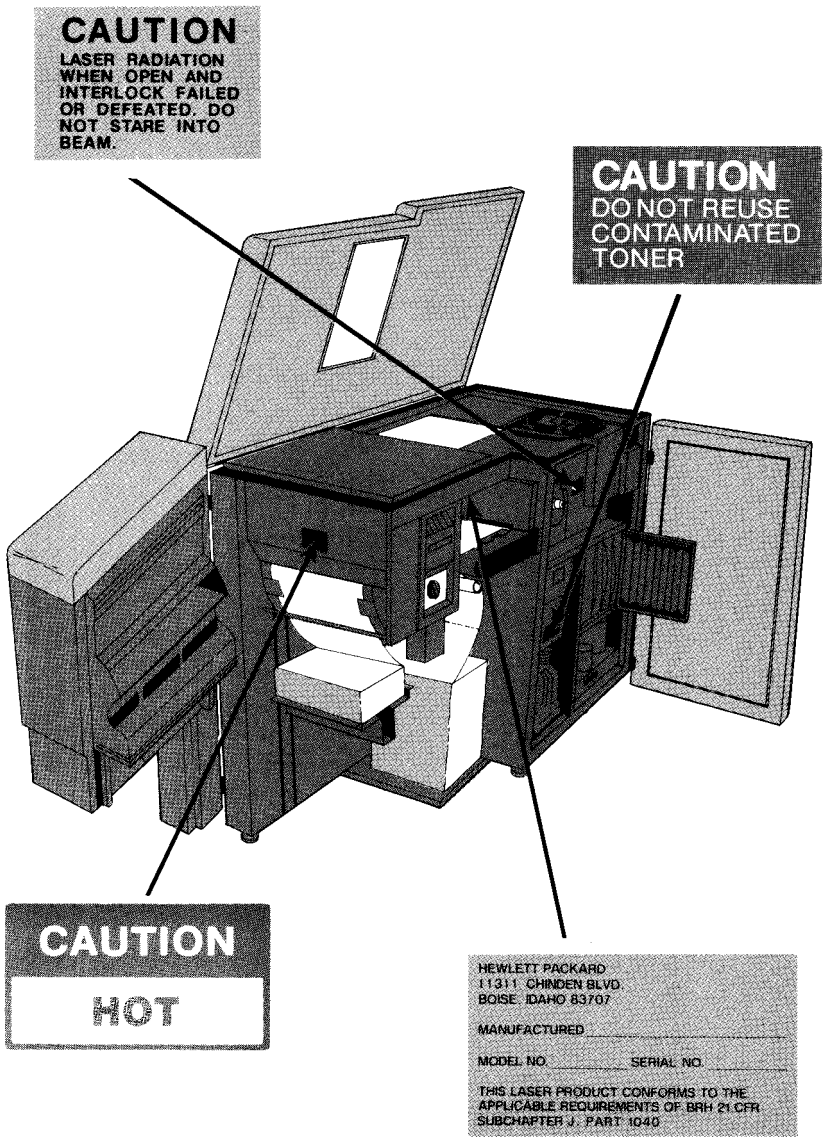
Due to the printer's design, which includes an integration of electronics, mechanics, and laser technology, several areas throughout the printer have been labeled to alert the operator of potential dangers. All labels must be heeded to avoid possible operator injury and possible printer damage. Figure 1-2 identifies the labels and their locations.

In addition to the safety labels, the following safety practices should be observed to prevent operator injury and damage to the equipment:

- Any servicing, adjustment, maintenance, or repair of this printer beyond operator maintenance, must be performed ONLY by trained HP Service Representatives who are aware of the hazards involved.
- Do not place anything under the paper stacker. Before lowering, make certain the area under the stacker is clear to prevent possible injury to feet and legs.
- Keep hands, hair, necklaces, and articles of clothing such as long sleeves away from moving parts of printer.
- Keep covers in place and doors closed while operating printer.
- Do not place liquids or any contaminating substance on top of printer. Possible spillage could result in damage to the printer.
- In handling toner avoid inhalation and ingestion. Do NOT recycle toner recovered by vacuum system. Extensive damage to the printer can occur. Dispose of toner according to the method stated on the toner disposal bottle.
- The preheater area may be hot. Always maintain caution while working near this area.

The following information pertaining to health and safety is stated concerning the HP 2680A Page Printer.

The HP 2680A Page Printer is considered a BRH class I laser device, safe for office/EDP use. The printer contains a five milliwatt, 632.8 nanometer wave length, helium-neon laser. Direct eye or indirect reflected eye contact with the laser beam may cause serious eye damage. Safety precautions and interlock mechanisms have been designed to prevent any possible laser beam exposure to the operator.



2680A-02-D

Figure 1-2. Safety Labels

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

The ozone emission level for the HP 2680A Page Printer is less than 0.1 parts per million (ppm) in a 3 x 3 x 2.5 metre unventilated room. This is within accepted levels and presents no safety hazards to personnel.

The HP 2680A Page Printer is designed in compliance with the codes and regulatory agencies as listed in Table 1-1.

Table 1-1. Safety Compliance Listing

Underwriter's Laboratories, Incorporated (UL 478) Standard of Data Processing Equipment.
VDE 0806 - German Standard for Data Processing Equipment.
VDE 0730 Part 2P - German Standard for Motor Operated Appliances.
VDE 0836 - Electrical Safety of Laser Equipment and Installations.
IEC 380 - International Electro-Technical Commission, Safety of Electrically Energized Office Machines.
IEC 435 - International Electro-Technical Commission, Safety of Data Processing Equipment and Office Machines.
CSA 22.2 Part 154 - Canadian Standards Association.

COMPLIANCE WITH
CANADIAN ELECTRICAL CODE
PRODUCT NOT EXAMINED BY
CSA FOR OTHER ATTRIBUTES.
PRODUCT CONFORME AUX
EXIGENCES DU CODE
CANADIEN, DE L'ELECTRICITE.
L'ACNOR DEGAGE SA
RESPONSABILITE SOUS TOUT
AUTRE RAPPORT.

U.S. Department of Health, Education and Welfare, Bureau of Radiological Health Title 21, Chapter I Sub-Chapter J.

- FOR UNITED STATES ONLY - FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

The Federal Communications Commission (IN 47 CRF 15.805) 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.

State safety codes and regulations may exist covering the installation and operation of a BRH Class I laser device. These rules and regulations may vary from state to state, therefore it is the responsibility of the customer to ensure that all safety codes, rules and regulations are adhered to. HP will provide assistance in helping their customers determine state safety conventions. For more information on this subject, refer to the HP 2680A Site Preparation Guide (HP Part Number 02682-90906).

SECTION II.
CONTROLS AND INDICATORS

Operating the HP 2680A Page Printer consists primarily of the use of the controls and indicators. The following areas are discussed in this section of the manual:

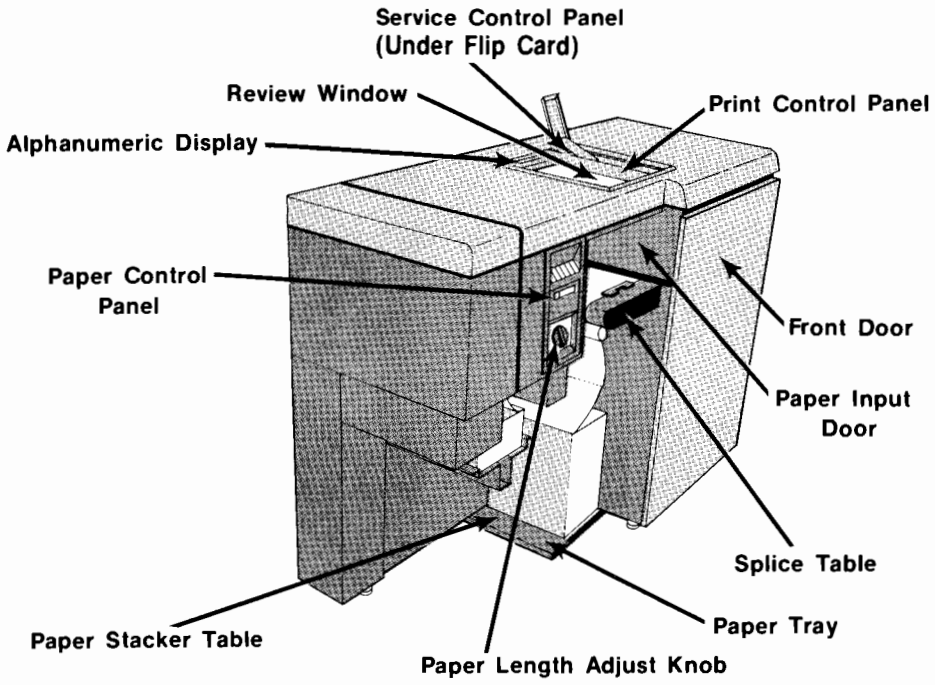


Figure 2-1. HP 2680A Laser Printer

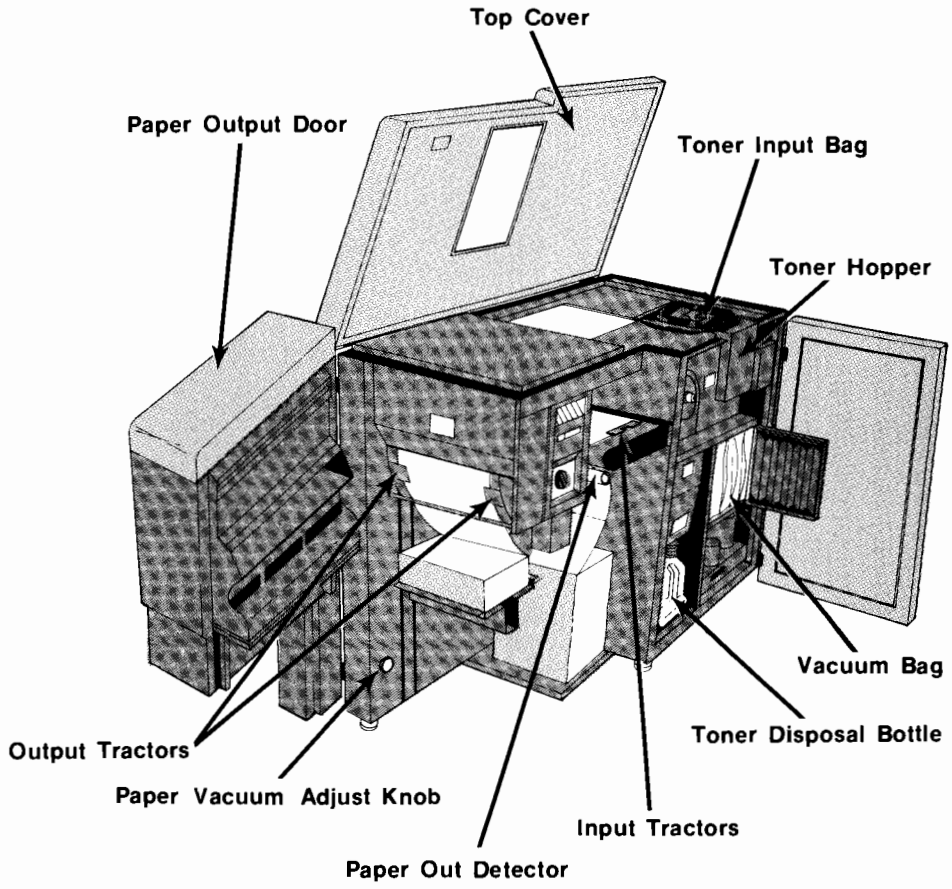


Figure 2-2. HP 2680A Laser Printer (doors open)

POWER CONTROLS

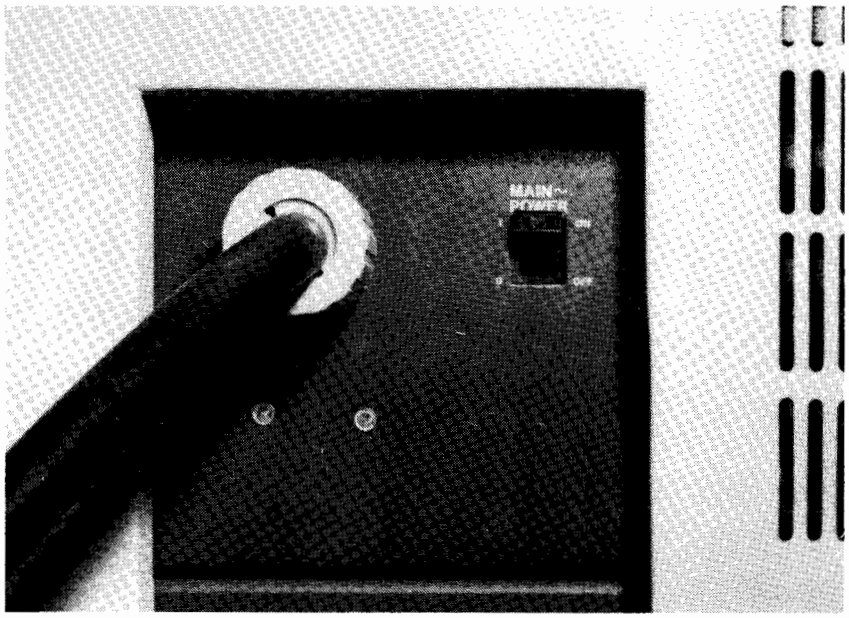


Figure 2-3. Rear MAIN POWER Breaker

Rear MAIN POWER Breaker

Located on the back of the printer, the MAIN POWER breaker provides AC power to the printer. This breaker is normally ON and should only be turned OFF by an HP service representative.

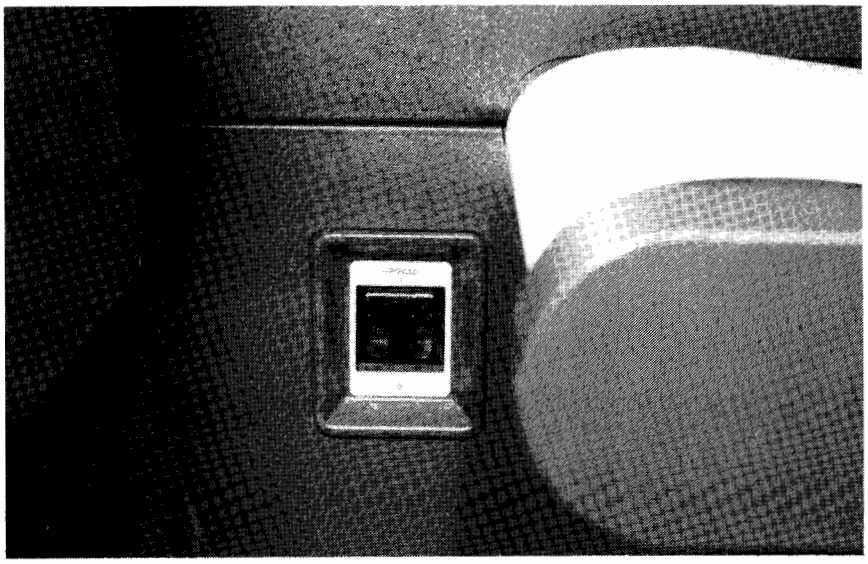


Figure 2-4. Front ON/OFF Switch

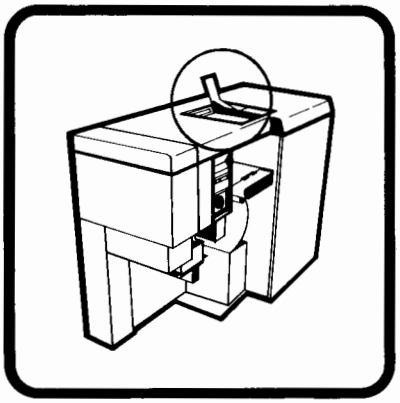
Front ON/OFF Switch

This is the Operator's ON/OFF switch. Located near the paper splicing table, this switch controls AC power throughout the printer. This switch also functions as a circuit breaker and is used to restore power after the breaker has been tripped.

WARNING

When the Front ON/OFF switch is OFF, AC power is still present in the printer's power module, main contactor, and drum heater. The operator should NOT perform maintenance in these areas.

REVIEW WINDOW AREA



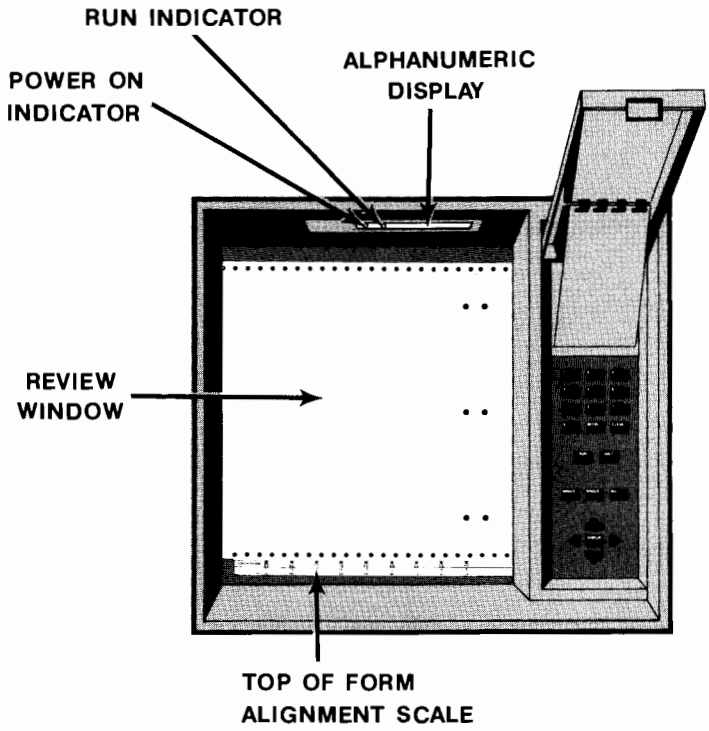


Figure 2-5. Review Window Area

POWER ON Indicator

The POWER ON indicator is a light emitting diode (LED). This indicator illuminates when the rear MAIN POWER breaker and FRONT ON/OFF switches are ON.

RUN Indicator

The RUN indicator illuminates when the printer is either waiting for or printing data.

Alphanumeric Display

The Alphanumeric Display indicator displays specific messages generated either automatically by the printer when certain internal conditions exist, or as a response to a code entered into the printer by the operator or service personnel from the Service Control Panel. Table 5-3 in Section V of this manual contains a listing of the operator messages displayed by the printer.

Review Window

The review window provides a view of the printed page before the toner is permanently fused to the paper. The page seen in the review window is not necessarily the last page printed. Due to the length of the paper path and the length of the paper used in printing, the last printed page (i.e., transferred from the drum to paper) may not be visible in the review window.

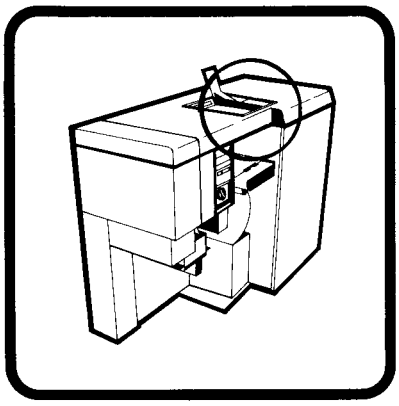
Top of Form Alignment Scale

The Top of Form Alignment Scale, located under the review window, is used to align the top of the physical page. The physical page is the sheet of paper surrounded by tractor strip and page perforations. Refer to the Top of Form alignment procedure in Section III of this manual.

Audible Tone

A short 600 Hz tone is sounded each time an error occurs, a condition requiring operator attention is encountered or an Operator, Service or Paper Control Panel key is pressed.

PRINT CONTROL PANEL



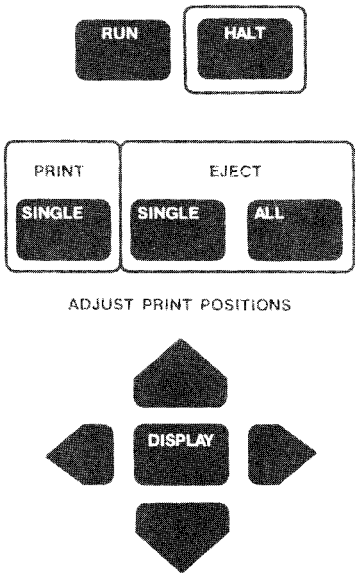


Figure 2-6. Print Control Panel

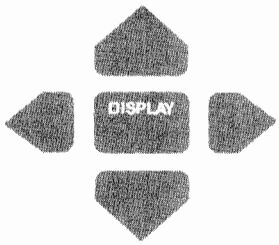
RUN Key

When the RUN key is pressed, the printer accepts data transmitted from the computer and the "**Warming up**" message is displayed until the printer is ready. When the printer is in the RUN mode, all operator keyboard controls are inhibited except: HALT, DISPLAY, ADJUST PRINT POSITIONS, STACK MANUAL; and STACK UP/STACK DOWN (if STACK MANUAL has been selected as the stacking mode).

HALT Key

When the HALT key is pressed, the halt sequence begins and the printer stops printing data after the current page has been printed. All printer control keys are functional when the printer completes its shut down sequence.

ADJUST PRINT POSITIONS Keys

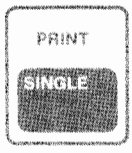


The four arrow shaped keys are used to adjust the position of the print on the paper. Press the key which points in the direction you wish to move the print. Each time you press the key, the image will move 0.28 mm (0.012 inches). If you press and hold the key, multiple incremental movements occur. Maximum image movement Right/Left, Up/Down is +/- 45 increments or 13 mm (0.5 inch) in any direction. When the DISPLAY key is pressed, the cumulative image movement is displayed on the Alphanumeric Display. If printer power is removed, the cumulative image movement is retained.

NOTE

In using the ADJUST PRINT POSITION keys, there is a delay of several pages between the push of the keys and the actual print to paper movement.

PRINT SINGLE Key



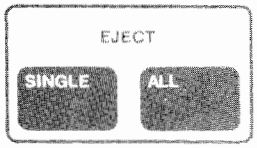
When the PRINT SINGLE key is pressed, a single page is printed. Repeated pressing of the PRINT SINGLE key causes a corresponding number of pages to be printed. The printer returns to a HALT condition after the last page is printed. If only one page of data is printed with this key, the page may not be visible in the review window. Use the EJECT SINGLE key to move the page into the review window.

NOTE

The use of the EJECT SINGLE key causes one or more blank pages to be interspersed in the print job.

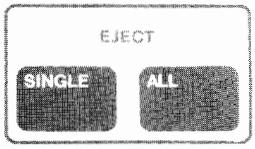
To move a page or pages printed with the PRINT SINGLE key through the fuser and into the stacker, press EJECT ALL. The use of the PRINT SINGLE key in conjunction with the ADJUST PRINT POSITION keys provides the operator a convenient method of aligning printed output on the physical page.

EJECT SINGLE Key



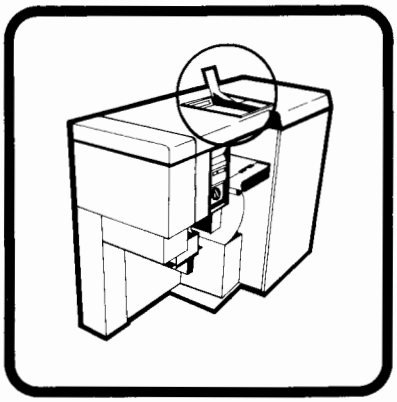
When the EJECT SINGLE key is pressed, the paper is advanced one page length. The fuser is active, therefore paper advanced with this key provides permanent printed output. Multiple pushes of this key cause multiple pages to be fused and ejected.

EJECT ALL Key



When the EJECT ALL key is pressed, all unfused pages are moved through the fuser, and into the stacker. If the operator presses either the EJECT SINGLE or the EJECT ALL keys and an out of paper condition is detected, paper movement stops and the **"Out of paper"** message is displayed. At this time, the operator may either splice on new paper or, if desired, remove all paper from the printer by pushing either key a second time.

SERVICE CONTROL PANEL



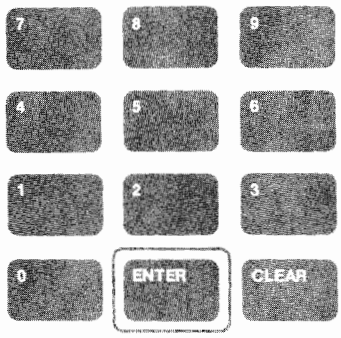


Figure 2-7. Service Control Panel

Service Control Panel Keys

The Service Control Panel, shown in Figure 2-7, is located under a hinged cover just above the Print Control Panel. The Service Control Panel consists of 12 keys: digits zero through nine, an Enter (ENT) key, and a Clear (CLR) key.

These keys are used primarily by qualified Hewlett-Packard service personnel to initiate internal tests and routines which provide information for service and repair procedures. Only the codes specified in Table 2-1 should be entered by the operator unless advised otherwise by service personnel.

CAUTION

Unauthorized use of keyboard commands by personnel other than qualified service representatives may cause possible damage to the printer.

The flip cover which conceals the Service Control Panel contains four index cards which provide the operator with a convenient reference for operating the printer.

The first card is a list of common operator messages plus a diagram which indicates an area within the printer that could be the probable source of the message. These messages are explained in detail along with the appropriate operator action in Section V of this manual.

The second card describes the paper loading procedure. This procedure is discussed in detail in Section III of this manual.

The third card provides an explanation of paper splicing. This is also discussed in Section III of this manual.

The fourth card is a list of operator commands. Each command is discussed in detail in Table 2-1.

Table 2-1. OPERATOR COMMANDS.

Table 2-1. Operator Commands		
COMMAND	FUNCTION	DESCRIPTION
	RESET	This command is used to correct a printer error condition and return all printer functions to to a default state. All buffered print data is lost.
	SELF TEST	When the printer is in the HALT mode, the self test command causes a test pattern to be printed, verifying the operation of the printer. To initiate a continuous self test press  and then  . To terminate the self test mode press  . For more details about this command, refer to the Self Test Procedure in section IV of this manual.
	RESET **"Carrier low"** MESSAGE	The **"Carrier low"** message is displayed when the carrier volume in the developer assembly is low. To add carrier refer to the Adding Carrier procedure in section III of this manual. After carrier has been added, clear message by pressing  . The **"Carrier added? 1=yes"** message is then displayed. The operator must respond by pressing  and  to resume printing.

Table 2-1. OPERATOR COMMANDS.

COMMAND	FUNCTION	DESCRIPTION
	DISPLAY DRUM COUNT	This command displays a cumulative count of drum revolutions from the initial machine installation to the current time. This count is used as a basis for determining a preventive maintenance schedule.
	RESET **"Corona cleaning due"** MESSAGE	At programmed periodic intervals the **"Corona cleaning due"** message is displayed. At this time the operator must clean the corona assemblies. Printing can not be resumed until the corona assemblies have been cleaned. Refer to the Corona Cleaning procedure in section IV of this manual. To clear display press  . The **"Corona clean? 1=yes"** message is displayed. The operator must respond to this message by pressing  and then  to resume printing.
	DISPLAY ADDITIONAL FAULT INFORMATION	When entered, this command displays additional information further identifying the cause of a **"Hardware malfunction"** or **"Advisory condition"**. For explanation of this information refer to table 5-1; if listed in the table, note the information and relay to the HP Service Representative.

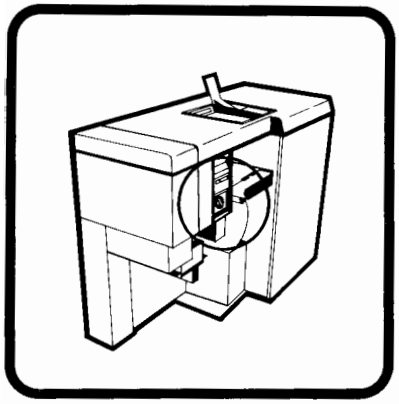
Table 2-1. OPERATOR COMMANDS.

COMMAND	FUNCTION	DESCRIPTION
6 ENTER	JAM RECOVERY MODE	This mode permits the operator to slowly move the paper through the active fuser, via the PAPER FORWARD key, so that Top Of Form can be re-established. If paper is moved without entering this mode, unfused (non-permanent) print is advanced. Jam Recovery Mode automatically terminates whenever the PAPER FORWARD key has not been used for five seconds or whenever HALT is pressed. Refer to Jam Recovery Mode operation in section V for a more detailed explanation of this command.
7 ENTER	RESET **"Disposal bottle full"** MESSAGE	At programmed periodic intervals the **"Disposal bottle full"** message is displayed. At this time, the operator must replace the waste toner bottle. Failure to do so will result in inability to clear message and may cause damage to the printer. Refer to the disposal bottle replacement procedure in section IV in this manual. To clear display Press 7 ENTER The **"Bottle empty? 1=yes"** message is displayed. The operator must respond to this by pressing 1 ENTER and then RUN to resume printing.
8 ENTER	ENTER/ DISPLAY PAGE LENGTH	This command is used to enter or display the page length in the printer's memory. This value is used by the Data Control System to organize print data into a page format

Table 2-1. OPERATOR COMMANDS.

COMMAND	FUNCTION	DESCRIPTION
		corresponding to the page length of the paper currently installed. To initially enter the page length press  . The **"Page length = ?"** message is displayed. The operator may now enter the page length by pressing the appropriate keys on the Service Control Panel. The length entered must be in 0.1 inch increments (i.e., 6 inch = 60, 8.5 inch = 85, 17 inch = 170...). To display the current page length in memory, press  . The **"Page length = ?"** message is displayed. Pressing  a second time, displays the current page length.
	DISABLE PAPER MISFOLD DETECTOR	This command disables the paper misfold detector in the power paper stacker and causes the **"Misfold detector dsb"** message to be intermittently displayed. This command is often useful when an excessive number of false paper misfolds are detected. This situtation may occur while printing on paper of short page lengths.
	ENABLE PAPER DETECTOR	This command enables the paper misfold detector.

PAPER CONTROL PANEL



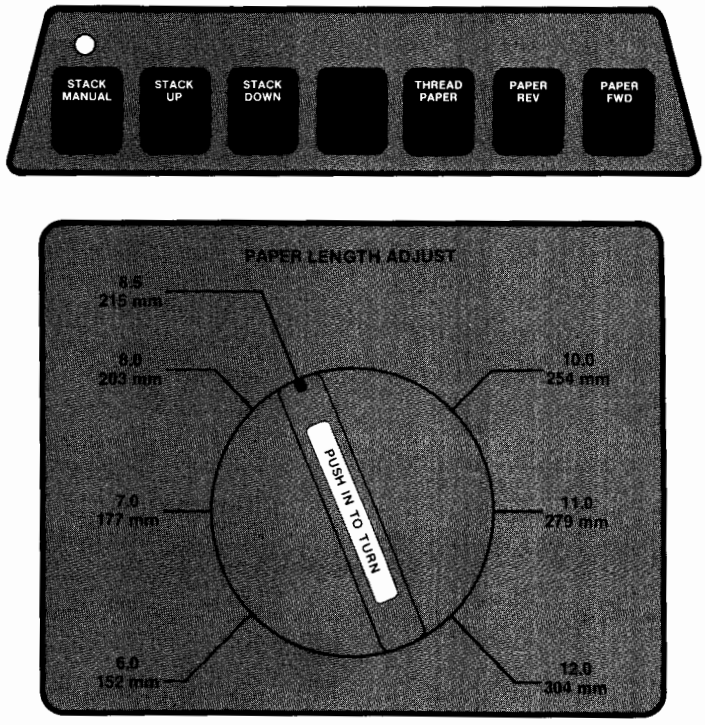


Figure 2-8. Paper Control Panel

STACK MANUAL Key

Under normal operating conditions, the paper stacker table automatically adjusts to the height of the paper stack. Pressing the STACK MANUAL key terminates automatic stacking and provides the operator manual control over the height of the stacker table through the use of the STACK UP/STACK DOWN keys. The STACK MANUAL key may be used while the printer is printing. This feature provides the operator easy access to the paper stack so that paper can be removed while the printer is in operation.

NOTE

With either automatic or manual stacking, the paper stacker cannot be raised if the paper output door is open.

When in the Stack Manual Mode, if the stacker is not manually lowered before the stack becomes excessively high, a stacker paper height sensing device automatically causes the stacker to be lowered. Additionally, the use of any control key which causes paper to move (for example, EJECT ALL) also causes the stacker to lower if the paper movement raises paper to a height which activates the paper height sensing device.

WARNING

Do not place anything under the paper stacker. Before lowering the stacker, make certain the area under the stacker is clear to prevent possible injury to feet and legs and possible damage to stacker assembly.

The LED indicator above the STACK MANUAL key illuminates when manual stacking is selected.

NOTE

Always return the printer to the automatic paper stacking mode after using the stack manual mode. This prevents a possible paper pile-up if printing is resumed and the printer is inadvertently left in the stack manual mode.

STACK UP/ STACK DOWN Keys

When pressed, the STACK UP and STACK DOWN keys control the upward and downward movement of the paper stacker table Pressing the key once moves the table in the direction indicated. Pressing either key stops the table at its current position. These keys function at all times when manual stacking is selected except when the output paper door is open; in this case the STACK UP key is inoperative. In the HALT mode, the STACK UP/STACK DOWN keys are functional in either the automatic or manual stacking modes.

NOTE

If your HP 2680A printer is equipped with Option 525, the blank key on the Paper Control Panel (see Figure 2-8) represents the SPLICE key. In the following explanation, the word "SPLICE" appears in the text and on the example key for identification purposes only.

SPLICE Key

With an HP 2680A printer equipped with Option 525, the SPLICE key is provided as an operator convenience to aid in paper splicing. When the SPLICE key is pressed, a vacuum is diverted to the paper splicing table which holds the paper firmly in place while the splice is being performed. Pressing the SPLICE key a second time turns the vacuum off. This key functions only when the printer is in the HALT mode, and only when the printer is equipped with Option 525.

THREAD PAPER Key

The THREAD PAPER key is provided for the initial loading of paper. This key moves the transfer assembly to allow the paper to pass freely through the drum area. When the THREAD PAPER key is continuously depressed, paper is advanced at half the normal speed from input paper tractors through the drum area. The operator should release the key when the paper emerges from the drum area (refer to the Paper Loading instructions in Section III of this manual).

PAPER REVERSE/ PAPER FORWARD Keys

When pressed the PAPER REVERSE and PAPER FORWARD keys move paper in either the reverse or forward direction. When the keys are depressed and held down, paper moves continuously through the printer. The PAPER FORWARD key moves paper in one-half inch increments and must be used when performing Top of Form alignment. The PAPER REVERSE key is used to move paper in the reverse direction. Since the output paper tractors do not reverse, PAPER REVERSE can only be used to move paper in the paper input tractors. The PAPER REVERSE key does not move paper in one-half inch increments, therefore it cannot be used in Top of Form alignment.

NOTE

After using the PAPER REVERSE key, the operator should push the PAPER FORWARD key to reposition the paper input tractors so that paper is moved in one-half inch increments. Additional pushes of the PAPER FORWARD key moves the paper.

PAPER LENGTH ADJUST

After the paper leaves the output paper tractors, it enters the paper stacker. To aid in folding the paper as it enters the paper stacker, the HP 2680A Page Printer uses a chain box assembly. This assembly stacks paper of various lengths. The chain box consists of five chains which rotate against the paper causing the paper to fold down into the stacker.

The PAPER LENGTH ADJUST knob (see Figure 2-9) adjusts the position of the chain box to accommodate the length of the paper being used. To adjust the knob, push in and turn. The chain box is adjustable for page lengths from 152 mm to 304 mm (6 inch to 12 inch).

NOTE

Any paper with a page length other than that of "A4" or 8.5 inches requires the Auxiliary Stacker Tray. Refer to Section III of this manual for Auxiliary Stacker Tray Installation.

Paper longer than 304 mm (12 inches), must be manually stacked by placing the paper stacker in the STACK MANUAL mode, lowering the paper stacker table and allowing the paper to stack unassisted.

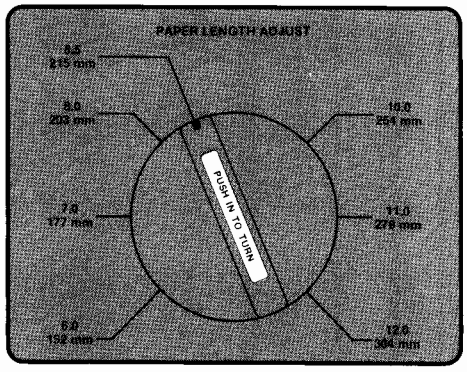


Figure 2-9. Paper Length Adjust

SECTION III. PREPARING THE PRINTER FOR USE

This section is written primarily to assist the operator in the HP 2680A Page Printer for use. The following procedures are contained in this section:

Although not all of these procedures must be performed each time the printer is operated, it is important the operator read and be able to perform each procedure.

CORONA SHIELD INSTALLATION

The corona shield is a U-shaped plastic insert which is installed in the Transfer Corona Assembly. The shield prevents toner from being attracted to the unused portion of the corona assembly. Various size corona shields are required for different paper widths. The paper width sensor, located on the input paper tractors, determines which corona shield must be used. Whenever the paper width is changed, the "**Use shield # X**" message is displayed. The "**X**" refers to the shield number which is to be used. Table 3-1 lists which shield must be used with a corresponding paper width. Corona shields are located in a holding bracket inside the front door and should always be stored there when not used. If the size of paper used in the print job (for example 7 inches) does not fall within the ranges listed in Table 3-1, the "**Use custom shield**" message is displayed. In this situation, a custom-made shield must be installed. Custom shields can be made by the local HP service representative. Contact the Service Office if a custom shield is needed.

If the proper shield is installed, press RUN to clear the message and continue. If the proper shield is not installed perform the following installation procedure:

NOTE

The operator is responsible for ensuring that the correct corona shield is installed. The printer specifies which shield is to be used, but cannot determine which shield has been installed. If the correct shield is not installed, printed output may degrade, life expectancy of corona wires may be shortened, and unnecessary cleaning of the preheater may be required by the service representative.

A. Place Front ON/OFF switch to OFF.

B. Open the printer front door. The front door latch is located behind the paper input door (see Figure 2-1). Opening the paper input door (the door hinges up) exposes a release button. Pressing on the button releases the front door latch.

C. Remove the transfer corona assembly (see Figure 4-1) by grasping the corona handle (L-shaped bracket labeled "Transfer") and carefully pulling outward away from the printer.

CAUTION

Care should be taken when handling the corona assembly. Corona wires are extremely delicate. Avoid touching end blocks and corona wires since skin oils and other contaminants could cause premature failures.

Table 3-1. CORONA SHIELD SIZES.

Shield Number	Paper Width Range *	
	mm	inches
No shield required	greater than 308	12 1/8
1	301 to 308	11-7/8 to 12-1/8
2	295 to 301	11-5/8 to 11-7/8
3	266 to 273	10-1/2 to 10-3/4
4	247 to 254	9-3/4 to 10
5	238 to 244	9-3/8 to 9-5/8
6	212 to 219	8-3/8 to 8-5/8
7	161 to 168	6-3/8 to 6-5/8

* Includes the two tractor pin feed strips.

D. Place the transfer corona assembly on a clean working surface. It is advisable to place the corona assembly on a sheet of paper since toner and other debris from the corona assembly could soil the working surface.

E. Install the appropriate corona shield specified by the display message. Grasp the shield by the fingertip handle and insert the shield into the transfer corona assembly (see Figure 3-1). Ensure that the shield is positioned firmly against the end block and that the corona shield's handle faces the cutout flange on the transfer corona assembly.

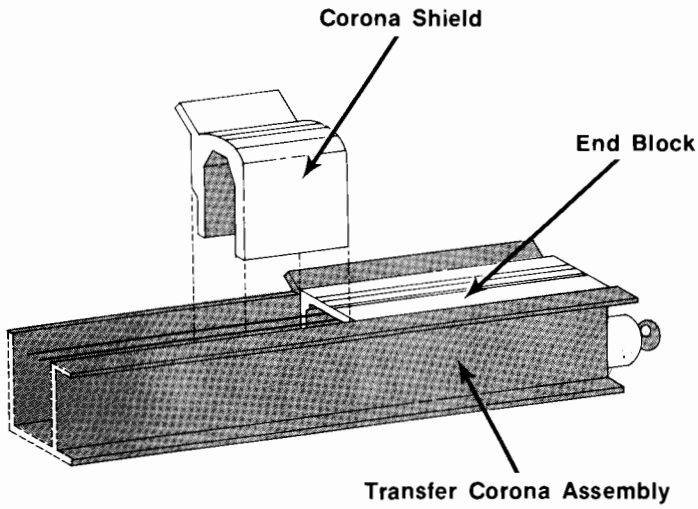


Figure 3-1. Corona Shield Installation

CAUTION

To avoid possible damage to drum surface, make certain the corona assembly is properly aligned in its guide rail when reinstalling.

F. Reinstall the transfer corona assembly in the printer and close all doors.

G. Place Front ON/OFF switch to ON.

H. Press RUN to clear the message and continue.

PAPER LOADING

When loading paper, the printer must be in HALT mode with the front door closed and the power ON. Load paper as follows:

A. Position the paper on the tray beneath the splice table. The paper should be positioned directly under the table and parallel to the input tractors.

NOTE

The paper should be removed from its container before being placed on the paper tray. If this if found to be awkward, the container can be placed on the tray and then cut away leaving the paper.

B. Fold approximately two feet of paper, as shown in Figure 3-2. Ensure the leading edge of the paper retains the original folding pattern. Thread paper around the paper out sensor assembly and place the leading edge on the splice table. The folded sheets will be used later in threading paper through the preheater.

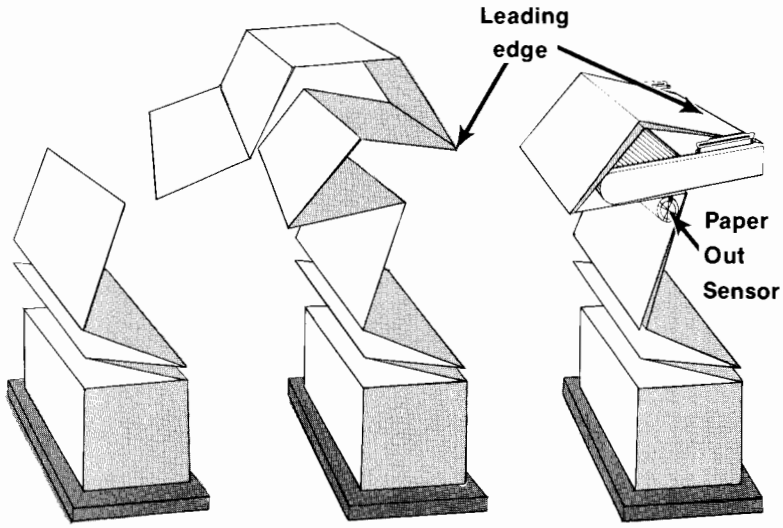


Figure 3-2. Preparing Paper to be Loaded

C. Open the input paper tractors. Note that the front tractor is fixed while the rear tractor is adjustable.

D. While aligning the leading edge of the paper, as shown in Figure 3-3, close the front tractor. Ensure that the leading paper tractor hole is aligned with the leading pin on the input tractor. Adjust the rear tractor to match the paper width.

NOTE

When adjusting the tractors to the paper width, adjust so that paper web is firm in the center (showing minimal sag) but not so firm as to cause tractor hole deformation.

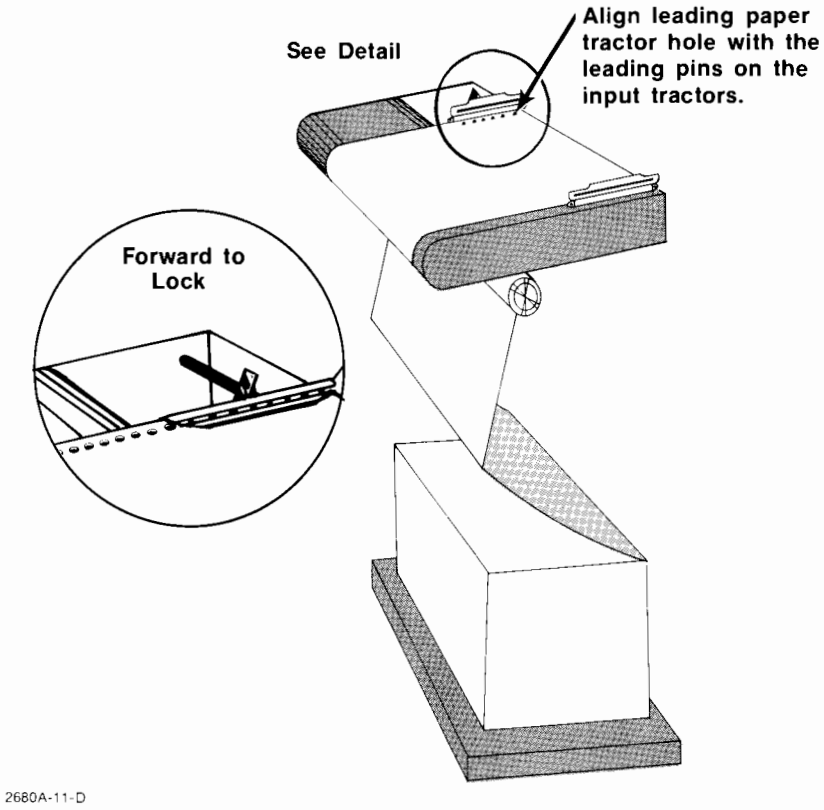


Figure 3-3. Alignment of Leading Edge of Paper with Tractor Pins

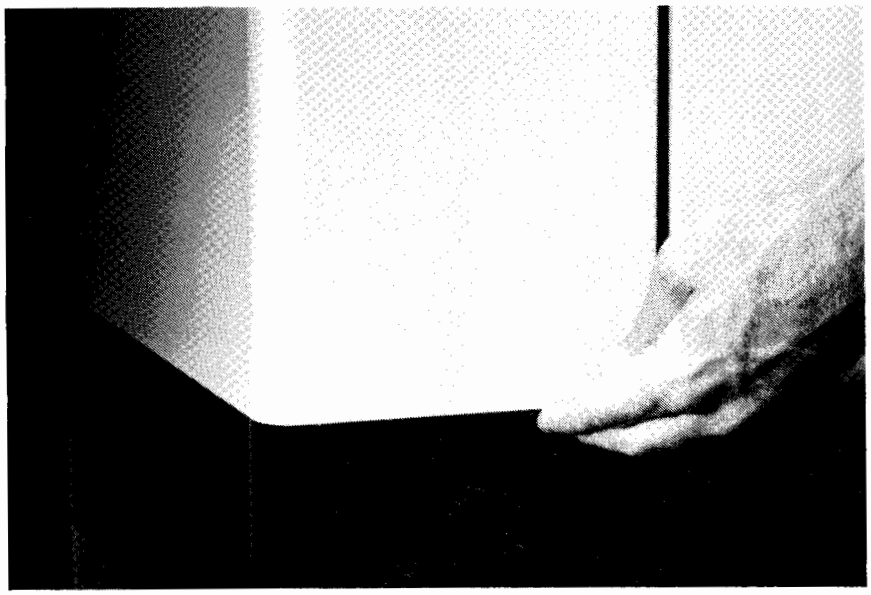


Figure 3-4. Paper Output Door Latch

E. Make certain the paper is not skewed; then clamp and close the rear tractor. The tractor clamp must be positioned forward to be locked (see insert in Figure 3-3).

F. Open the printer top cover exposing the paper path and the preheater areas.

G. Open the paper output door. Door latch is located underneath the front left-hand corner of the printer (see Figure 3-4).

H. Press and hold the THREAD PAPER key on the Paper Control Panel until the paper just emerges from the electrophotographic area of the printer (see Figure 3-5), then release the key.

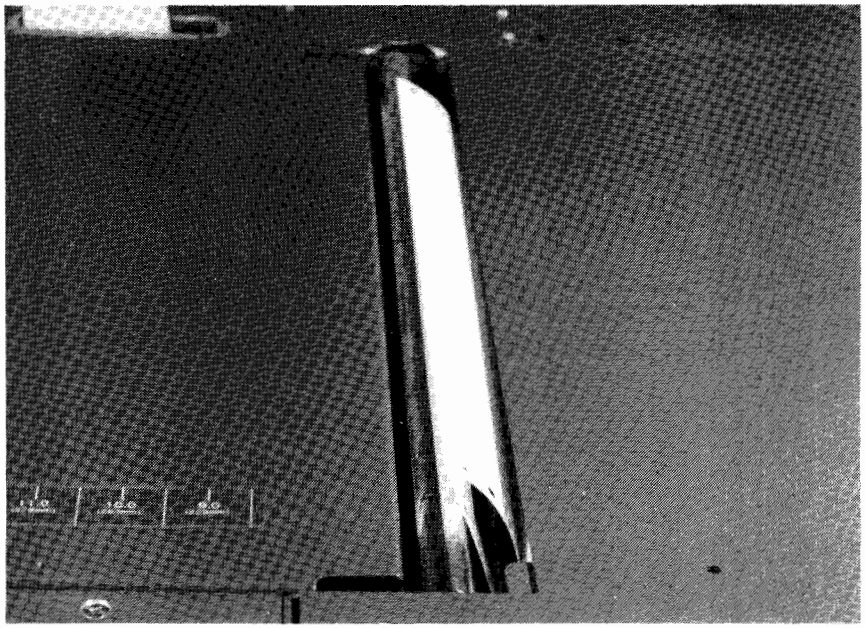


Figure 3-5. Paper Emerging from Electrophotographic Area

NOTE

The THREAD PAPER key moves the transfer assembly which allows the paper to freely move through the drum area. If the key is released before the paper has passed through the area, the paper must be reversed via the PAPER REVERSE key, and restarted from the input tractors (see Figure 3-3).

I. Using one hand, grasp the edge of paper (as shown in Figure 3-6). Apply slight tension to the paper while depressing the PAPER FORWARD key until doubly folded paper is out of the electrophotographic area of printer.

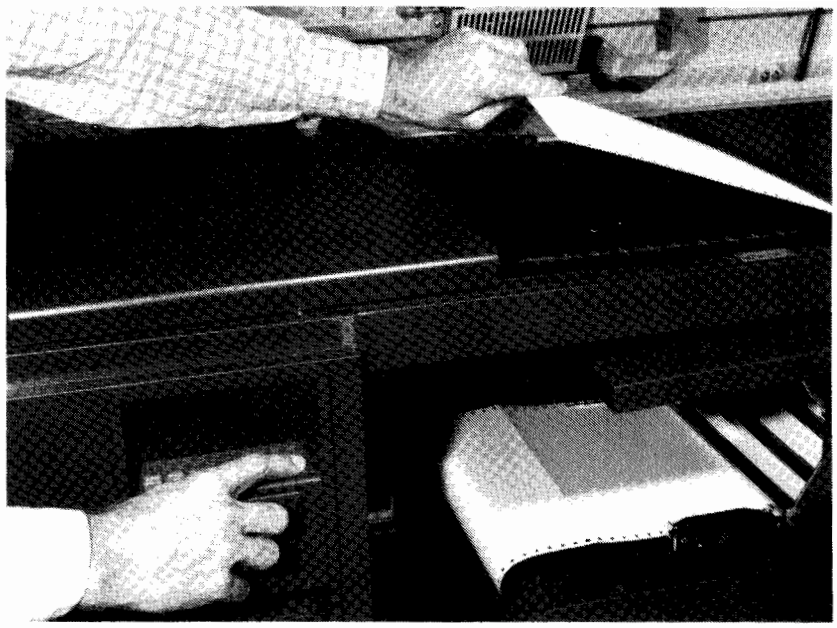


Figure 3-6. Pulling Paper through Electrophotographic Area

J. Unfold the paper, folded in step B, and feed it through the preheater area to the output tractors (pinwheels).

NOTE

This adjustment is for cold paper only, the tractor must be readjusted when using hot (fused) paper, see step P.

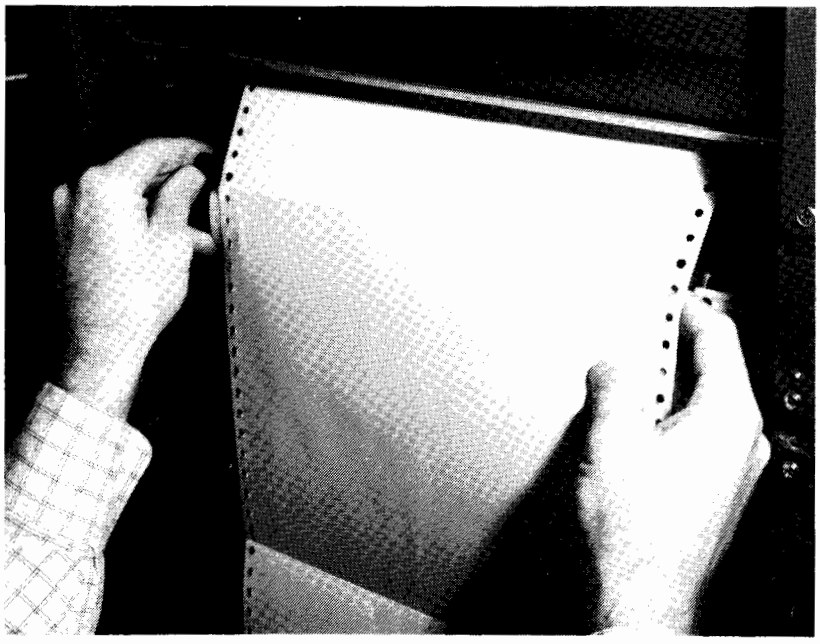


Figure 3-7. Output Paper Tractors

K. Adjust the output tractors to the paper width (see Figure 3-7). The right tractor is fixed and cannot be adjusted. Move the left tractor by rotating the tractor clamp release knob. If the adjustment knob is located to the rear of tractor and is difficult to grasp, manually rotate the tractor until the adjustment knob is in front.

L. When the tractors have been adjusted and the paper is securely held by the tractor, tighten the tractor clamp knob.

M. Set the PAPER LENGTH ADJUST selector, below the Paper Control Panel, to correspond to the page length of the paper.

N. Use the PAPER FORWARD key to move paper through the output tractors into the stacker.

NOTE

It is important that the folding pattern of the paper entering the stacker is the same as that of the paper exiting the box.

O. The stacker width adjustment, located on the paper output door, must be adjusted to the width of the paper. When making this adjustment, include the two tractor carrier strips (i.e., 11 inch wide paper with the two one-half inch carrier strips would be positioned at the 12 inch setting). Adjust by pushing up on the lever (see Figure 3-8) and sliding the compactor guide to the correct position.

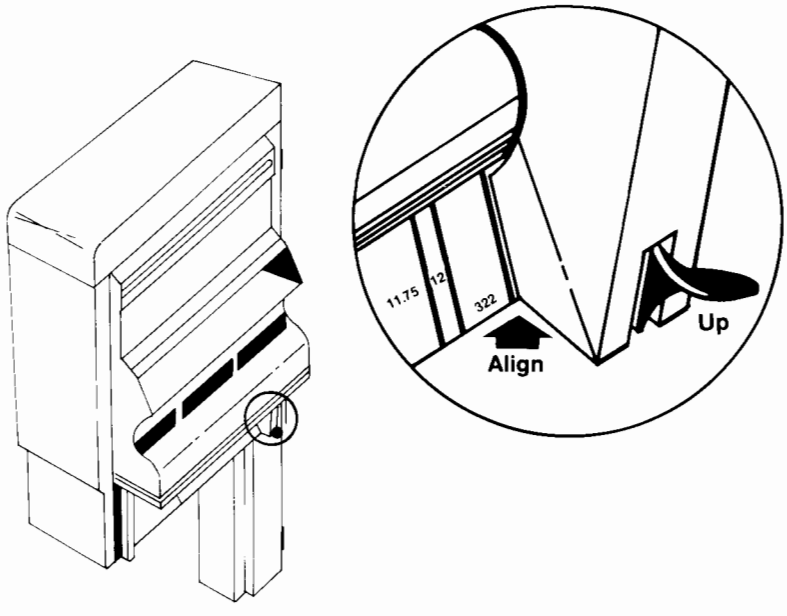


Figure 3-8. Stacker Width Adjustment

P. Close the paper output door. Make certain the latch is secure.

NOTE

Paper tends to shrink significantly once it is heated by the preheater and fuser, therefore it is essential that the output tractors be readjusted once hot (fused) paper is available at the output paper tractors.

Q. Use either the EJECT ALL key or the PRINT SINGLE key, if data is available, to move several pages of hot (fused) paper through the printer. Open the paper output door and readjust the output tractors to paper. Repeat sequence as often as necessary until paper hole deformation is no longer evident (see Figure 3-9).

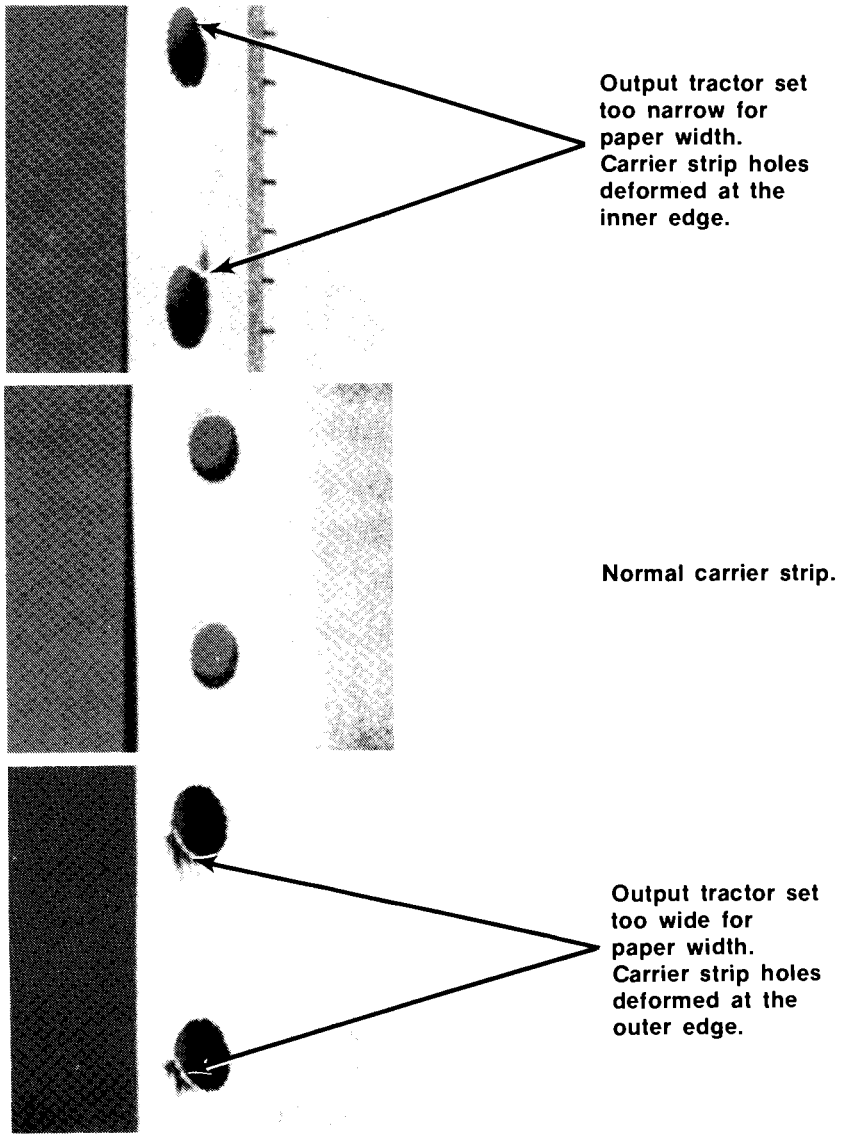


Figure 3-9. Paper Hole Deformation

TOP OF FORM ALIGNMENT

Once paper is loaded, align the page perforations to the correct corresponding page length alignment mark visible in the review window to prevent printing outside the boundaries of the print image areas (see Figure 1-1). Page length for the HP 2680A Page Printer is defined as the distance between page perforations.

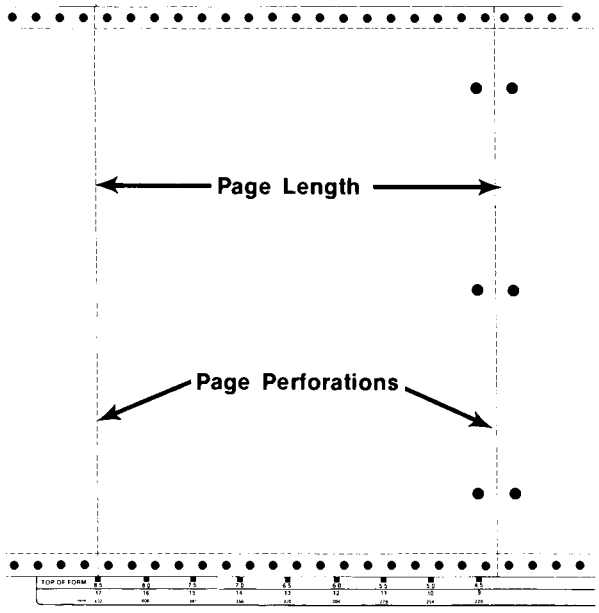


Figure 3-10. Page Length

Each alignment mark has two sets of numbers associated with it. This denotes that more than one page length can be adjusted to the same alignment mark. To align the perforation, proceed as follows:

A. Use the PAPER FORWARD key to move paper perforation to the correct page length alignment mark, (see Figure 3-11). The PAPER FORWARD key is the only key which may be used since it moves paper in one-half inch increments. The PAPER REVERSE key can NOT be used for this alignment.

B. When alignment is complete, press the RUN key to start operation.

NOTE

Tractor hole to page perforation spacing may vary from box to box of paper. It may be necessary to fine adjust the print output on the page with the ADJUST PRINT POSITION keys. This adjustment does not change the location of the page perforation alignment with respect to the Top of Form scale but changes the position of the print image on the paper.

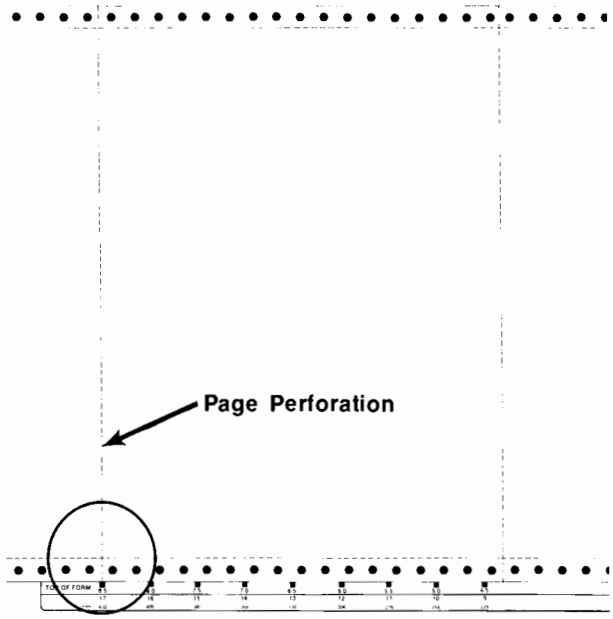


Figure 3-11. Top Of Form Alignment (Page length=8.5 inches)

PAGE LENGTH ENTRY

When paper is initially loaded in the printer, or whenever it is changed to a paper of a different page length (see Figure 3-10), the page length must be entered into the HP 2680A Page Printer's memory. This value is used by the Data Control System to organize the print data into a page format corresponding to the page length of the paper currently installed.

NOTE

The page length can not be changed if data is present in the printer's memory waiting to be printed.

Only page lengths of multiple one-half inch increments may be used in the HP 2680A Page Printer. Page lengths greater than 17 inches or less than three inches are not allowed.

To initially enter the page length press 8 at the Service Control Panel. The **"Page length=?"** message will be displayed. The operator may now enter the page length by pressing the appropriate keys on the Service Control Panel. The length entered must be in 0.1 inch increments (i.e., 6 inch length = 60, 8.5 inch length = 85, 17 inch length = 170...).

To display the current page length in memory, press 8 . The **"Page length=?"** message will be displayed. Pressing a second time displays the current page length.

AUXILIARY STACKER TRAY INSTALLATION

If printing is performed on paper other than "A4" equivalent or 8.5 inch length paper, the auxiliary stacker tray must be installed. To install the tray proceed as follows:

A. Press the STACK MANUAL key on the Paper Control Panel to put the printer in the stack manual mode.

B. Press STACK DOWN key and lower the stacker table to its maximum extent.

C. Position the stacker tray directly over the stacker table and apply pressure to seat the tray on the table (see Figure 3-12). Ensure the tray is firmly seated on the stacker table.

For page lengths greater than 304 mm (12 inches) or less than 152 mm (6 inches), paper must be stacked manually. To do so, leave the printer in the manual stacking mode and allow the paper to stack unassisted. Proceed to step F.

For page lengths from 152 mm (6 inches) to 304 mm (12 inches), the automatic paper stacking mode may be used. Proceed to step D.

NOTE

Stacking paper of these lengths requires adjustment of the chain box assembly. See Page Length Adjust in Section II of this manual.

D. Press the STACK UP key to raise the stacker table.

E. Press the STACK MANUAL key to return the printer to the automatic stacking mode.

F. Press RUN to resume printing.

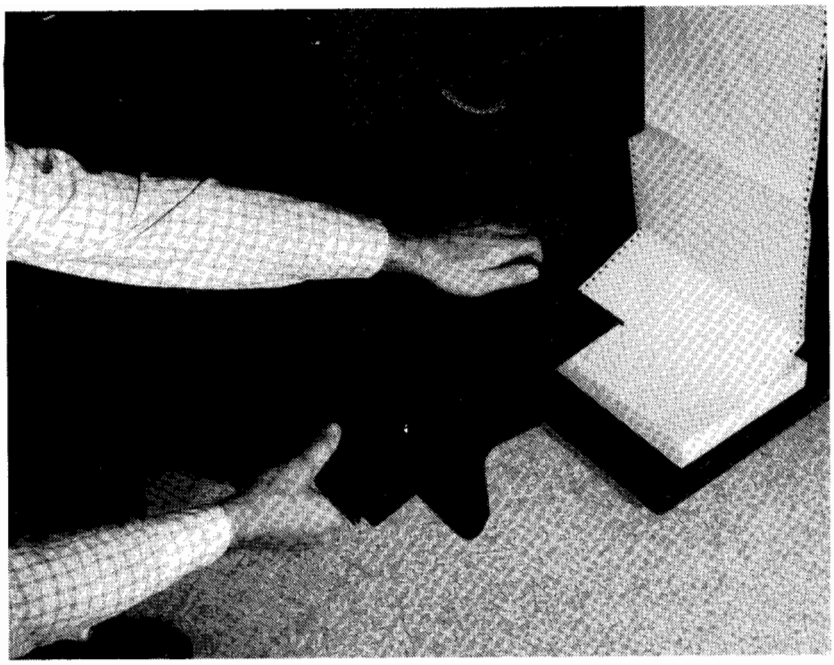


Figure 3-12. Auxiliary Stacker Tray Installation

NOTE

The operator should help start the paper stack by ensuring that the paper starts stacking in the same direction as it was folded when in the box.

PAPER SPLICING

In the event the HP 2680A Page Printer runs out of paper, an **"Out of paper"** message is displayed and printing ceases. This condition is indicated when the PAPER OUT sensor detects an absence of paper. In order to avoid the task of reloading paper, the convenience of magnetic paper splicing has been provided. If the printer is equipped with Option 525, a vacuum splicing option has also been provided. To splice paper using vacuum splicing, proceed to **OPTION 525 - VACUUM PAPER SPLICING**. To splice paper using magnetic splicing, proceed as follows:

Magnetic Paper Splicing

A. The trailing edge of the old paper should be positioned approximately in the middle of the splice table as shown in Figure 3-13. If the paper does not stop in this position when a paper out occurs, the operator may advance the paper by use of the EJECT SINGLE key or by using Jam Recovery Mode (see Section V of this manual) to establish this position. If desired, the last page can be buckled as shown in the insert in Figure 3-13 to position the paper.

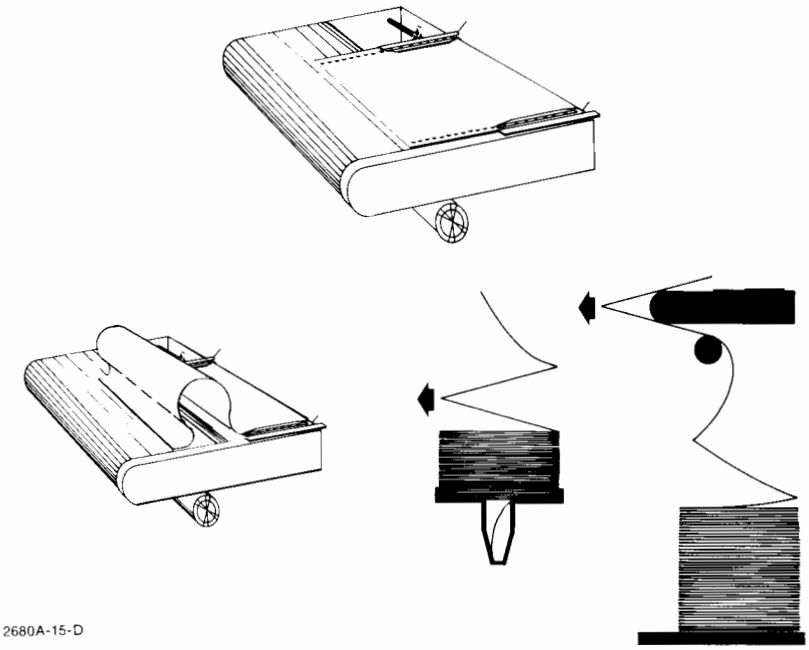


Figure 3-13. Correct Paper Position for Splicing

B. Thread new paper around the paper out sensor and align the leading edge of the new paper next to the trailing edge of the old paper.

C. Position the magnetic splicing strips (HP Part Number 02682-60501) on the pages to be spliced as shown in Figure 3-14; the magnetic strips should be postioned parallel, and approximately two inches from the edges to be spliced.

NOTE

To ensure that the splice folds correctly when it enters the stacker, verify that the natural fold of the new paper being spliced matches the natural fold of the paper lying in the stacker (see arrows in Figure 3-13).

D. Apply splicing tape to the edges of the paper being joined as shown in Figure 3-14. A minimum of three pieces of tape are required, and should be positioned along the page perforation and not overlapping one another. Avoid taping in the paper carrier strips and binder holes.

CAUTION

Use only recommended splicing tape (HP Part Number 92183A). This is a high temperature tape which is able to withstand the temperatures of the preheater and fuser areas. Use of other tapes may damage the printer and constitute a fire hazard.

E. Remove the magnetic splicing strips from the splice table. When not in use, the magnetic splicing strips can be attached to the printer wall opposite the splice table.

NOTE

The magnetic strips are easily removed by pressing on the curved edge of the strip thereby causing the magnetic splicing strips to roll free from the surface of the splice table.

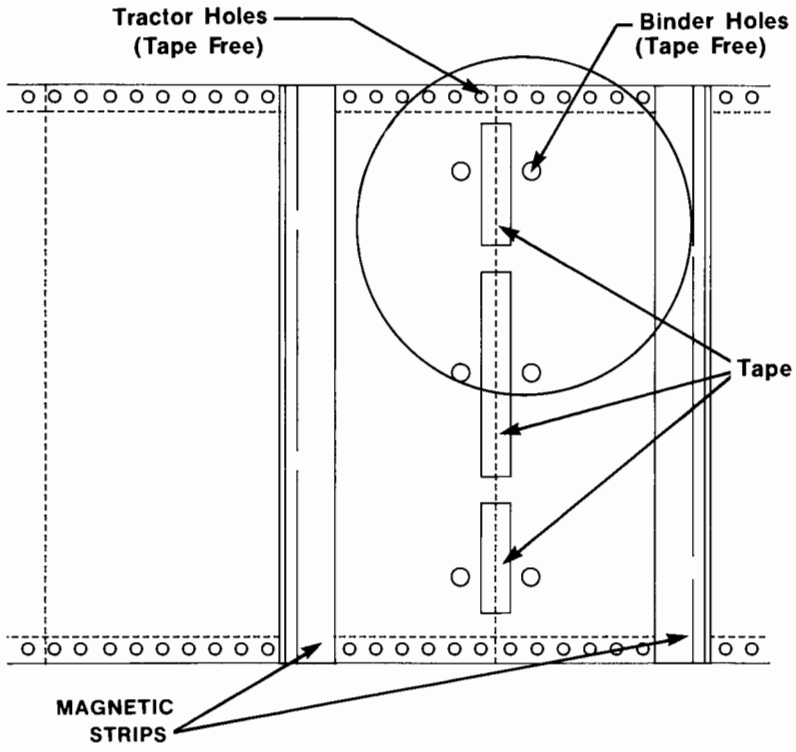


Figure 3-14. Paper Splicing.

NOTE

Tractor hole to page perforation spacing may vary from box to box. Adjustment of the print image to paper with the ADJUST PRINT POSITION may be necessary.

The Operator should observe the splice as it enters the stacker. Manual folding of the splice as it enters the stacker may be necessary.

Option 525 - Vacuum Paper Splicing

A. The trailing edge of the old paper should be positioned approximately in the middle of the splice table as shown in Figure 3-13. If the paper does not stop in this position when a paper out occurs, the operator may advance the paper by use of the EJECT SINGLE key or by using Jam Recovery Mode (see Section V of this manual) to establish this position. If desired, the last page can be buckled as shown in the insert in Figure 3-13 to position the paper.

B. Press the (unmarked) SPLICE key on the Paper Control Panel. This activates a vacuum system which holds the paper to the table while splicing is being performed.

C. Thread new paper around the paper out sensor and align the leading edge of the new paper next to the trailing edge of the old paper.

NOTE

To ensure that the splice folds correctly when it enters the stacker, verify that the natural fold of the new paper being spliced matches the natural fold of the paper lying in the stacker (see arrows in Figure 3-13).

D. Apply splicing tape to the edges of the paper being joined as shown in Figure 3-14. A minimum of three pieces of tape are required, and should be positioned along the page perforation and not overlapping one another. Avoid taping in the paper carrier strips and binder holes.

CAUTION

Use only recommended splicing tape (HP Part Number 92183A). This is a high temperature tape which is able to withstand the temperatures of the preheater and fuser areas. Use of other tapes may damage the printer and constitute a fire hazard.

E. Press SPLICE or RUN to turn off the vacuum.

NOTE

Tractor hole to page perforation spacing may vary from box to box. Adjustment of the print image to paper with the ADJUST PRINT POSITION may be necessary.

The operator should observe the splice as it enters the stacker. Manual folding of the splice as it enters the stacker may be necessary.

JOB SEPARATION MARKS

Job separation marks are one millimeter by 0.5 centimeter (0.02 x 0.2 inch) marks printed on each physical page just inside the tractor strip perforations. These marks are provided to assist the operator in identifying separate print jobs.

Job separation marks are written during alternate print jobs (see Figure 3-15). If desired, the writing of the job separation marks can be disabled by the host system.

Below is an example of how job separation marks appear in the stack and on the paper.

NOTE

The job separation mark is printed only once per drum rotation (i.e., if the job is being printed on 8.5 inch page length paper, the mark would only occur on every other page.

There are no job separation marks on 17 inch paper.

Jobs with an odd number of pages will sometimes have the job separation marks on the inside fold where they are not visible.

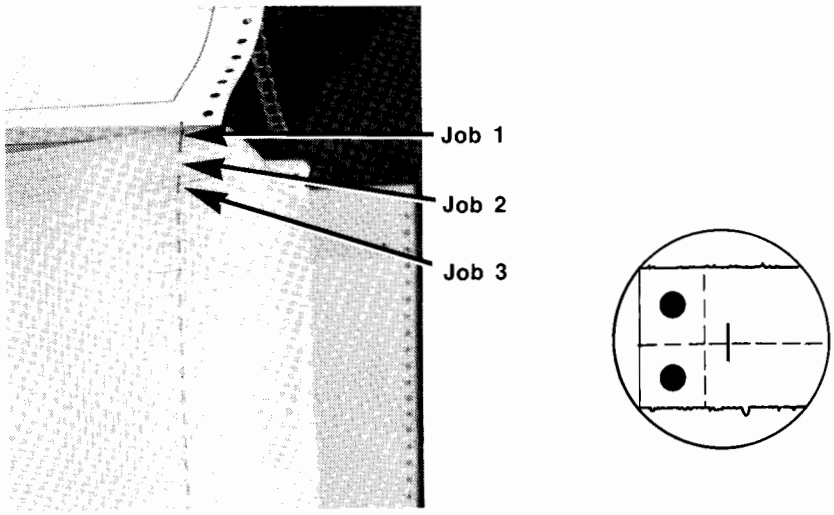


Figure 3-15. Job Separation Marks (Typical)

PAPER STACKER UNLOADING

To remove paper from the stacker proceed as follows:

A. Press the HALT key on the Operator Control Panel to stop printing.

WARNING

Before lowering the stacker, make certain the area under the stacker is clear to prevent possible injury to feet and legs.

B. Press the STACK DOWN key on the Paper Control Panel to lower the stacker. Press the key again to stop the stack at the desired position.

C. Tear the paper at the desired location and remove the paper.

NOTE

To assist in removing paper from the stacker, insert a ruler or any similar straight edged object between paper folds; then slide object along the page perforation to tear the pages apart.

D. Press the STACK UP key on the Paper Control Panel to raise the stacker to the operating position.

E. Position paper in the stacker making certain the paper is folded correctly (the folding pattern should be the same as it was in the box.)

F. Press the RUN key to continue printing.

ADDING TONER

In electrophotographic printing, toner is the dry "ink" used to print the image on the paper. Once the toner has been electrostatically attracted to the paper, it is fused (melted) into the paper and a permanent printed image is created. If the level of toner in the toner hopper is sensed below a specified level yet the development process adjustment parameters are still well within the operating range, the "**Toner hopper low**" message is displayed. The printer continues to operate if this message is displayed, however toner should be added to prevent an unscheduled halt if a "**Toner hopper empty**" message occurs.

When the level of toner in the toner hopper is sensed below a specified level and the development process adjustment parameters are beginning to change, the "**Toner hopper empty**" message is displayed. When this message occurs, the printer stops printing and a new bag of toner must be installed. To add toner and to replace the toner bag if necessary, proceed as follows:

A. Raise printer top cover.

B. If the toner bag is not empty, lift the bag and carefully shake to transfer toner from the bag to the hopper as shown in Figure 3-16. Proceed to step K. If the toner bag is empty, replace the bag and proceed to step C.

C. Push the toner lid locking latches in the direction indicated by the arrows shown in Figure 3-17, and raise the toner lid.

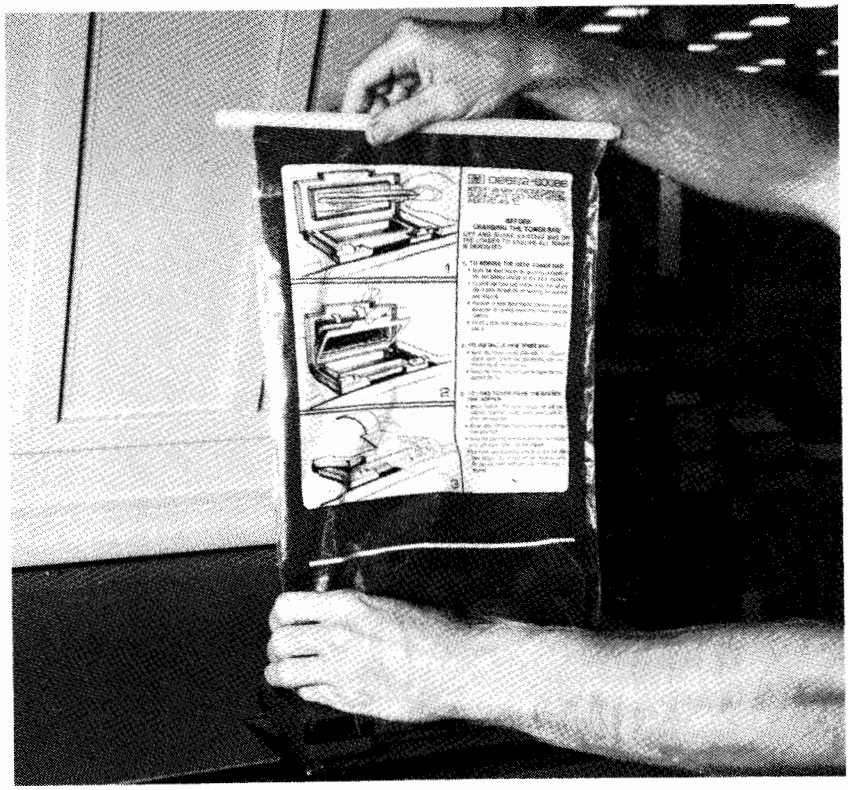


Figure 3-16. Transferring Toner to the Toner Hopper

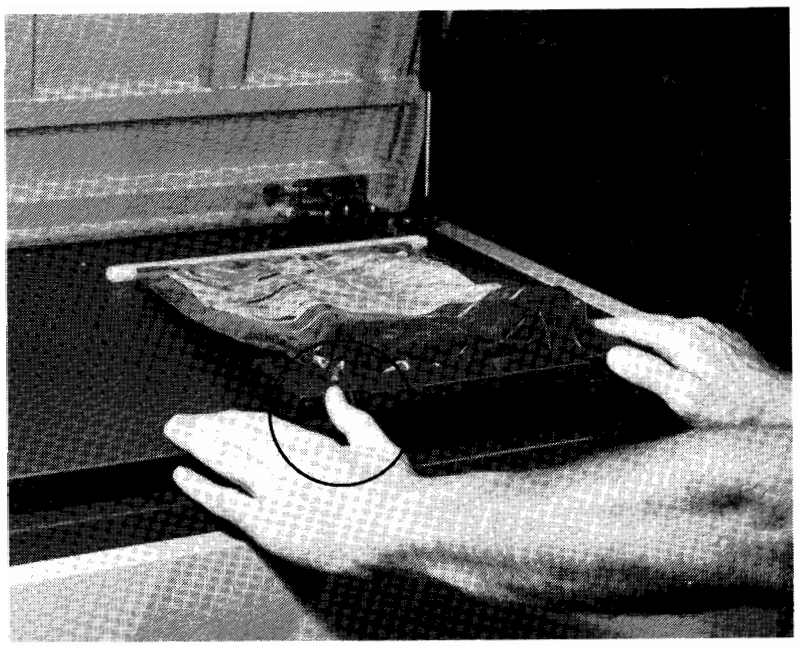


Figure 3-17. Unlocking Toner Hopper

Figure 3-18. Opening Toner Hopper Lid

D. Pull the toner bag retainer down as shown in Figure 3-18. Remove the bag from the lid by pulling the bag retaining clips from the interior lip of the lid. Push the bag back through the lid opening as shown in Figure 3-19.

Figure 3-19. Removing Toner Bag

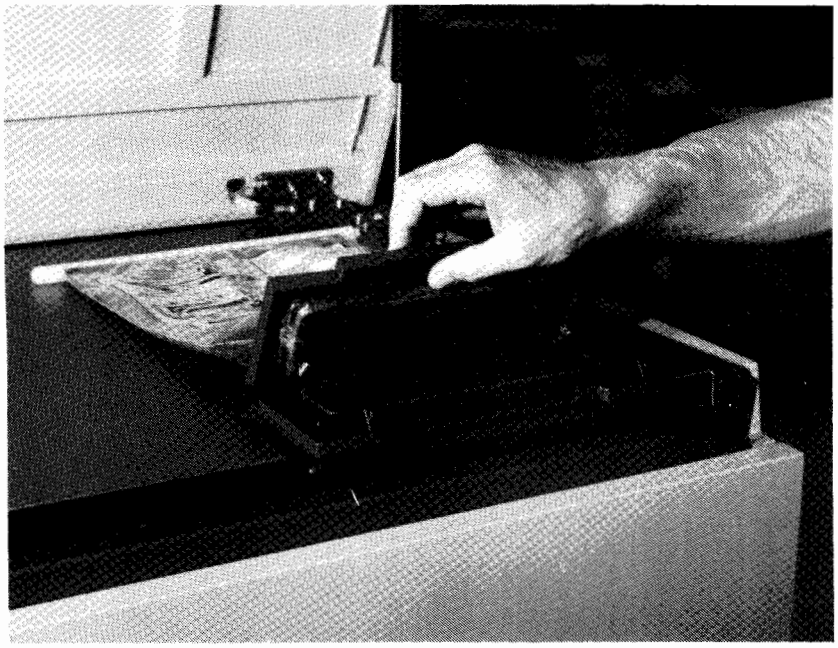


Figure 3-20. Installing New Toner Bag

NOTE

Be careful to position the bag opening up to prevent toner spillage.

E. Obtain a new toner bag. Hold the bag with its mouth up and loosen the bag seal (long white plastic clip). Open the bag slightly to allow a small amount of air into the toner bag. Reinstall the bag seal.

F. Position the new toner bag on the machine and insert the bag sleeve down through the lid.

G. Push the bag retaining clips inside the bag sleeve over the interior lip of the lid to fasten the toner bag to the lid.

H. Press the bag retainer against the lid to hold the bag in place (see Figure 3-20). Hold the lid and retainer firmly together and close the lid. The lid locking latches must engage the lid to prevent toner spillage. Verify that the inner toner bag is not pinched in the toner lip.

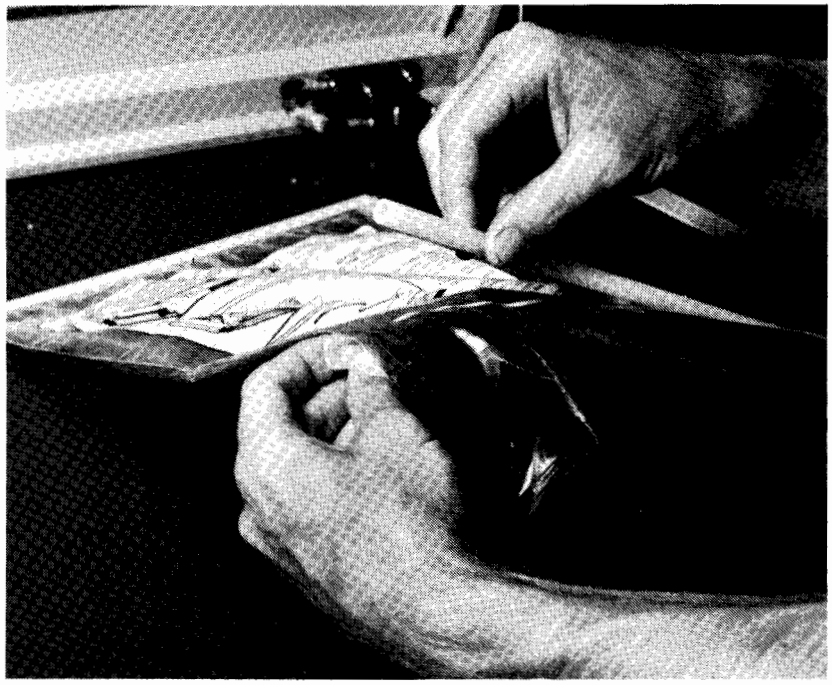


Figure 3-21. Removing Toner Bag Seal

I. Remove the bag seal as shown in Figure 3-21 and lift the bag to a vertical position. Shake the bag gently to put toner into the hopper.

CAUTION

Always remove the toner bag seal before closing the printer top cover. If the seal is not removed and the top cover is forced shut, excess pressure on the toner bag may cause it to break. It is recommended that once a new toner bag is installed, that some of its contents are emptied into the toner hopper.

J. Position the toner bag on the printer as shown in Figure 3-22 and close the top cover.

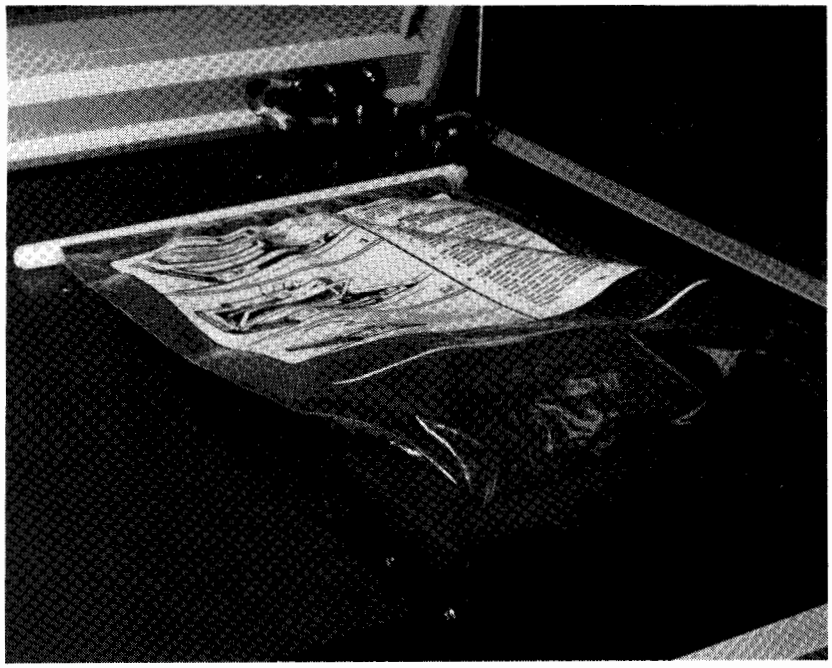


Figure 3-22. Positioning Toner Bag for Operation

NOTE

The printer should never be operated without a properly installed toner bag. The bag acts as a seal for the toner hopper and prevents toner from escaping into the printer.

K. Close the top cover and press RUN; this activates the toner hopper motor which evenly distributes toner throughout the toner hopper. Once the correct level of toner is sensed the message is cleared and printing is resumed.

ADDING CARRIER

The "**Carrier low**" message is displayed when the carrier volume in the developer assembly is sensed below a predetermined level. To add carrier, place the machine in the HALT mode and proceed as follows:

NOTE

Extensive operation of the 2680A Page Printer with the "**Carrier low**" message displayed may result in poor print quality.

A. Open the printer top cover.

B. Open the printer front door. The front door latch is located behind the paper input door (see Figure 2-1). Opening the paper input door (the door hinges up) exposes a release button. Pressing on the button releases the front door latch.

C. To open the toner hopper, grasp the lower left-hand corner of hopper and carefully lift and swing the assembly outward. When the hopper is open, a one inch diameter hole is exposed through which the developer assembly augers are revealed. (It may be necessary to reposition the toner bag beside the hopper so that the hopper can be opened.)

NOTE

After carrier mixture has been added, it may take as much as 5-10 minutes for the carrier to stabilize in the developer mixture.

D. Pour the entire 50 gram contents of the carrier mixture (HP Part Number 92182A) directly into the hole in the developer assembly (see Figure 3-23). WAIT the recommended amount of time before adding more carrier. Even though carrier was added, the **Carrier low**" message may still occur for as much as 10 minutes.

CAUTION

Clean all carrier spillage. Carrier is a conductive substance which if allowed to accumulate may cause a electrical short and subsequently a printer failure.

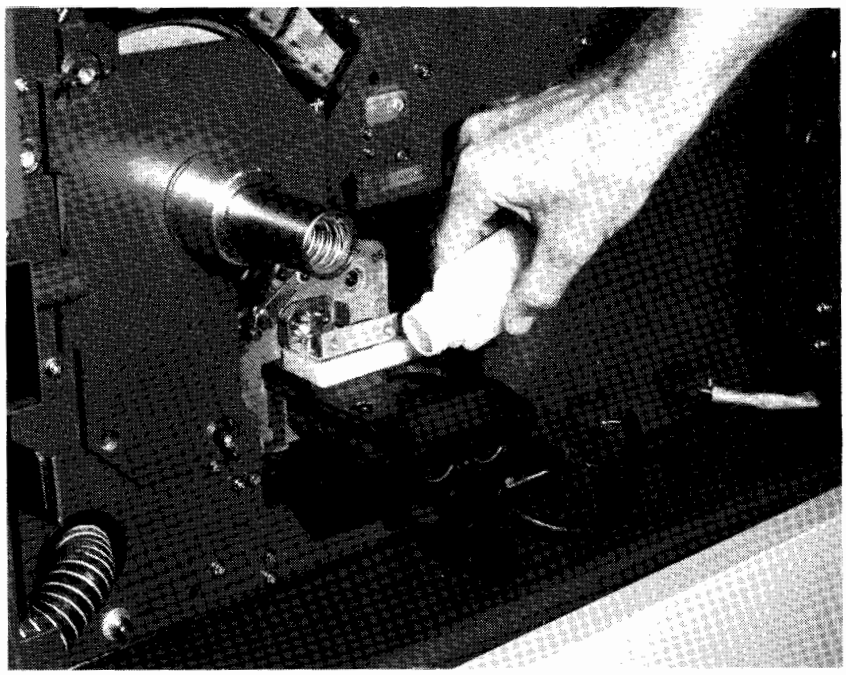


Figure 3-23. Adding Carrier

E. To close the toner hopper, lift up and swing the hopper assembly back into position. When the toner hopper is in position, a cap-like assembly covers the hole.

F. Close all doors and the top cover.

G. To clear the "**Carrier low**" message, press 2 and at the Service Control Panel. The "**Carrier added? 1=yes**" message will be displayed. The operator must respond to this by pressing 1, and then RUN to resume printing.

NOTE

If the "**Carrier low**" message occurs again within a few minutes, reset it once again. If the message continues, call for service.

If an "**Advisory condition**" or the "**Hopper motor warn**" (after performing the 5, ENTER command) message is displayed, the toner hopper may not be fully engaged. Verify that the assembly is fully engaged.

ADDRESS SELECTION

The standard interface for the HP 2680A Page Printer is the Hewlett-Packard Interface Bus (HP-IB), an implementation of IEEE standard 488. A thumbwheel switch, located on the back lower left-hand corner of the printer, is used to establish the printer's system address. The printer's address (0 through 7) is selected by rotating the thumbwheel switch (see Figure 3-24) to the desired address.

The device address is initially set when the printer is installed by the service representative. If the operator desires to change the printer's address, proceed as follows:

NOTE

The operator should NOT interchange HP-IB interconnect cables. Cable lengths are matched to specific impedance loads. Possible loss of data could occur if the wrong cable length was inadvertently connected to the wrong load.

A. The Address Select switch is located to the left-hand side of the HP-IB interconnect cable (see Figure 3-24). Remove switch covering by pulling outward on the plastic fastener.

B. Rotate the thumbwheel switch to the desired address. A visual indication of the address appears as the thumbwheel is rotated.

C. Reinstall switch covering removed in step A.

D. Press 0 (RESET) on the Service Control Panel.

E. Press RUN on the Print Control Panel to resume printing.

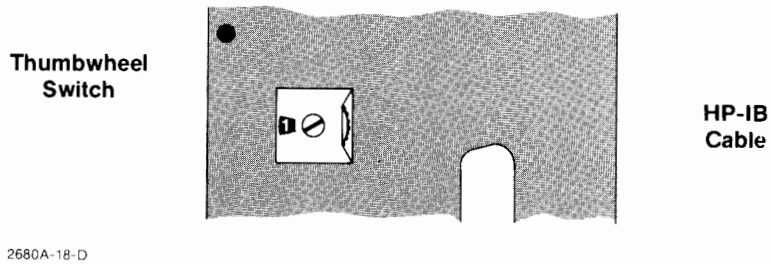


Figure 3-24. Address Selection

PAPER VACUUM ADJUSTMENT

Prior to paper being moved through the 2680A's output tractors it passes through the preheater and fusing stations. In moving through the preheater, a vacuum is applied to the bottom-side of the paper. This vacuum must be sufficient enough to hold the paper to the preheater's surface for conduction of heat but not so excessive that it might restrict movement of paper.

Different types of paper require different levels of vacuum to hold the paper to the preheater surface. The Paper Vacuum Adjustment knob permits the operator to regulate the vacuum at the preheater surface so that different types of paper may be printed i.e., carbonless, bonded and non-porous label-type papers.

CAUTION

Prior to making any paper vacuum adjustments ensure that all paper used in the 2680A meets the paper requirements as stated in the 2680A Paper Specifications Guide (HP Part Number 02682-90913).

Ensure that when printing either carbonless or label paper stock that the paper is loaded correctly in the input tractors (non-label side of the paper facing up).

To adjust the vacuum level, proceed as follows:

A. Press the HALT key at the Print Control Panel.

B. Press the STACK DOWN key at the Paper Control Key and lower the stacker table to the bottom of its travel.

C. Rotate the Paper Vacuum Adjustment knob to the position corresponding to the type of paper being used (BONDED, CARBONLESS, OR LABELS).

NOTE

The labels on the Paper Vacuum Adjustment Knob indicate approximate positions. Each form will have its own optimum setting. It may be necessary to experiment to find the best setting.

D. Press RUN to continue normal printing operation.

NOTE

Operating the printer with the knob in the incorrect position may result in poor fusing and/or excessive paper jams.

WARNING

Label-type paper is extremely hot after fusing. It may be necessary to allow the paper to cool before removing from the stacker.

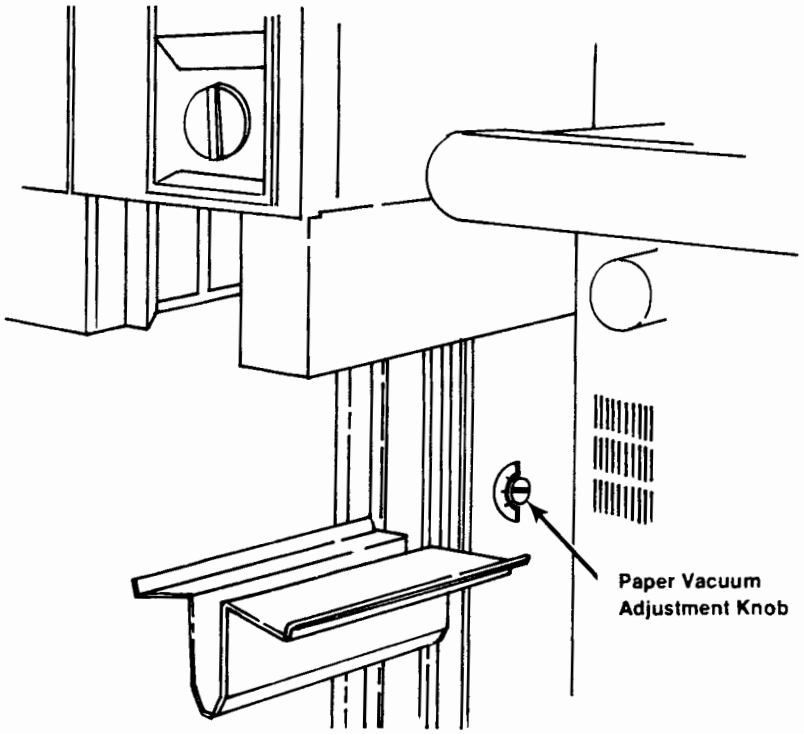


Figure 3-25. Vacuum Adjustment Knob

VARIABLE PRINT DENSITY ADJUSTMENT

The HP 2680A Page Printer comes from the factory with the print density (darkness) adjusted for average printing use. If darker or lighter print is required for specific printing applications, **Option 062**, the variable print density feature, allows the Operator to set the print density to the setting used predominately by the printer. A print density range from 1 (lightest) to 10 (darkest) may be selected.

Some guidelines for print density selection are listed below:

Light Print	**Darker Print**
Lower consumable cost	More pleasing print
Higher printer reliability	More frequent preventative maintenance
Smaller character fonts are more legible	Larger character fonts are more legible
Less background toner in light areas	More background toner in light areas

For optimum printer performance, it is recommended that a constant print density target be maintained for all printed output. To adjust the print density, proceed as follows:

A. Press the HALT key on the Print Control Panel if the printer is not already stopped.

B. Press 50 at the Service Control Panel. The "**Dens Target=?**" message will be displayed. The Operator may now enter the desired density (1 through 10) by pressing the appropriate keys at the Service Control Panel and then pressing ENTER.

To display the current operating density of the printer, press 50, ENTER. The "**Dens Target=?**" message will be displayed. Pressing ENTER the second time displays the current operating density.

NOTE

It should be understood that there is a delay from the time the Operator enters the new density target to the time the new density level occurs in the printed output. This delay is based on several factors including the type of job being printed and the difference between the new and old density targets.

NOTE

It should be understood that the consumption of toner and carrier may increase significantly if the printer is operated at higher print densities. Also, the Developer Mixture will need to be replaced on a more frequent basis. In addition, operating the printer at higher print densities will require that the disposal bottle be emptied more frequently.

Three operator messages are related to the variable density option:

The "**Density Adjusting**" message may be displayed while the printer is adjusting for its current operating density. No operator action is required.

The "**VDP Controller Error**" is displayed when a printer diagnostic error has occurred. This is a recoverable error and the operator may clear the error by pressing the RUN key. Reoccurrence of this error may indicate a hardware malfunction and the service representative should be notified.

The "**Can't Maintain Target**" message occurs if the density target is set too high for the printed output; i.e. the printed output contains several pages of material with a high percentage of print coverage (ratio of printed area to non-printed area). If this message occurs, the printer stops. To continue printing the operator should lower the density target via the 50 command.

PAPER TENSION ADJUSTMENT

Due to changes in environmental conditions, variations in paper types and weights and mechanical wear in the paper tensioning system, it may be necessary to change the printer Run tension setting. This adjusts the amount of tension applied to the paper during the printing process. Changes in the Run tension should be made in one count increments until the correct tension is obtained. The following is a list of criteria to assist the operator in determining the correct run tension:

- If the paper tends to buckle near the review window during printing, the Run tension may be set too low.
- If the paper rubs on the top of the preheater, the Run tension may be set too low.
- Smeared print on the leading edge of the printed page may indicate that the Run tension is too low.
- Examine the printed output. If the paper tractor feed holes appear elongated, the Run tension is probably set too high.
- Excessive paper jams may indicate that the Run tension is NOT correctly set.
- As a general rule, lighter weight paper requires less Run tension than heavier weight paper.

To adjust the paper tension, proceed as follows:

On the keyboard press 272, ENTER. The "**Run tension = XX**" message will be displayed. The operator may now change the Run tension by pressing 372, ENTER on the Service Control Panel. The "**Run tension = ?** will be displayed. The operator can now enter the desired paper tension (the default value is 10).

Recommended Paper Tension Settings

Tension:	High	Normal	Low
Value:	15	10	5
Form Type:	Heavy	Normal	Light

DARK TARGET ADJUSTMENT

To improve print quality and to ensure an adequate developer mixture lifetime, the dark potential target must be set. As a general rule, as the developer ages the dark target will need to be increased. To set and monitor the dark potential target, proceed as follows:

A. Press 330, ENTER at the Service Control Panel. The " **Dark target = ?**" message is displayed. Press 160, ENTER to set the dark potential target to a count of 160.

B. Press 1, ENTER, RUN at the Service Control Panel to initiate the printer Self Test.

C. Press 1130, ENTER at the Service Control Panel to continuously display the dark potential.

D. Allow sufficient time for the dark potential to stabilize, press HALT and inspect the print quality on the paper as it exits the printer.

NOTE

Carry-out is a condition where carrier from the developer mixture is being attracted to the paper. On paper, carry-out appears as rough gritty particles in the print background, that can be brushed off after the paper has gone through the fusing process.

A background condition, which is the opposite of carry-out, is characterized by print that looks shadowy or dirty, and can not be brushed off after the paper has gone through the fusing process.

E. Inspect the paper for excessive carry-out or background. If the carry-out is minimal, proceed to step F. If carry-out is excessive, return to step A and REDUCE the dark potential target by increments of 5 and proceed through steps B-E. Repeat this procedure until suitable print quality is obtained. If background is excessive, INCREASE the dark potential target by increments of 5 until suitable print quality is obtained, and proceed as described above.

F. Resume printing.

SECTION IV.
QUALIFIED OPERATOR MAINTENANCE

The primary purpose of a maintenance program is to ensure that the equipment provides the highest levels of utility and availability for the user. The most fundamental consideration in maintenance of electromechanical equipment is frequent VISUAL INSPECTION. Most mechanical equipment failures give a visual indication of their presence long before the actual failure occurs. The operator's awareness and perception are therefore important. If abnormal or unusual machine functions which are not discussed in this manual occur, the operator should closely monitor the printer to see if they persist and if a failure occurs. If a failure does occur, the operator should inform a Hewlett-Packard service representative.

CAUTION

Some accessories contain components that are sensitive to damage from electrostatic discharge. Whenever you remove, install, or handle any of these devices, be sure to use protective measures including static free workstations and personnel grounding devices. Be especially careful when working in carpeted areas.

The procedures described in this section are intended to be performed only by operators trained by Hewlett-Packard. Indepth technical expertise of the HP 2680A Page Printer is not required for performance of the operator maintenance procedures. However, the qualified operator should possess the necessary mechanical aptitude and have the ability to strictly adhere to the described procedures. The operator should NOT attempt to perform any maintenance beyond that described in this manual.

All additional maintenance procedures are covered under the service contract and when required, a qualified Hewlett-Packard customer engineer should be notified.

The following areas of maintenance are discussed in this section of the manual:

MAINTENANCE SCHEDULE

The HP 2680A Page Printer is specifically designed to monitor its internal processing functions to ensure that the quality of the printer output is maintained. When an abnormal printer operating condition is detected, an error message is displayed on the printer display notifying the operator of the condition. Refer to Section V for detailed explanations of these error messages.

Maintenance procedures are performed at various intervals dependent on printer use and complexity of the printer output. Under certain circumstances, the printer notifies the operator, via the printer display, that a particular maintenance procedure needs to be performed. However, other circumstances require the operator to exercise judgement in determining when a specific procedure needs to be performed. All self test printouts and the Operator's Maintenance Checklist should be kept with the printer in an Operator's Log Book.

The following table lists the two levels of maintenance routines:

Operator Maintenance	Qualified Operator Maintenance
1. General cleaning	1. All operator maintenance
2. Corona Cleaning	2. Drum replacement
3. Disposal Bottle replacement	3. Cleaner blade replacement
4. Adding carrier	4. Cleaner blade tension adjustment
5. Adding toner	5. Developer mixture changing
6. Splicing paper	6. New drum routine
7. Adjusting the vacuum valve	7. Dark target adjustment
8. Clearing paper jams	8. Erase and illumination lamp replacement
9. Paper tension adjustment	

Corona Cleaning

The frequency with which the corona cleaning procedures must be performed depends upon the printer operating conditions. Normally, the coronas should be cleaned every 30 to 40 thousand drum rotations, at which time a regularly scheduled message is displayed notifying the operator that this procedure is needed.

In the event of a broken corona wire, operators may choose to restring their corona assemblies to expedite printer operation. A copy of the restringing procedure is available upon request, by contacting your service representative.

Developer Mixture and Photoconductive Drum Replacement

The need to replace the developer mixture and the photoconductive drum is usually related to problems associated with print quality. Different operators judge print quality differently. The life of the developer mixture is highly dependent upon printer use and the operator's perception of print quality.

The photoconductive drum normally lasts more than 200 thousand drum rotations. The drum should only be changed if it is accidently damaged (scratched) or if replacement of the developer mixture fails to restore the desired print quality.

A flow chart found in Section 5-Print Quality Actions, has been designed to aid in making a decision on when to change the developer mixture or the drum, as drum rotation counts serve only as a measure of usage and not as an indicator of the end of life for either the drum or the developer mixture.

Also found in Section 5 is a "Print Quality Common Symptoms" table to aid in identifying common print quality problems. These print quality problems could occur during a maintenance procedure or during routine operation of the printer.

TOOLS AND SUPPLIES REQUIRED

The following special tools and equipment are required to perform maintenance on the HP 2680A Page Printer.

- Cleaner blade/tension gauge (8750-0058)
- Portable Vacuum Cleaner (92175D)
- Vacuum Cleaner Bags-6 and one filter (92175E)
- Screwdriver Cross-Tipped (Medium Tip)
- Screwdriver Flat-Blade (Medium Tip)

Optional Supplies:

- Plastic Gloves, box of 25 pr (92193G)

Consumable Supplies Required:

- Foam-Tipped Swabs, box of 50 (9300-0468)
- Lint Free Wipes, bag of 100 (92193W)
- Developer Starter Mixture, box of 6 (92182D)
- Drum Kit (92180D) containing 1 photoconductive drum and 1 wiper blade
- Erase and Overall Illumination lamps (2140-0506)
- Toner Disposal Bottles (92191A)
- Isopropyl alcohol

GENERAL CLEANING

A state of overall general cleanliness should be preserved while operating the HP 2680A Page Printer. The printer should be operated in a clean, well-ventilated environment. Accumulation of dust, toner, bits of paper, and lint can lead to problems. Grillwork for exhaust fans, which permits circulation of air, should be clean and free from obstructions. Dust on the paper tray and on the floor surrounding the printer should not be allowed to accumulate.

Cleaning Suggestions/ Recommendations

The following cleaning suggestions are recommended for the HP 2680A Page Printer:

A. Periodically examine output paper tractors for toner build-up. If noted, toner may be chipped away with any nonabrasive object. DO NOT use chemical cleaners to clean output paper tractors.

B. The review window may be cleaned with ordinary window cleaner.

C. Vacuuming is the preferred method for cleaning spilled toner. Water, especially hot water, is not recommended since it tends to smear toner rather than gather it up. If toner gets onto clothing, wash clothing in COLD water.

D. Liquids should NEVER be placed on top of the printer. If liquids are spilled, clean up the liquids before opening the top cover. Opening of the top cover before cleaning may cause the liquid to run into the printer.

CORONA ASSEMBLY PROCEDURES

The HP 2680A Page Printer has three corona assemblies: Primary, Simultaneous and Transfer. The assemblies are located at various stations around the photoconductive drum (see Figure 4-1) and resemble long slender U-shaped brackets with thin wires strung lengthwise from end to end. The corona wires must be kept clean and in suitable condition to maintain print quality.

Whenever the printer displays either the **"Corona cleaning due"** or the **"Corona contaminated"** message, the corona assemblies must be cleaned. The displaying of these messages does not stop printer operation, however once the printer stops, it can not be restarted until the corona assemblies have been cleaned.

Removing Corona Assemblies

To remove the corona assemblies from the printer, proceed as follows:

A. Place Front ON/OFF switch and the rear MAIN POWER breaker to OFF.

B. Open the printer top cover.

C. Open the printer front door. The front door latch is located behind the paper input door (see Figure 2-1). Opening the paper input door (the door hinges up) exposes a release button. Pressing on the button releases the front door latch.

D. Remove the three corona assemblies (see Figure 4-1) by grasping the respective corona handle (L-shaped bracket) labeled either PRIMARY, SIMULTANEOUS, or TRANSFER and carefully pulling outward away from printer.

CAUTION

Care should be taken in handling corona assemblies. Corona wires are extremely delicate. Avoid touching end blocks and corona wires since skin oils and other contaminants may cause a failure.

E. Place the corona assemblies on a clean working surface. It is advisable to place the corona assemblies on a sheet of paper since toner and other debris from the corona assemblies could soil the working surface.

Corona Cleaning Procedure

A. Using a clean foam-tipped swab moistened with isopropyl alcohol, carefully wipe the corona wires. If the primary corona is suspected of being dirty, remove the screen and clean both sides of the screen and corona wire thoroughly.

NOTE

If a foam tipped swab is not available, wipe the corona wires with a lint free cloth or paper towel moistened with isopropyl alcohol. Wipe away all excess isopropyl alcohol with the dry portion of the material.

B. Inspect the corona wires and the primary screen for any fibers. Reinstall the primary corona screen to the assembly, if removed.

C. Reinstall the corona assembly(s) in the printer.

After all three corona assemblies are cleaned, proceed as follows:

A. Inspect all the corona assemblies to ensure that no brush bristles, fibers or debris remain on or inside the corona assemblies.

CAUTION

To avoid possible damage to the drum surface, ensure that the corona assemblies are properly aligned in their guide rails before reinstalling.

B. Reinstall the corona assemblies in the printer.

C. Close all covers and doors.

D. Place the Front ON/OFF switch and the rear MAIN POWER breaker to ON.

E. To reset the **"Corona cleaning due"** message, press 4, ENTER at the Service Control Panel. The **"Corona clean? 1=yes"** message is displayed. The operator must respond to this message by pressing 1, ENTER and then RUN to resume printing.

DEVELOPER ASSEMBLY PROCEDURES

Changing of the developer mixture should be done in an area away from the printer or other delicate equipment. Plastic gloves and a smock or other protective clothing should be worn to prevent skin and clothing from becoming soiled.

Equipment Needed:

- Developer Start Mixture (92182D)
- Large Plastic Bag
- Portable Vacuum Cleaner (92175D)
- Screwdriver Cross-Tipped (Medium tip)

Optional Equipment:

- Lint Free Wipes, bag of 100 (92193W)
- Plastic Gloves, bag of 25 pair (92193G)

Developer Assembly Removal

To remove the developer assembly, perform the following procedures:

A. Arrange a drop cloth on a suitable surface to place the developer assembly onto after removal.

B. Switch the Front ON/OFF switch and the rear MAIN POWER breaker to OFF.

C. Open the printer top cover.

D. Open the printer front door.

E. Open the EP close-out cover (see Figure 4-1) by lifting up on the cover.

F. Open the toner hopper by grasping the lower left-hand corner of the hopper. Carefully lift and swing the assembly outward. It may be necessary to reposition the toner bag beside the hopper so that the hopper may be opened.

G. Disconnect the developer assembly power cable at the connector labeled "DEV CONN" in the front of the printer, see Figure 4-1.

H. Rotate the DEVELOPER ENGAGE CONTROL lever located below the developer assembly (see Figure 4-1) fully clockwise to disengage the developer gears.

WARNING

The developer assembly weighs approximately 6 kilograms (13 pounds). Be prepared to support this weight when the assembly is pulled from the printer. Use care to pull the assembly straight out to prevent damage to the drum surface.

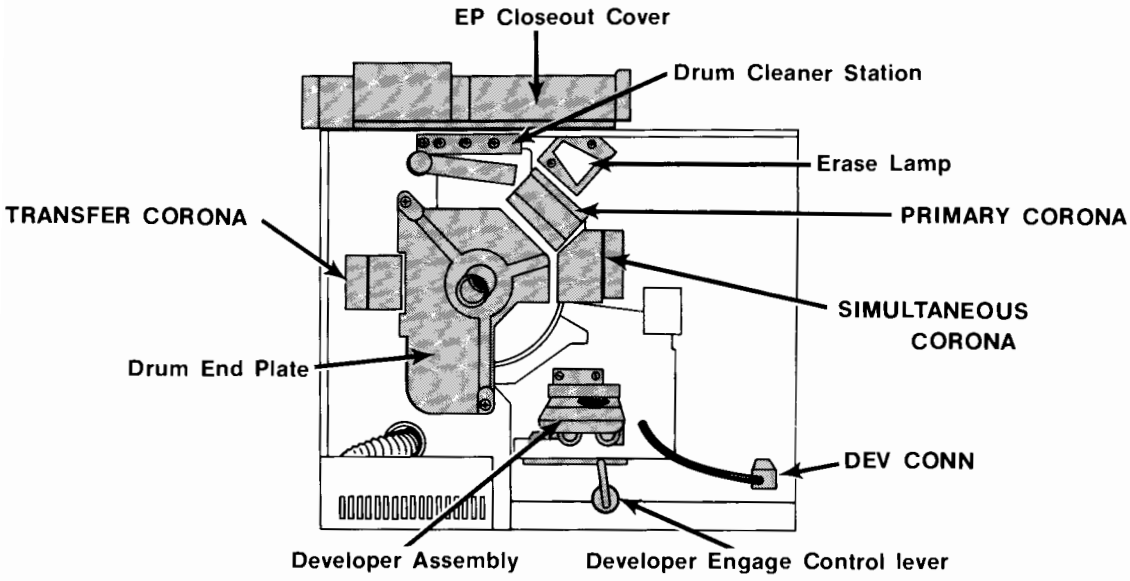


Figure 4-1. Developer Assembly Area (End View)

I. Slide the developer assembly out (with your hands positioned as shown in Figure 4-2).

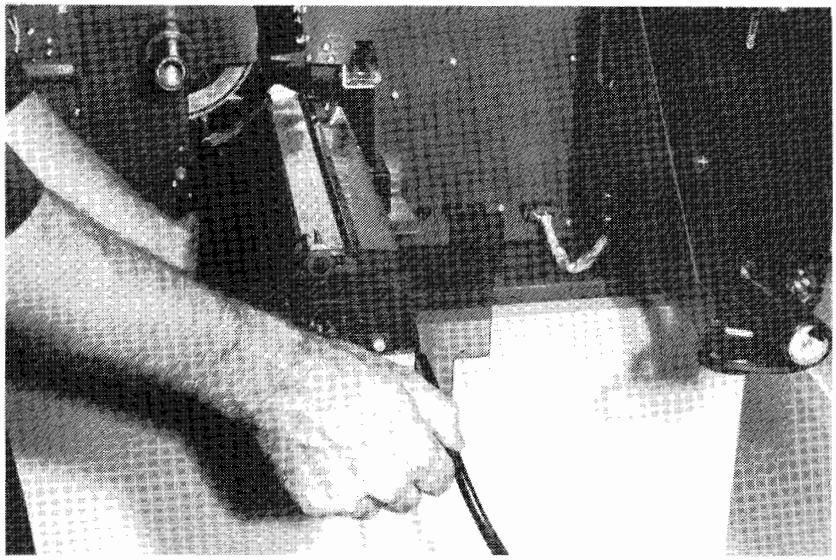


Figure 4-2. Removal of Developer Assembly (Hand Position)

J. Place the developer assembly on the drop cloth arranged in step A.

Purging The Developer Assembly

To purge the developer assembly, perform the following procedure:

A. Put on plastic gloves. It is recommended that all developer sub-assemblies be cleaned (vacuumed) as they are removed.

B. Remove the developer assembly top seal (see Figure 4-3) by lifting up on the top seal. Vacuum the top seal.

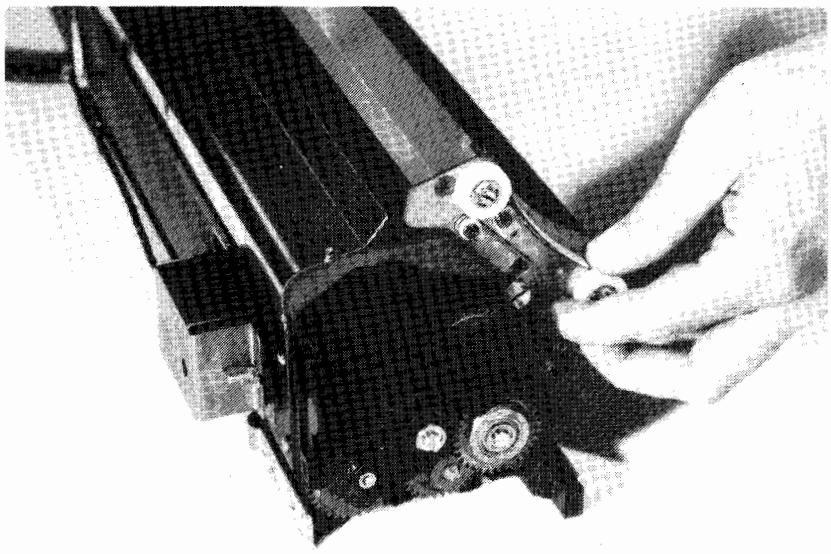


Figure 4-3. Removing Developer Top Seal

C. Remove the two cross-hatched screws which secure the developer top cover (see Figure 4-4) and remove the top cover. Vacuum the top cover until all developer mixture is removed.

D. Remove the three cross-hatched screws which secure the toner input tray cover (see Figure 4-4) and remove the tray cover; vacuum the cover to remove all traces of developer mixture.

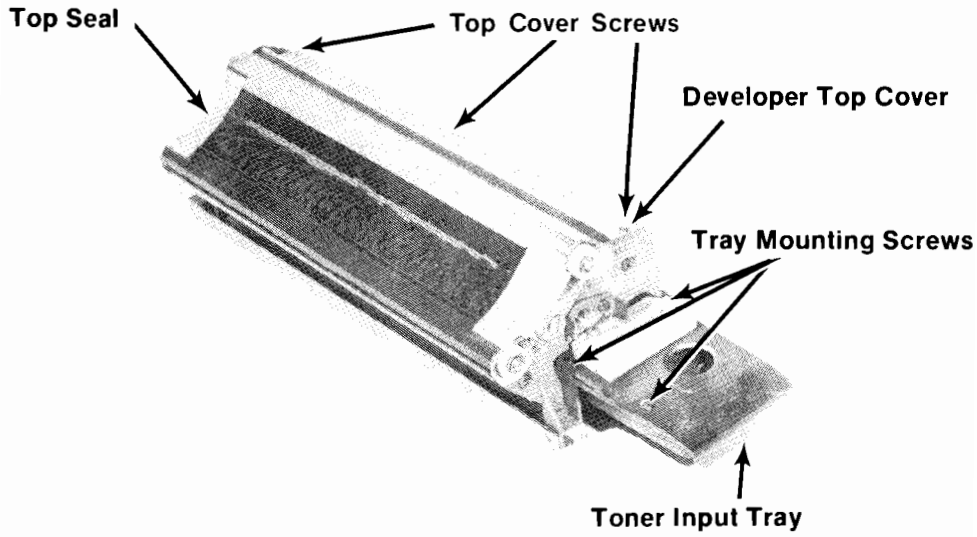


Figure 4-4. Developer Assembly (Removed from printer)

E. Pour and shake the mixture out of the assembly into a plastic bag.

NOTE

The waste toner mixture should be placed inside an empty start developer bottle, and the lid should be securely fastened. This bottle should then be disposed of. Disposal in a sanitary landfill is recommended.

F. Using the vacuum cleaner and dry tissue wipers, thoroughly clean all developer mixture from the developer roller. Ensure that all the grooves and end caps are as clean as possible.

G. Rotate the developer roller to attract the excess mixture and thoroughly vacuum the developer assembly to ensure that all parts are as clean as possible.

H. Vacuum all developer mixture which may have accumulated under the assembly when it was installed in the printer.

CAUTION

When cleaning the developer track, use care not to touch the photoconductive drum. The surface is easily scratched. This can produce undesirable printer marks on the paper.

NOTE

Skin and clothing are best cleaned by removing as much toner as possible with a vacuum or dry tissue wipers, then washing with cold water. Use cold water to wash clothing, as hot water makes the toner much more difficult to remove. Also, try to keep toner off vinyl materials as the toner tends to degrade the appearance of these materials.

Developer Mixture Replenishment

A. Install the developer top cover on the developer assembly as shown in Figure 4-5. Installation of the top cover in this manner allows the top cover to be used as a temporary funnel so that the developer start mixture can be more easily added to the developer assembly.

B. Add 2/3 of the contents of the developer starter mixture bottle (HP Part Number 92182D) as follows:

NOTE

Do NOT empty the entire bottle of the developer starter mixture onto the developer roller. Read the following substeps completely before continuing.

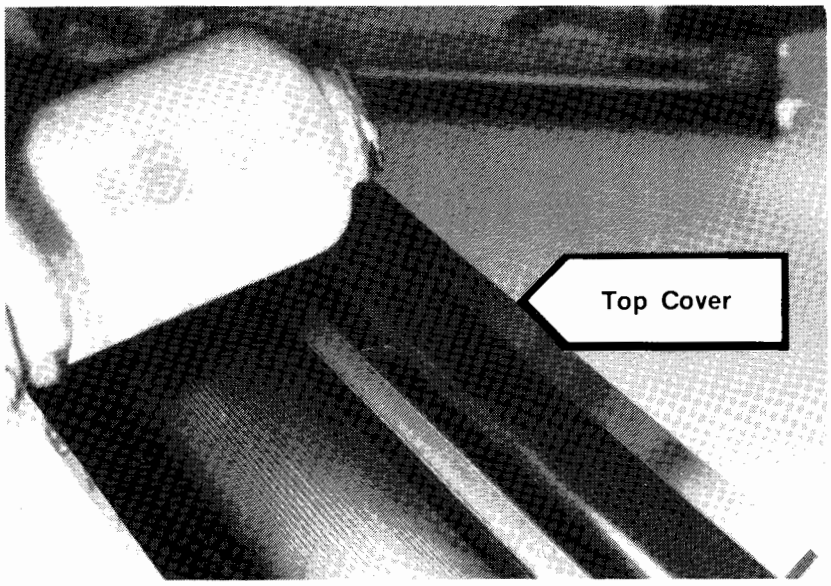


Figure 4-5. Developer Top Cover (Used as a Temporary Funnel)

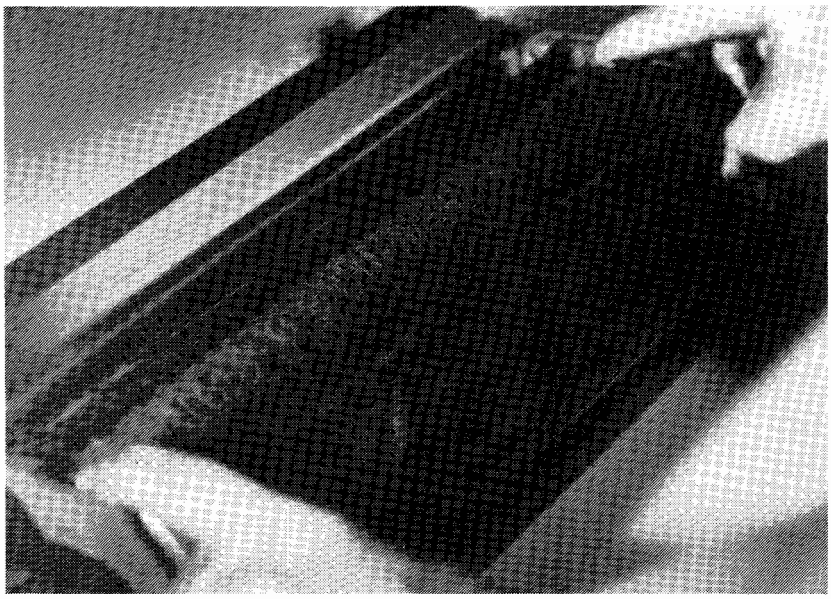


Figure 4-6. Developer Roller (Obtaining a Uniform Brush)

1. Pour approximately 30% of the developer starter mixture to the rear of the developer cavity (between the roller and the temporary funnel).

2. Pour approximately 30% of the developer starter mixture in front of the developer roller.

3. With fingers positioned at the edge of the developer roller, see Figure 4-6, rotate the developer roller counter-clockwise (as viewed from the gear train) approximately eight complete rotations until an even developer brush is obtained.

4. With finger positioned as shown in Figure 4-7, wipe all developer starter mixture from the top of the doctor blade assembly (horizontal metal bar).

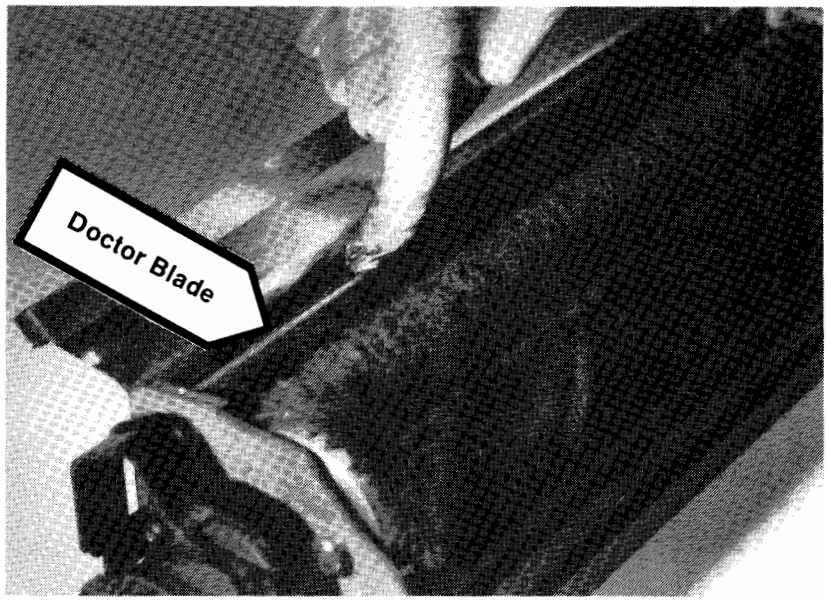


Figure 4-7. Cleaning the Doctor Blade

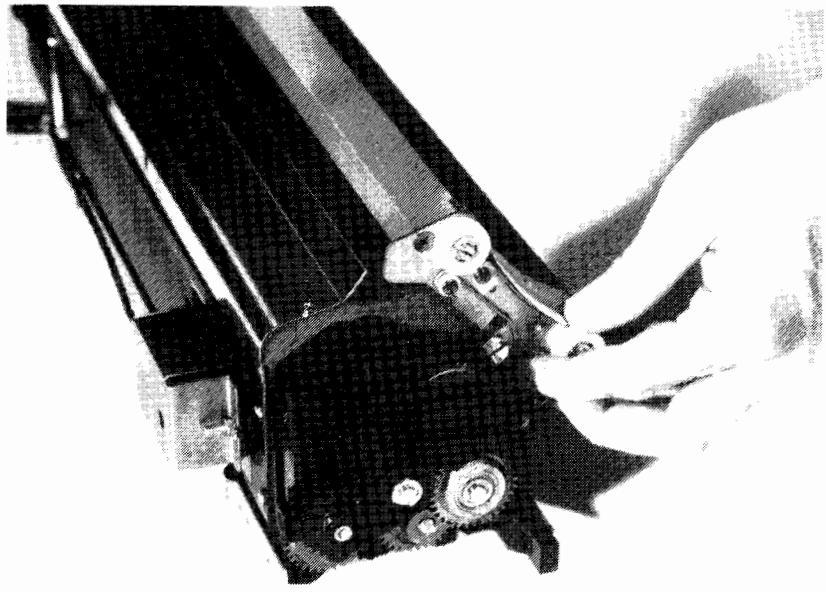


Figure 4-8. Installing the Developer Top Seal

C. Remove the developer top cover, installed in step A as a temporary funnel, and vacuum top cover to remove all developer start mixture.

D. Reinstall the developer top cover on the developer assembly; secure the assembly with the two cross-hatched screws.

E. Replace the developer toner input tray cover. Secure the tray to the developer housing with the three cross-hatched screws.

F. Slide the developer top seal on to the developer housing, see Figure 4-8. Ensure that the seal is fully seated. Rock the seal forward, then back to the center of its rotational movement limits.

Developer Assembly Installation

Install the developer in the printer as follows:

A. Keeping the developer assembly parallel to the floor, align the developer assembly to its guide rail and carefully slide in the printer.

NOTE

Ensure the DEVELOPER ENGAGE CONTROL lever is rotated fully clockwise before attempting to install the developer assembly in the printer.

B. Rotate the DEVELOPER ENGAGE CONTROL lever counter-clockwise to lock the developer assembly in position.

C. Reconnect the developer assembly cable to the connector labeled "DEV CONN" in the front of the printer. Ensure that the cable is routed under the toner hopper stop block.

D. Close the toner hopper by lifting up on the assembly and swinging the hopper back into position.

E. Close the EP close-out cover.

F. Close the printer front door and top cover.

Developer Mixture Run-In

After installing new developer mixture it is necessary to initiate the Developer Run-In Routine so that the developer mixture is evenly distributed throughout the assembly. To execute the Developer Run-In Routine, proceed as follows:

A. Place the Front ON/OFF switch and the rear MAIN POWER breaker to ON.

B. Execute the Developer Run-In Routine and monitor the developer volume level as follows:

NOTE

The printer front door must be closed.

---

1. Press 735, ENTER, RUN at the Service Control Panel. A low audible tone should now be heard from the vicinity of the developer assembly; this indicates the developer is turning.

2. Press 1135, ENTER at the Service Control Panel to continuously display the developer level. The "**Devel.level=XXX**" message is displayed. The "XXX" represents the developer level in counts.

3. Monitor the developer level for approximately five to ten minutes until the count stabilizes within a five count range. Once the developer level count stabilizes, press HALT at the Service Control Panel to stop the developer motor.

NOTE

The developer level has a tendency to fluctuate greatly when the run-in mode is first initiated. Ensure that the developer motor has run a sufficient amount of time (approximately 5-10 minutes) and that the count is fully stable within the specified range of 100-150 counts before continuing. If enough time has not been allowed it may result in a "**Carrier low**" or "**Developer overfull**" message. If these messages occur, confirm that sufficient time has passed to permit adequate mixture run-in. Then add as necessary the remaining 1/3 of the new bottle of developer mixture.

---

4. Press 600, ENTER at the Service Control Panel to terminate the Developer Run-In Routine. The "**Operator access level**" message is intermittently displayed and then the "**HP 2680A Laser Page Printer**" or "**Laser Page Printer**" message is displayed.

NOTE

The HP 2680A Page Printer maintains a record of the number of photoconductive drum rotations (in thousands) which have occurred on the present developer mixture. To display this number press 205, ENTER at the Service Control Panel. The "**KRtn on dvlp = XXX**" message is displayed. The "XXX" refers to the number of drum rotations in thousands on the mixture.

C. To reset the developer mixture interval count, press 305, ENTER at the Service Control Panel. The "**KRtn on dvlp = ?**" message is displayed. Press 0 ENTER to set the developer interval count to zero.

D. Press 1, ENTER, RUN at the Service Control Panel to initiate the printer's self test (refer to Self Test in this section of the manual). After several (approximately 50) self test print samples have been printed, press HALT.

E. Inspect the printed output for excessive carry-out. If carry-out is excessive refer to step I of the New Drum/Wiper Routine in the Photoconductive Drum Procedures.

NOTE

Carry-out is a condition wherein excessive carrier from the developer mixture is being attracted to the photoconductive drum. On paper, carry-out appears as rough gritty particles in the print background that can be brushed off after the paper has gone through the fusing process.

F. Attach a copy of the Self Test printout to the Operator's Checklist along with the date when the developer assembly was replenished, and keep in the Operator's Log Book.

G. Press RUN to resume normal printing.

PHOTO-CONDUCTIVE DRUM PROCEDURES

The Photoconductive Drum Procedures consist of the replacement of the photoconductive drum, the replacement of the drum wiper blade assembly, and the inspection and general clean-up of the electrophotographic area of the printer. It is essential that the photoconductive drum and the wiper blade are replaced at the same time since the failure of either assembly affects the operation of the other.

CAUTION

It is extremely important that all procedures be followed precisely to prevent possible damage to the printer.

Equipment Needed:

- Drum Kit containing one Photoconductive Drum and one Cleaner Station Wiper Blade. (92180D)
- Screwdriver Cross-tipped (Medium Tip)
- Screwdriver Flat-Blade (Medium Tip)
- Cleaner blade/tension gauge (8750-0058)
- Plastic Gloves, box of 25 pr (92193G)

Photoconductive Drum Removal

To remove the drum from the printer, proceed as follows:

WARNING

If the printer has had power applied to it, the photoconductive drum shaft and drum is hot. Allow a sufficient amount of time for the shaft to cool (approximately 20 minutes) before proceeding.

A. Place the Front ON/OFF switch AND and rear MAIN POWER breaker to OFF and wait approximately twenty minutes for the drum shaft to cool.

B. Open the printer front door.

C. Open the EP close-out cover (see Figure 4-1) by lifting up on the cover.

CAUTION

In order to remove the photoconductive drum, several printer subassemblies must first be removed to prevent damage to the drum. Perform all procedures completely before attempting to remove the drum.

D. Remove the Developer Assembly as follows:

1. Open the toner hopper by grasping the lower left-hand corner of the hopper and carefully lifting and swinging the assembly outward. It may be necessary to reposition the toner bag beside the hopper so that the hopper may be opened.

2. Disconnect the developer assembly cable from the connector labeled "DEV CONN" in the front of the printer.

3. Rotate the DEVELOPER ENGAGE CONTROL lever located below the developer assembly (see Figure 4-1) fully clockwise to disengage the developer gears.

WARNING

The Developer assembly weighs approximately 6 kilograms (13 pounds). Be prepared to support this weight when the assembly is pulled from the printer.

4. Slide the Developer assembly out (with hands positioned as shown in Figure 4-2).

5. Place the developer assembly on a clean working surface away from the printer.

E. Remove the Electrostatic Monitor assembly as follows:

CAUTION

The electrostatic monitor is highly susceptible to static discharges. Do NOT touch the wire contacts or metal door, as this could damage the internal monitor circuitry.

1. Grasp the electrostatic monitor assembly (as shown in Figure 4-9) and carefully pull outward away from the printer.

2. Place the monitor assembly on a clean working surface away from the printer.

F. Remove the three corona assemblies (see Figure 4-1) by grasping the respective corona handles (L-shaped bracket) labeled either PRIMARY, SIMULTANEOUS or TRANSFER and carefully pulling outward away from the printer. Place the corona assemblies on a clean working surface away from the printer.

CAUTION

Care should be taken when handling corona assemblies. Corona wires are extremely delicate. Avoid touching corona end blocks and corona wires.

G. Remove the Cleaner Station Wiper Blade as follows:

1. Loosen the one flat-head captive screw (see Figure 4-10) which secures the cleaner station to the printer frame.

2. Pull out on the black plastic knob (see Figure 4-10) and move the handle up to position the cleaner station wiper blade away from the surface of the drum.

3. Grasp the cleaner station handle and, while holding the handle up, pull the assembly out of its track.

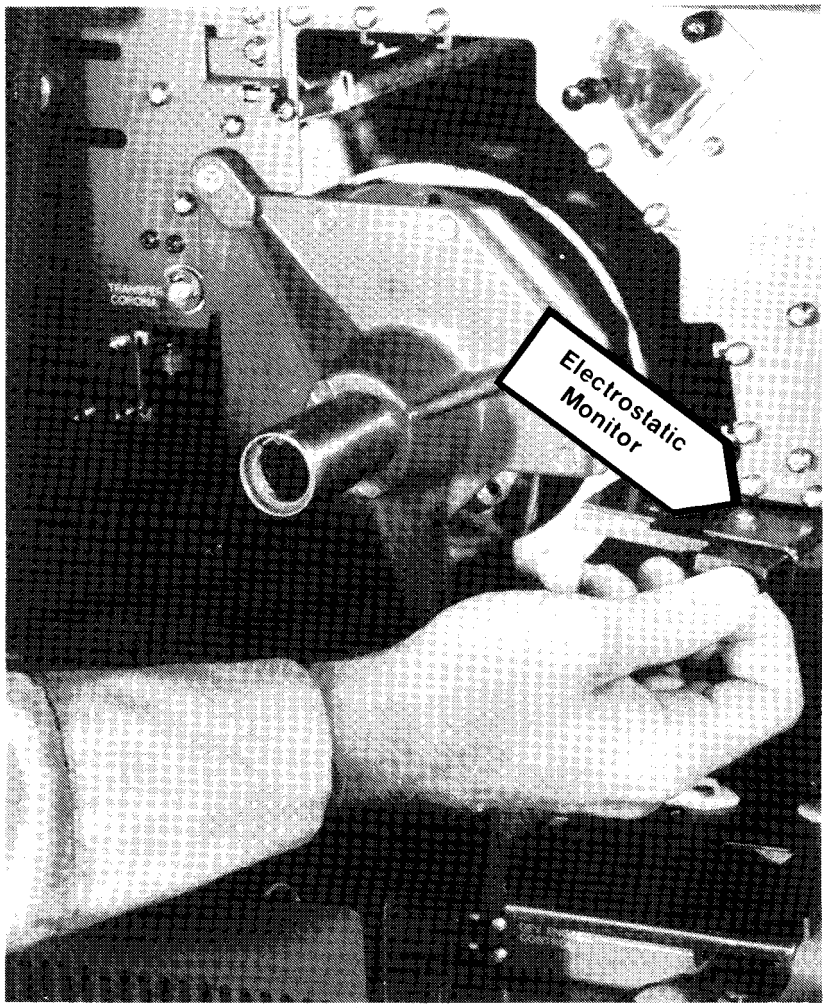


Figure 4-9. Electrostatic Monitor Removal

4. Set the cleaner station on a clean working surface with cleaner blade facing up.

H. Remove the Drum End Plate as follows:

1. Using a medium cross-tipped screwdriver, loosen the two cross-hatched quarter-turn captive screws (see Figure 4-11).

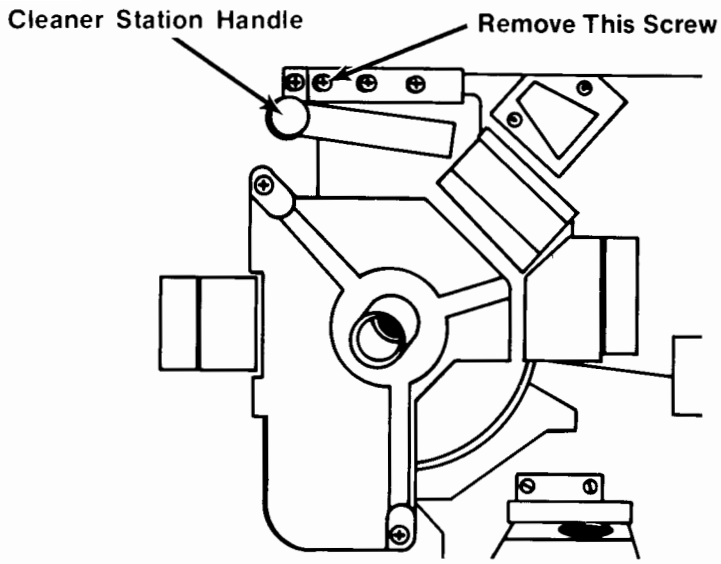


Figure 4-10. Drum Cleaner Assembly (Installed in Printer)

2. Grasp the drum end plate and pull outward away from the printer.

3. Place the drum end plate on a clean working surface away from the printer.

l. Remove the photoconductive drum as follows:

CAUTION

Handle the photoconductive drum only by the end bells (spokes). The drum surface is very delicate and can be damaged by contact with hands, hard surfaces, or other foreign objects.

---

1. Grasp the spokes of the drum end bell and pull the drum STRAIGHT off the shaft (see Figure 4-12).

2. When the drum is off the shaft, remove the outer bearing (see Figure 4-13).

NOTE

DO NOT discard the bearing. It will be needed for installation of the new photoconductive drum.

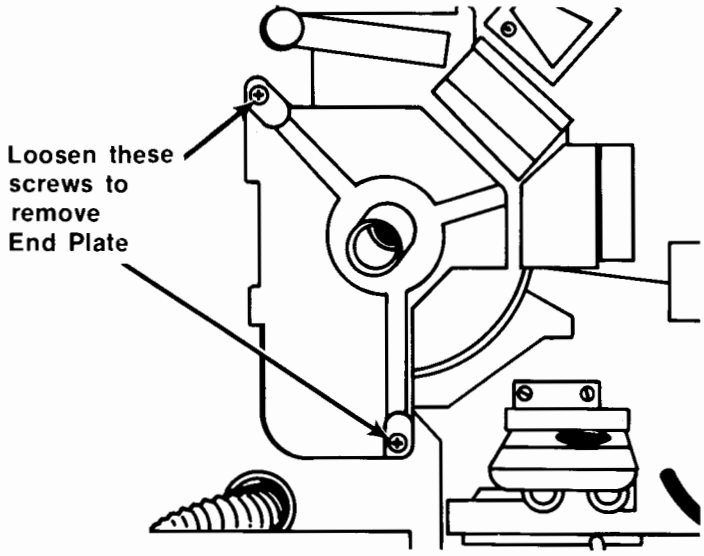


Figure 4-11. Photoconductive Drum End Plate

3. Place the drum on its end bell, away from the printer. The drum must be packaged and returned to Hewlett-Packard for disposal (the address is printed on the drum carton).

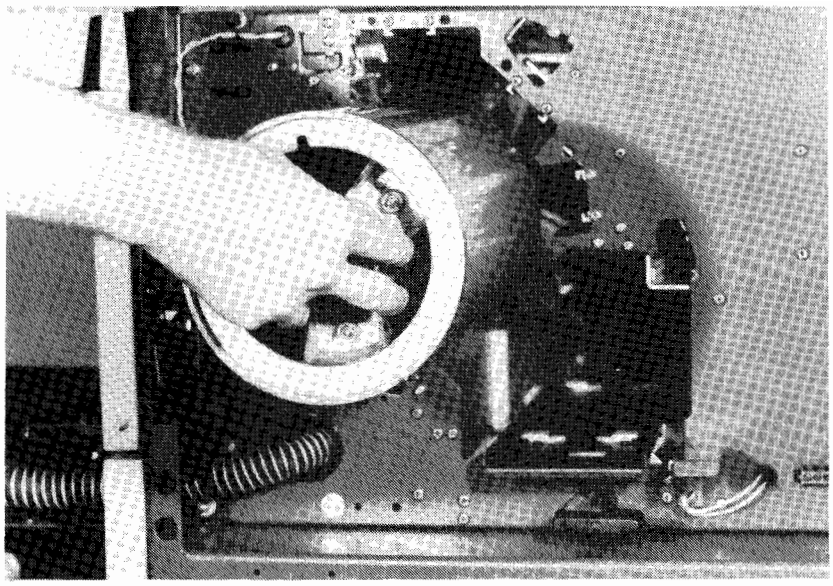


Figure 4-12. Removing The Photoconductive Drum

Figure 4-13. Removing Photoconductive Drum Bearing

WARNING

The drum must be disposed of in accordance with Title 40 CFR, Parts 261-265. Return all drums to your local Hewlett Packard Service Office (listed in the back of this manual) or return to:

Hewlett Packard Company
Boise Division
11311 Chinden Blvd.
Boise, Idaho
83707
attn: Line #9. Bldg. 5U

Electrophotographic Area Clean-up Procedures

For general clean-up of the electrophotographic area, proceed as follows:

A. Visually inspect the printer after the drum has been removed. Vacuum all paper dust, developer mixture, and other debris which may have accumulated in the electrophotographic area of the printer.

B. Visually inspect the drum cleaner assembly; vacuum all developer mixture which has accumulated on the assembly.

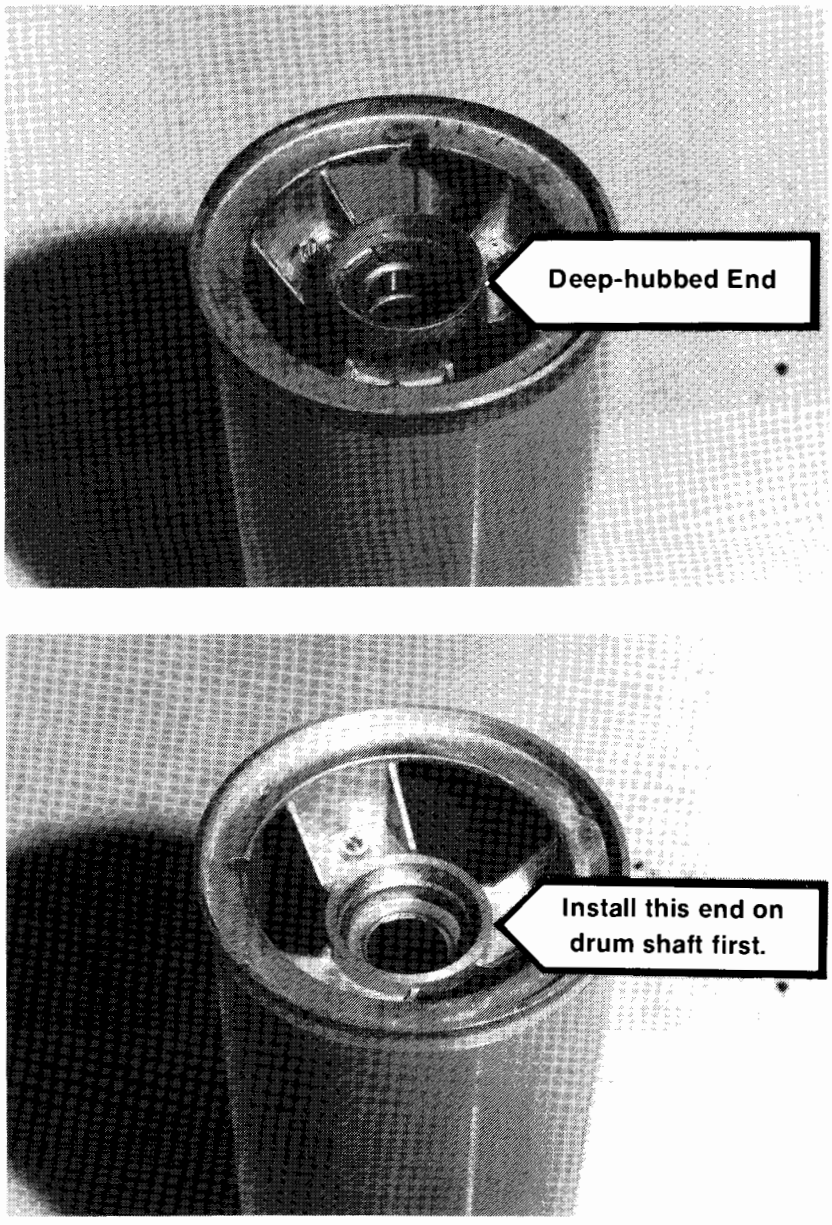


Figure 4-14. Drum End Bells

Photoconductive Drum Installation

Install the new photoconductive drum and EP area subassemblies (excluding the drum cleaner assembly) as follows:

A. Carefully unpack the new drum per the instructions on the box. Handle the drum by the end bells (spokes) at all times.

B. The two ends of the photoconductive drum are almost identical except that the hub on one end bell is deeper (see Figure 4-14). While holding the drum by its end bell at the deep-hubbed end, install the drum onto the drum shaft. Carefully slide the drum into the printer.

NOTE

The drum must be as parallel as possible to the drum shaft during installation.

C. When the drum has been slid into position, rotate the drum back and forth until the rear notch on the drum locks in place (no more free rotation is possible).

D. Place the bearing removed in step I of the removal procedure onto the drum shaft. Center and seat the bearing in the exposed hub of the photoconductive drum end bell.

E. Carefully install the drum end plate on the drum shaft and push forward to seat the bearing in the end bell hub. Using a large cross-tipped screwdriver, tighten the end plate's two captive quarter-turn screws to lock the end plate in position.

CAUTION

The drum surface can be scratched easily when the coronas are inserted. Ensure that the corona assemblies are aligned to their guide tracks when reinstalling.

F. Reinstall the three corona assemblies (PRIMARY, SIMULTANEOUS, and TRANSFER) into the printer.

G. Install the electrostatic monitor assembly in the printer. Do NOT touch the assembly's wire connectors or metal door.

H. Install the Developer Assembly as follows:

CAUTION

Ensure the DEVELOPER ENGAGE CONTROL lever is rotated fully clockwise before attempting to install the developer assembly in the printer.

---

1. Keeping the developer assembly parallel to the floor, align the assembly with its guide rail and carefully slide it into the printer.

2. Rotate the DEVELOPER ENGAGE CONTROL lever counter-clockwise to lock the assembly in position.

3. Reconnect the developer assembly cable to the connector labeled "DEV CONN" in the front of the printer. Ensure that the cable is routed in under the toner hopper stop block.

4. Close the toner hopper by lifting up on the assembly and swinging the hopper into position.

Cleaner Station-Wiper Blade Replacement

Whenever the photoconductive drum is replaced, the cleaner station assembly's wiper blade must be replaced. To replace the wiper blade, proceed as follows:

A. Position the drum cleaner assembly on a clean working surface with the cleaner blade facing up and the blade closed. (The normal operating position).

B. Loosen the three cross-hatched screws (see Figure 4-15) which secure the wiper blade support bracket and remove the bracket.

CAUTION

Loosen only the three screws which are on the outside of the bracket as shown in Figure 4-15.

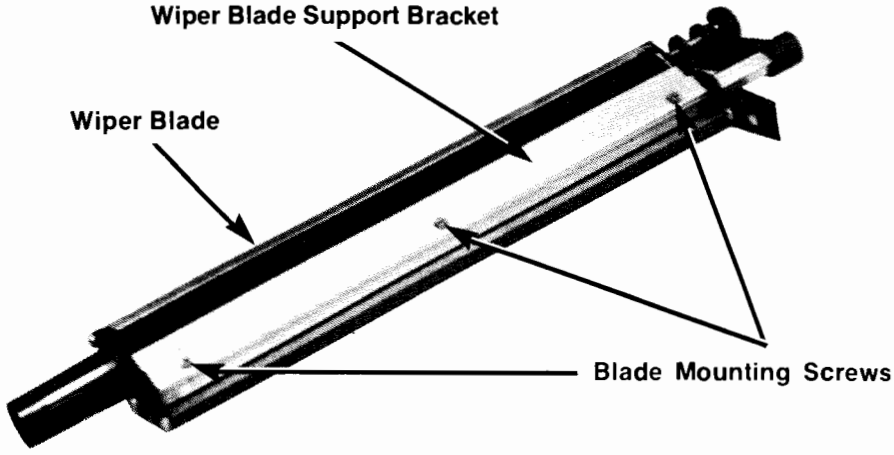


Figure 4-15. Cleaner Station Wiper Blade (Removed from Printer).

C. Lift up on the blade and remove the blade.

D. Using a vacuum cleaner or disposable wipers, thoroughly clean the drum cleaner assembly.

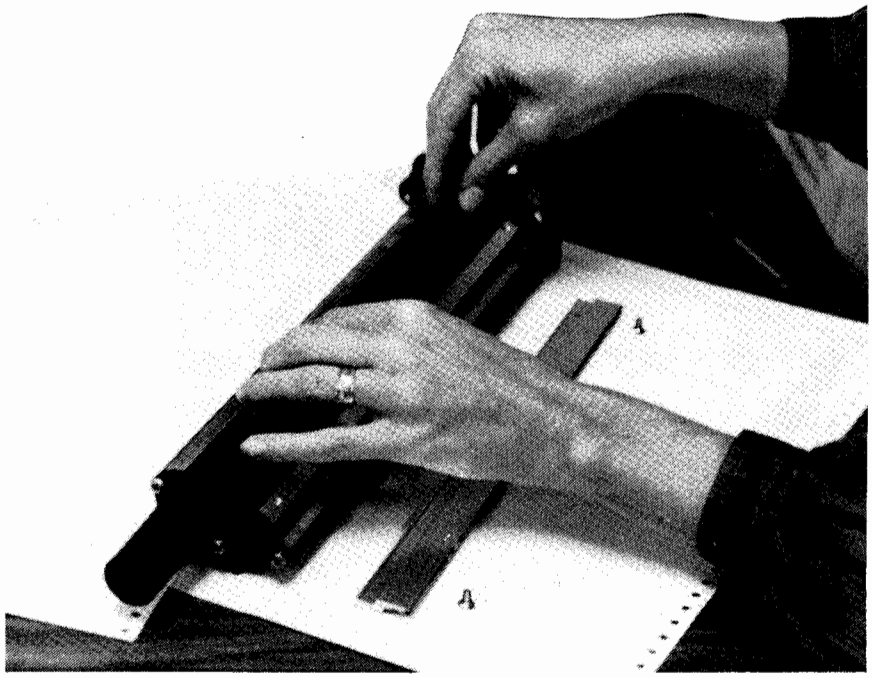


Figure 4-16. Installing New Wiper Blade

E. Install the new wiper blade on the assembly. Ensure that the dull side of the wiper blade faces up (see insert in Figure 4-16) and that the blade is parallel to the bottom of the assembly.

F. Install the blade support bracket on the wiper blade and secure the bracket to the assembly with the three cross-hatched screws. Tighten the center screw first, then tighten the two outside screws.

G. Lubricate the wiper blade as follows:

1. Put on a plastic glove.

2. Using the gloved hand, apply a generous amount of toner to the outside edge of the wiper blade (see Figure 4-17).

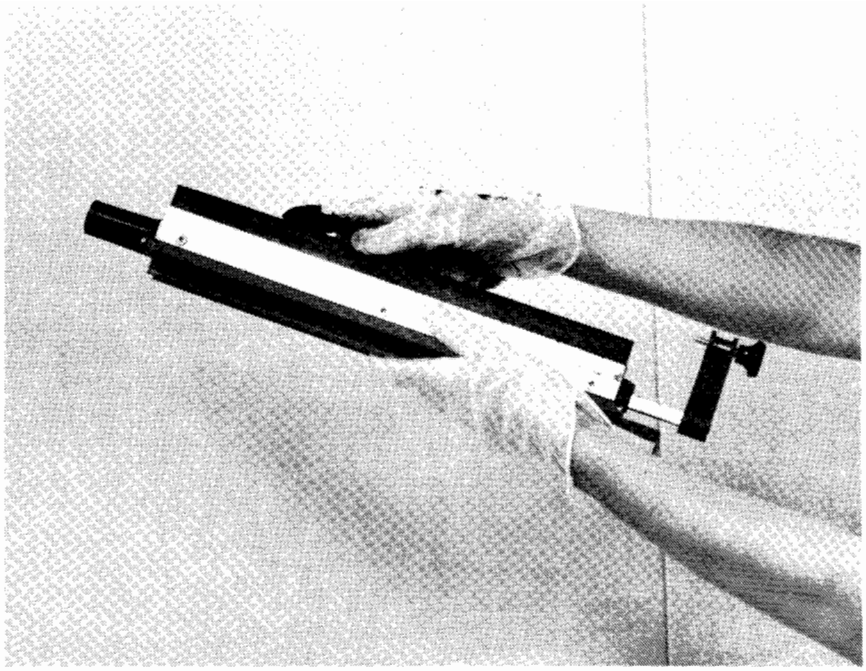


Figure 4-17. Lubrication of Wiper Blade

NOTE

If no toner is readily available, open the toner hopper top cover and obtain toner from the hopper for lubricating the wiper blade.

H. Carefully align the cleaner station assembly to its tracks and slide into the printer. Ensure that the cleaner station handle is in the up position.

I. Install the one flat-head screw which secures the cleaner station assembly to the printer frame (see Figure 4-1). It may be necessary to move the cleaner station handle to install this screw; position the STATION HANDLE UP once the screw is installed.

New Drum / Wiper Routine and Wiper Blade / Drum Pressure Adjustment

The New Drum/Wiper Routine must be executed after the photoconductive drum and wiper blade have been replaced to ensure that the drum is properly lubricated. The wiper blade tension calibration procedure verifies that the correct tension is exerted on the drum by the wiper blade. To perform the New Drum/Wiper Routine and calibrate the wiper blade tension, proceed as follows:

A. Close the printer front door.

B. Place the Front ON/OFF and the rear MAIN POWER breaker to ON.

C. Execute the New Drum/Wiper Routine as follows:

1. Press 660 ENTER at the Service Control Panel. The "**New drum routine**" message is intermittently displayed. Press RUN, the "**Standby**" message is displayed; the drum will make one complete rotation to apply toner to the drum's surface. When drum movement stops, the "**Lower wiper blade**" message is displayed; proceed to step D.

D. Verify the wiper blade tension as follows:

1. Open the printer front door.

2. Grasp the cleaner station handle (black plastic knob) and lower the wiper blade into position. Ensure that the handle is latched below the metal tab.

3. Install the Cleaner blade/tension gauge onto the cleaner station handle, see Figure 4-18.

4. While closely monitoring for handle movement, pull downward on the Cleaner blade/tension gauge. Handle movement should occur precisely when the 1000 g mark is aligned on the tension tool. If movement does not coincide with index mark alignment, proceed to step 5 and adjust the position of the handle locking bracket. If the tension is correct, proceed to step E.

5. Blade/Drum pressure is changed by loosening the two cross-hatched screws and moving the slotted handle locking bracket either up or down. If the tension is insufficient move the bracket down. If the tension is too great move the bracket up (See Figure 4-18). Repeat steps 4 and 5.

NOTE

It may be more convenient to loosen both screws and then only tighten the top adjustment screw when adjusting the position of the handle locking bracket. Once the correct position is found, tighten both screws.

E. Close the EP close-out cover and the printer front door.

F. Press RUN at the Service Control Panel. The "**Standby**" message is displayed. When the New/Drum Wiper Routine is completed, the "**All done**" message is displayed.

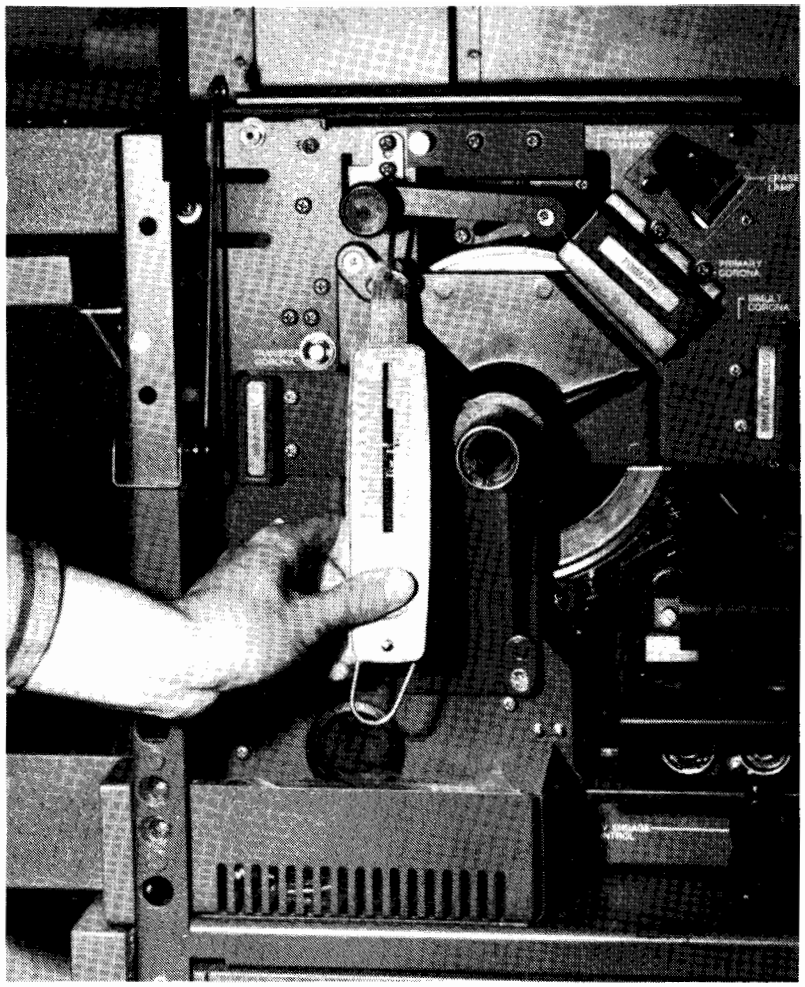


Figure 4-18. Wiper Blade/Drum Pressure Adjustment

G. Press 600, ENTER at the Service Control Panel to exit the New Drum/Wiper Routine. The "**Operator access level**" message is intermittently displayed and then the "**HP 2680A Page Printer**"or "**Laser Page Printer**" message is displayed.

NOTE

The HP 2680A Page Printer maintains a record of the number of rotations which have occurred on the photoconductive drum. To display the number of rotation on the drum, press 204, ENTER. The "**KRtn on drum = XXX**" message is displayed. The "XXX" refers to the number of rotations in thousands.

H. To reset the drum rotation count, press 304, ENTER at the Service Control Panel. The "**KRtn on drum = ?**" message is displayed. Press 0, ENTER to set the drum rotation count to zero.

I. To improve print quality and to ensure an adequate developer mixture lifetime, the dark potential target must be set. To set and monitor the dark potential target, proceed as follows:

1. Press 330, ENTER at the Service Control Panel. The "**Dark target = ?**" message is displayed. Press 160, ENTER to set the dark potential target to a count of 160.
2. Press 1, ENTER, RUN at the Service Control Panel to initiate the printer Self Test.
3. Press 1130, ENTER at the Service Control Panel to continuously display the dark potential.
4. Allow sufficient time for the dark potential to stabilize and press HALT.

NOTE

Carry-out is a condition where carrier from the developer mixture is being attracted to the paper. On paper, carry-out appears as rough gritty particles in the print background that can be brushed off after the paper has gone through the fusing process.

---

5. Inspect the fused paper for excessive carry-out. If the carry-out is minimal, proceed to step J. If carry-out is excessive, return to step 1 and REDUCE the dark potential target by an increment of 5 (i.e., 155) and proceed through steps 1 through 5. Repeat this procedure until suitable print quality is obtained. The dark potential target range is between 175 to 145 counts, with the optimum being 160.

J. Press RUN to resume normal printing.

NOTE

A background condition, which is the opposite of carry-out, can exist. It is characterised by a light gray color in the white areas of the printout, and can be adjusted by INCREASING the dark potential target by increments of 5, as described in step 5 above.

The dark target should be run as low as possible without background appearing on the paper. Running the dark target too high could cause some areas of the print to fade out or certain other characteristics of poor print quality.

LAMP REPLACEMENT

Erase Lamp Assembly

The Erase Lamp assembly consists of ten incandescent lamps. If the **"Erase lamp warn"** message is displayed (this message is only seen after an **"Advisory condition"** message is displayed and the 5 ENTER operator command has been inititiated), a defective lamp is probably the source of the message. To replace a defective erase lamp, proceed as follows:

NOTE

If the error message persists after performing this procedure, notify an HP service representative.

A. Place the Front ON/OFF switch and the rear MAIN POWER breaker to OFF.

B. Open the front door and the EP close-out cover.

C. Pull the two snap fasteners and remove the erase lamp end cover (see Figure 4-1).

D. Grasp the Erase Lamp Assembly at the finger hold as indicated in Figure 4-19 and pull outward to remove the assembly from the printer.

E. Carefully inspect each bulb on the unit for a broken filament which indicates a faulty bulb.

F. When a bulb with a broken filament is identified, remove the bulb by pulling it from the socket (see Figure 4-20). Insert a new bulb in the empty socket.

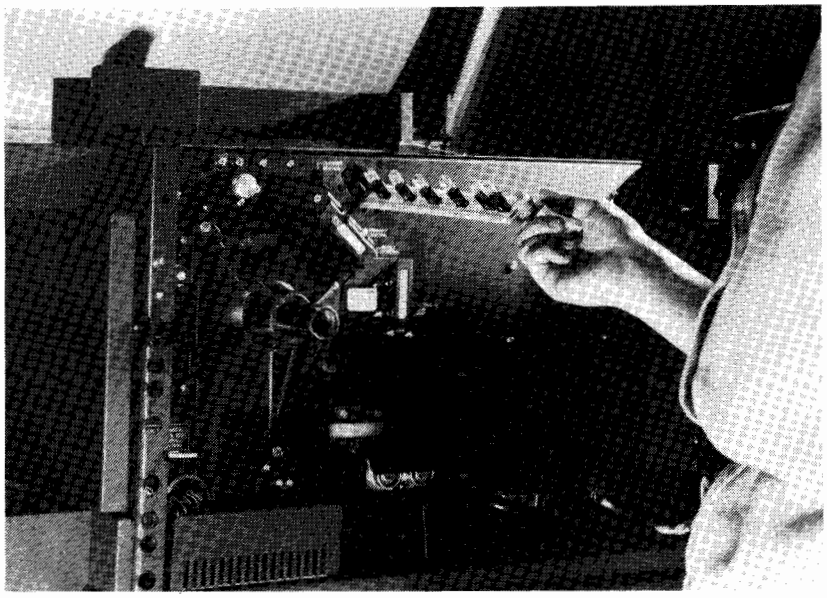


Figure 4-19. Erase Lamp Assembly Removal

NOTE

A broken filament is not always visible in the faulty bulb. If the faulty bulb is not visually identifiable, replace all the lamps in the erase lamp assembly.

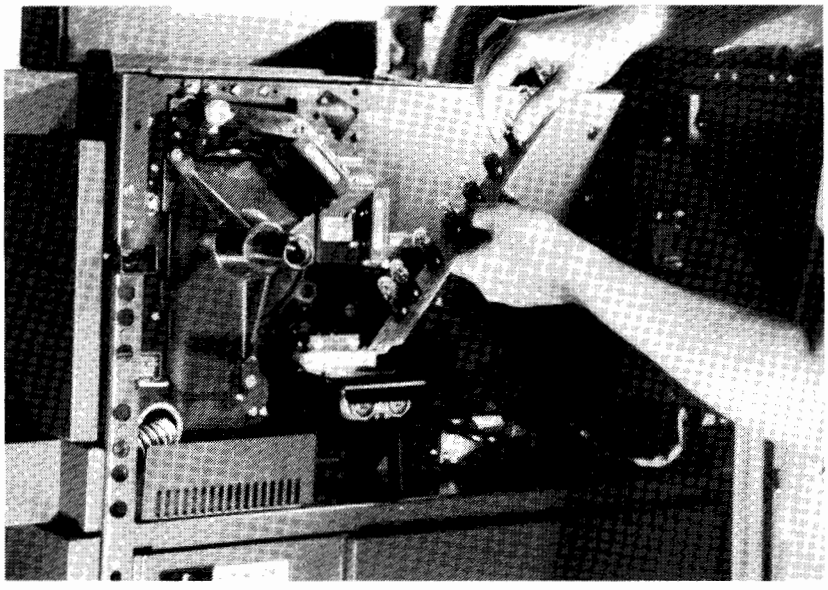


Figure 4-20. Erase Lamp Assembly (Lamp Replacement)

G. Insert the Erase Lamp Assembly back into the printer. Replace the Erase Lamp end cover.

H. Close the EP close-out cover and printer's front door.

I. Place the Front ON/OFF switch and the rear MAIN POWER breaker to ON.

J. Press RUN to resume normal printing.

Overall Illumination Lamp Assembly

The Overall Illumination Lamp assembly consists of ten incandescent lamps. If the **"Overall illum warn"** message is displayed (this message is only seen after an **"Advisory condition"** message is displayed and the 5, ENTER operator command has been initiated), a defective lamp is probably the source of the message. To replace a defective overall illumination lamp, proceed as follows:

NOTE

If the error message persists after performing this procedure, notify an HP service representative.

A. Place the Front ON/OFF switch and the rear MAIN POWER breaker to OFF.

B. Open the front door and the EP close-out cover.

C. Remove the Developer Assembly as follows:

1. Open the toner hopper.

2. Disconnect the developer assembly cable from the connector labeled "DEV CONN" in the front of the printer.

3. Rotate the DEVELOPER ENGAGE CONTROL lever located below the developer assembly (see Figure 4-1) fully clockwise to disengage the developer gears.

WARNING

The developer assembly weighs approximately 6 kilograms (13 pounds). Be prepared to support this weight when the assembly is pulled from the printer.

---

4. Slide the developer assembly out (with hands positioned as shown in Figure 4-2).

5. Place the developer assembly on a clean working surface away from the printer.

D. Grasp the Overall Illumination Assembly at the finger hold indicated in Figure 4-21. Pull the strip outward and remove it from the printer.

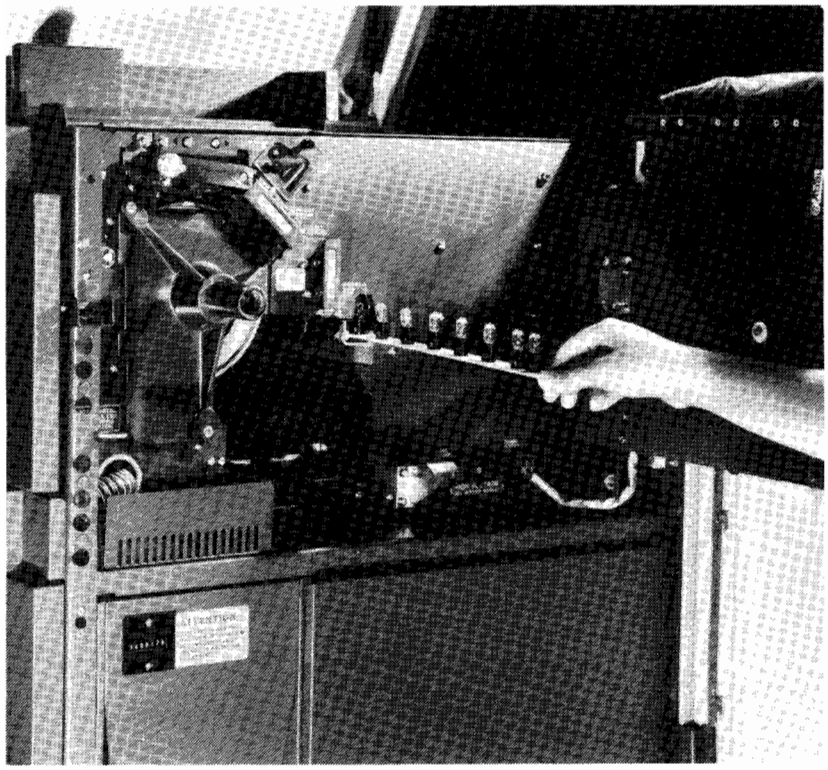


Figure 4-21. Overall Illumination Assembly Removal

E. Carefully inspect each bulb on the unit for a broken filament which indicates a faulty bulb.

F. When a bulb with a broken filament is identified, remove the bulb by pulling it from the socket. Insert a new bulb in the empty socket.

NOTE

A broken filament is not always visible in the faulty bulb. If the faulty bulb is not visually identifiable, replace all the lamps in the overall illumination assembly.

G. Install the Overall Illumination Assembly back into the printer.

H. Install the Developer Assembly as follows:

CAUTION

Ensure the Developer Engage Control Lever is rotated fully clockwise before attempting to install the developer assembly in the printer.

---

1. Keeping the developer assembly parallel to the floor, align the assembly with its guide rail and carefully slide it into the printer.

2. Rotate the DEVELOPER ENGAGE CONTROL lever counter-clockwise to lock the assembly in position.

3. Reconnect the developer assembly cable to the connector labeled "DEV CONN" in the front of the printer. Ensure that the cable is routed in under the toner hopper stop block.

4. Close the toner hopper by lifting up on the assembly and swinging the hopper into position.

I. Close the EP close-out cover and the printer's front door.

J. Place the Front ON/OFF switch and the rear MAIN POWER breaker to the ON position.

K. Press RUN to resume normal printing.

DISPOSAL BOTTLE REPLACEMENT

The HP 2680A Page Printer displays the **"Disposal bottle full"** message at a preprogrammed interval. This interval is based on revolutions of the photoconductive drum. When this message is displayed, it is the RESPONSIBILITY of the operator to replace the toner disposal bottle with a new, empty bottle. The printer can not be put back on-line until the bottle has been replaced.

CAUTION

The toner disposal bottle collects contaminated toner at different rates depending upon print density and printer usage. Although the disposal bottle may not appear to be full at the end of its scheduled interval, it must be replaced to prevent it from overfilling. If allowed to overfill, the vacuum system may become blocked which could damage the printer and contaminate the room that the printer is in with toner.

To replace the toner disposal bottle proceed as follows:

A. Open the printer front door.

B. Unscrew the cap which attaches the vacuum hose to the bottle. It is advisable to tap the hose a few times to clear any toner trapped in the hose before unscrewing the cap.

CAUTION

Toner recovered by the vacuum system then stored in the recovery bottle is highly contaminated with paper dust. DO NOT ATTEMPT TO REUSE THIS TONER IN THE PRINTER. Extensive damage to the printer will occur.

C. Lift the vacuum hose from the bottle, tip the top of the bottle forward and remove the bottle from the printer.

D. Use the cap from the replacement bottle to seal the bottle removed from the printer.

NOTE

Dispose of toner bottle according to the instructions stated on the bottle.

E. Tilt the replacement bottle (92181A) into the printer top first, engage the hose to the bottle, and lift the bottle into position.

F. Lift the vacuum hose and straighten the bottle into position. Connect the hose to the bottle by tightening the cap. Ensure that the cap is secured and that no vacuum leaks exist around the cap.

G. Close all doors and the top cover.

H. To clear the **"Disposal bottle full"** message press 7, ENTER at the Service Control Panel. The **"Bottle empty? 1= yes"** message is displayed. The operator must respond to this by pressing l, Enter to resume printing.

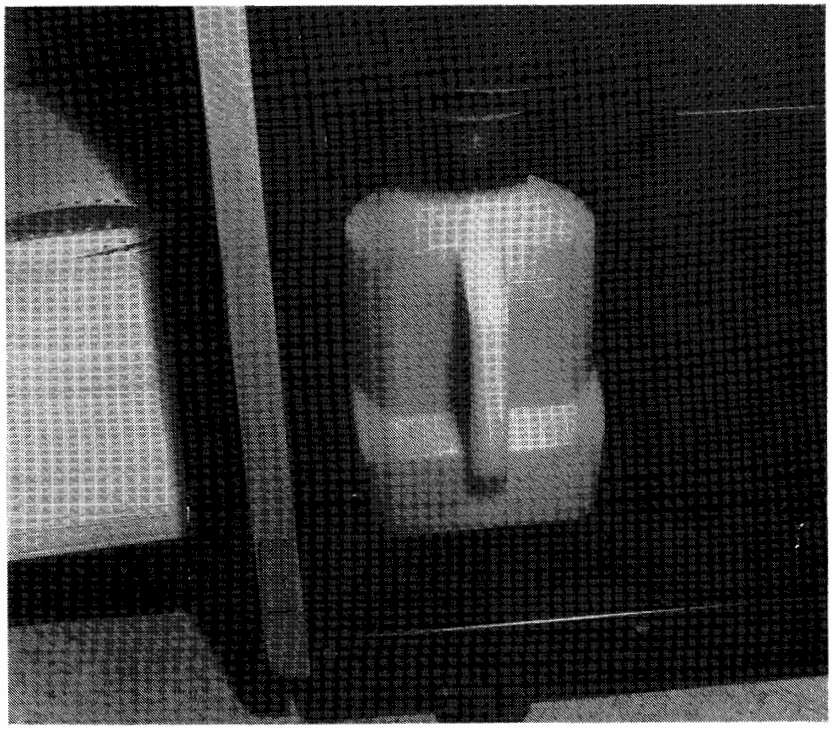


Figure 4-22. Toner Disposal Bottle Replacement

PAPER SENSOR MAINTENANCE

The paper sensors should be cleaned when excessive false paper misfolds or undetected paper-outs occur. Proceed as follows to clean the paper sensors:

A. Locate the paper sensors in the two locations shown in Figures 4-23 and 4-24.

   1. The paper out sensor is located on the paper input bar in the front of the printer.

   2. The paper misfold sensor is located on the inside of the paper door.

B. Clean the paper sensors by wiping with a clean, lint-free wipe.

C. Close the paper output door.

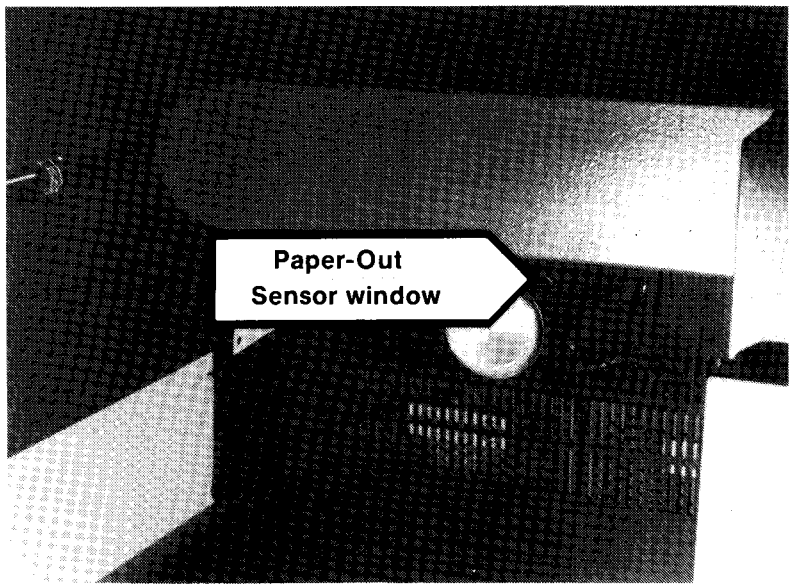


Figure 4-23. Paper Out Sensor

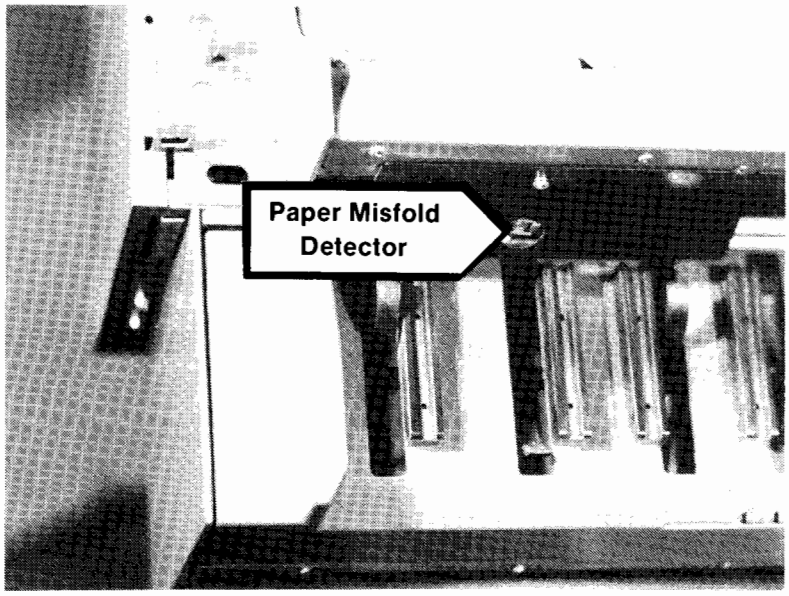


Figure 4-24. Paper Misfold Sensor

SELF TEST

Initiation of the Self Test command causes the HP 2680A Page Printer to print out a test pattern (see Figure 4-25). This pattern verifies the operation of most of the processing functions of the printer. The self test pattern contains various print samples and a diagnostic printout. Since the printer continuously monitors its internal processing functions, the diagnostic printout is constantly updated as each pattern is printed. The operator may be called upon at times to relay information from this printout to the service representative. For this reason it is recommended that the operator run the self test daily and keep a copy of the printout with the maintenance checklist in the Operator's Log Book.

NOTE

It is recommended that the Self Test only be initiated when the printer is loaded with paper which is 12 inches wide or greater (from outside edge to outside edge of paper carrier strips). If Self Test is attempted on paper less than this width, portions of the test pattern are not transferred to paper.

If the printer is currently printing a job the "**Job already active**" message is displayed. The operator must either wait for the job to be completed or terminate the job at the system console before initiating Self Test.

To initiate the Self Test, press 1, ENTER at the Service Control Panel and then press RUN. A continuous pattern is printed out after the Self Test diagnostics have completed (approximately the fifth page of printed output).

To terminate Self Test press HALT.

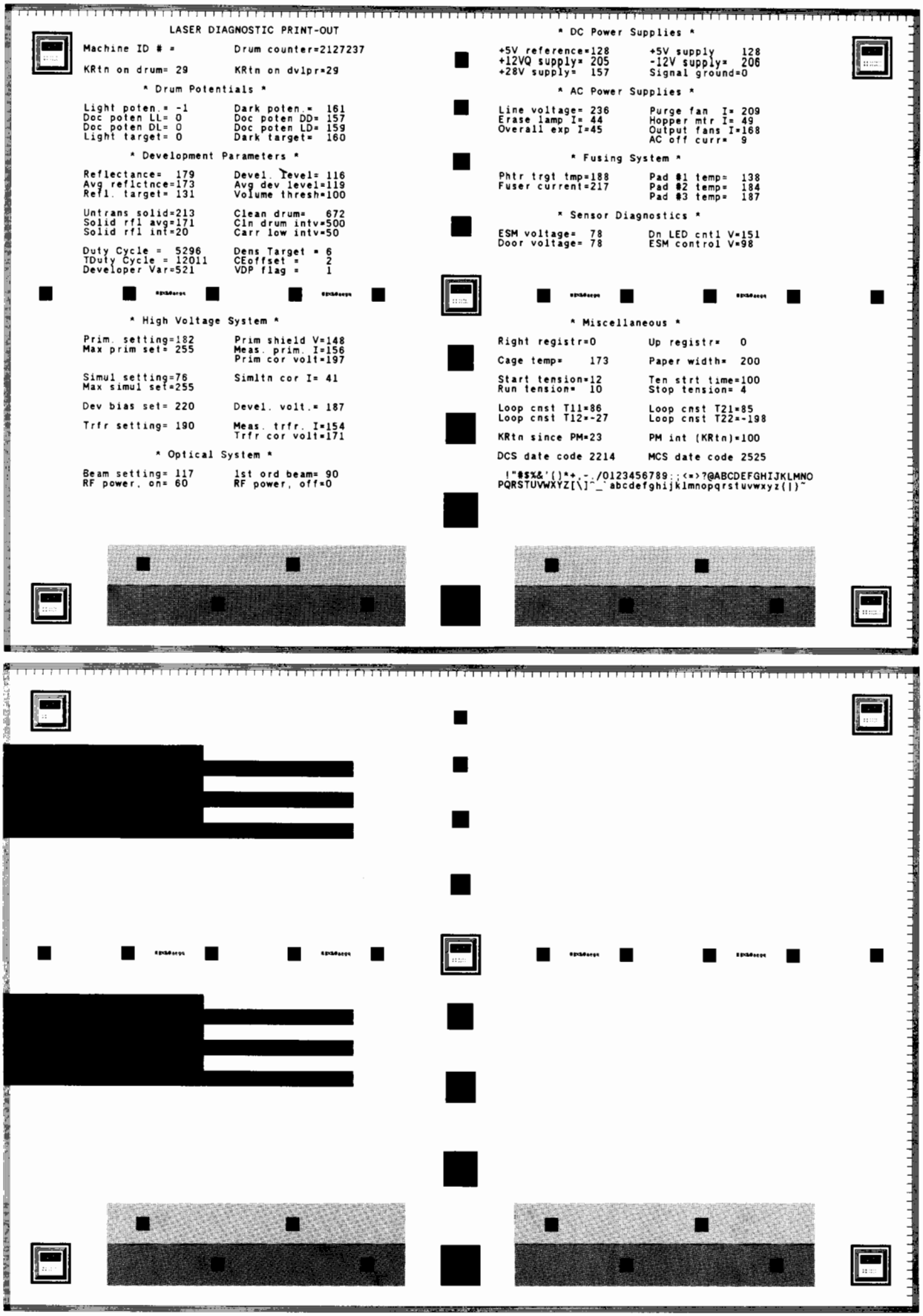


Figure 4-25. Self Test Pattern

SECTION V.
IN CASE OF DIFFICULTY

There are several instances in which proper operator action can correct printer difficulties. To expedite the correction of these difficulties, the operator should be aware of the information and suggestions listed in this section of the manual. The following topics are discussed:

JAM RECOVERY MODE

During printing, the preheater and fuser, will fuse (melt) the toner into the paper to create a permanent printed image. If a paper jam occurs, paper motion stops and the preheater and fuser are disabled. Before printing can resume, if the operator attempts to perform Top of Form alignment (see Section III) by advancing the paper via the PAPER FORWARD key, nonpermanent (unfused) print is advanced through the printer. Jam recovery mode allows the operator to move paper by manually activating the preheater and fuser so that Top of Form alignment may be established, and paper may be moved without sending unfused paper to the stacker.

The Procedure for using jam recovery mode is as follows:

A. At the Service Control Panel press 6, ENTER.

   1. The "**Jam recovery warmup**" message will be displayed.

   2. The RUN, PRINT SINGLE, EJECT SINGLE/ALL, THREAD PAPER and PAPER REVERSE keys are disabled. When the preheater is ready, the printer displays "**Jam recovery ready**" message, and a three beep tone is sounded.

B. Press the PAPER FORWARD key on the Paper Control Panel to re-establish Top of Form. The paper is advanced at one-half the normal speed.

NOTE

If the PAPER FORWARD key is not used for five seconds, jam recovery mode will terminate.

C. Press the HALT key on the Operator Control Panel to terminate Jam Recovery Mode.

   1. The "**Jam recovery ready**" message is cleared.

   2. All Service, Operator and Paper Control Panel keys are returned to normal operation.

PAPER JAMS

The HP 2680A Page Printer is designed to retain print information in memory until it has been successfully printed and transferred to paper. If a paper jam is detected before any of these processes have completed, the pages will be reprinted, without interaction from the host system, after clearing the jam.

When a paper jam occurs, it will usually happen in one of the following areas:

- Input area
- Output area

Determine the location of the paper jam and proceed as follows:

NOTE

Unfused print is easily smeared. The operator's hands and clothing may become soiled if the paper is not handled with care.

Input Area

If the paper jam is not too serious (i.e., the carrier strip holes are not torn), the operator may move the jam through the input tractors by using Jam Recovery Mode (see the Jam Recovery Mode discussion in this section of the manual), re-establishing Top of Form and resuming printing.

If the carrier strip holes are torn, press the PAPER REVERSE key on the Paper Control Panel to pull the paper backward through the printer and proceed to step B. If the paper is too tightly jammed, the PAPER REVERSE key will not work; proceed to step A.

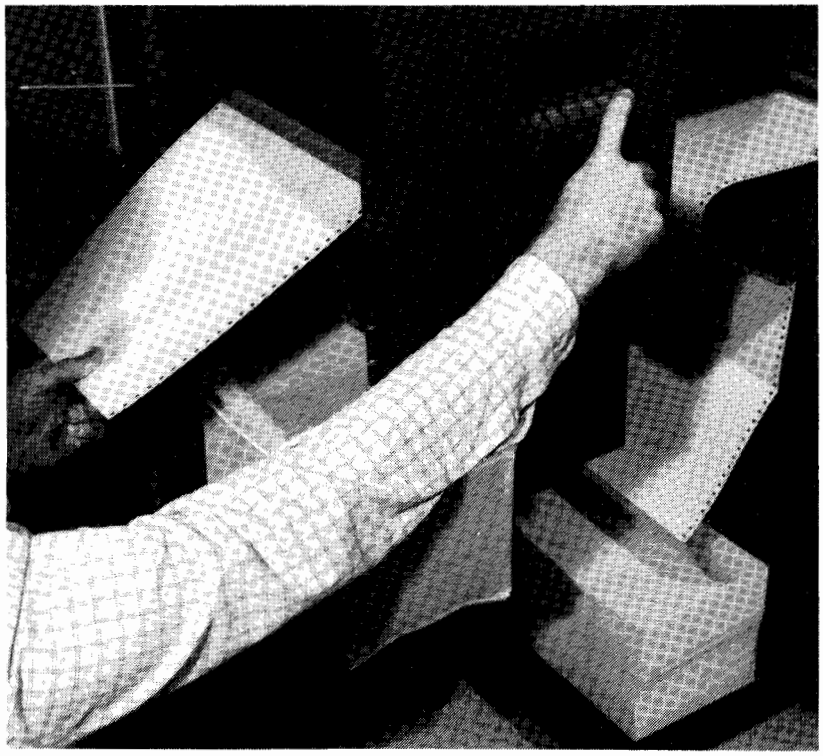


Figure 5-1. Clearing a Paper Jam from the Output Tractors

NOTE

The use of the PAPER FORWARD key while not in Jam Recovery Mode causes unfused print to be advanced.

After using the PAPER REVERSE key, the operator should press the PAPER FORWARD key to reposition the paper input tractors so that paper is moved in one-half inch increments. Additional presses of the PAPER FORWARD key moves the paper.

A. Open the paper input tractors. Open the paper output door and remove the paper from the output tractors. Ensure the paper is not caught on either set of tractors.

B. While maintaining hand tension on the paper from either the output tractors (see Figure 5-1) or from the review window (see Figure 5-2), use the PAPER FORWARD key to move paper through the printer until the jam is cleared.

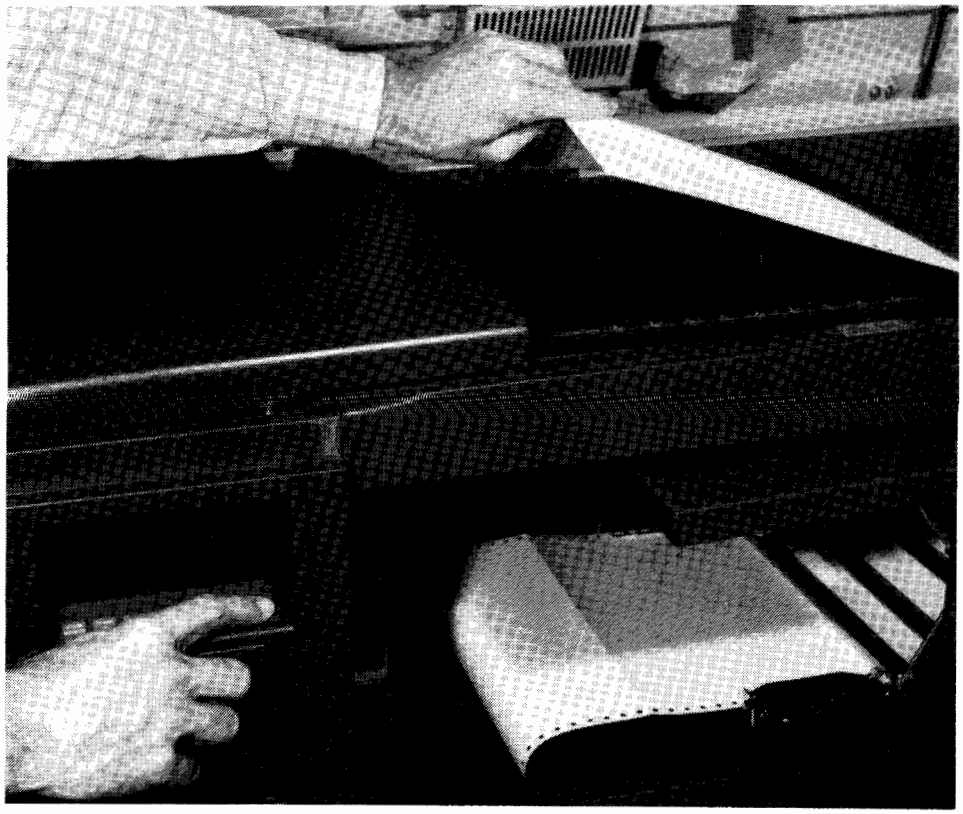


Figure 5-2. Clearing a Paper Jam from the Review Window

C. Reposition the paper in the paper tractors and the stacker.

NOTE

If the paper is badly torn at the input tractor, tear the paper at the page perforation. Press the EJECT ALL key on the Operators Control Panel to clear the printer of paper and reload paper.

D. Re-establish Top of Form.

E. Close all doors and top cover and press the RUN key to resume printing.

Output Area

WARNING

The preheater area may be hot, even when the MAIN POWER switch is OFF. Always maintain caution while working near this area.

NOTE

Output jams may not be visible to the operator until the paper output door is opened. Often, paper jams in the output tractors may cause the paper to bunch at the input tractors.

A. Open the paper output door. If the paper is not seriously damaged (i.e., the carrier strips have not been torn), use Jam Recovery Mode to clear the jam, re-establish Top of Form, and resume printing. If the paper is badly torn proceed on to step B.

B. Open the output paper tractors and remove the paper from the pinwheels. While pulling on the paper just removed, use the PAPER FORWARD key to move the jam through the printer.

C. Reposition the paper in the output tractors and close the paper output door. Ensure that the paper is folded correctly when started in the stacker.

D. Re-establish Top of Form.

E. Press the RUN key to resume printing.

PAPER STACKER MISFOLDS

When a paper misfold occurs in the stacker, proceed as follows:

A. Ensure that the area under the stacker is clear, then press the STACK DOWN key on the Paper Control Panel to lower the stacker.

B. Clear the misfold and reposition the paper in the stacker so that all folds are correct (in the same direction as it was folded when in the box).

C. Press the STACK UP key to raise the stacker to the operating position; then press the RUN key to resume printing.

NOTE

It is recommended that a new paper stack be started after a paper jam has occurred. Jams often result in paper stack contortions which, if not attended to, could possibly lead to additional stacker misfolds.

If time permits, the operator should occasionally straighten the paper stack. This could possibly prevent a paper misfold.

PAPER PATH PROBLEM CHECKLIST

If the operator encounters difficulty in paper handling (i.e., paper jams, paper misfolds, print to paper problems...), it is advisable that all adjustments pertaining to paper handling are checked and verified. The following is a summary of the paper and paper related adjustments which must be taken into consideration each time paper is loaded or changed.

- Does the paper meet all specifications required by the HP 2680A Page Printer? (See Paper Specifications in Section I of this manual.)
- Is the paper correctly positioned on the Paper Tray? (Refer to the Paper Loading Instructions in Section III).
- Is the correct Corona Shield installed? (Refer to the Corona Shield Installation in Section III.)
- Are the Input Tractors adjusted correctly? (Refer to the Paper Loading instructions in Section III.)
- Have the output tractors been adjusted correctly with hot (fused) paper? (Refer to the Paper Loading instructions in Section III.)
- Has the Page Length Adjustment, on the paper output door, been set for the currently installed paper length? (Refer to the Paper Length Adjust discussion in Section II and the Paper Loading instructions in Section III.)
- Has Top Of Form been correctly aligned? (Refer to the Top of Form Alignment in Section III.)
- Has the Page Length been entered into memory? (Refer to Page Length Entry in Section III.)
- Has the print been registered to the paper via the Adjust Print Position keys? (Refer to the Adjust Print Position Keys explanation in Section II.)
- Is the Auxiliary Stacker Tray needed? (Refer to the Auxiliary Stacker Tray Installation procedure in Section III.)
- Do the Paper Sensors (paper misfold and paper out) need cleaning? (Refer to the Paper Sensor Maintenance procedures in Section IV.)
- Is the paper stacking correctly in the power paper stacker (not leaning, twisting, or stair-stepping)? Incorrect stacking may result in excessive paper path problems (paper misfolds and paper jams).

OPERATOR HINTS

(Before Notifying the service representative)

The operator should not attempt to perform any maintenance of this printer except the routine operator maintenance. However, due to the number of self adjustments and self diagnostics inherent in the HP 2680A Page Printer, the operator may perform several actions to try to correct a difficulty prior to calling a Service Representative. If a "**Hardware malfunction**" or an "**Advisory condition**" occurs, the operator should perform the following steps:

At the Service Control Panel.

A. Key in a  (Display Additional Fault Information)

Press 

Consult Table 5-1, Operator Messages, to see if the message is listed along with the appropriate operator action. If the message is not listed in the table, note the specific fault condition and the time, data, and drum rotation count (use the 3, ENTER command).

B. Press 

This causes the printer to perform several self adjustments which may clear the fault condition. After a second time through these steps, if a fault still exists, proceed to step C.

NOTE

For "**Advisory condition**" messages, the operator can continue as normal and the condition may correct itself.

NOTE

The actions described in step C and D cause a loss of data and they restore the printer to its default environment.

C. Key in a  (reset)

Press 

Press 

D. Turn the Front ON/OFF switch to OFF then ON.

Press 

After repeating the above steps, if the fault condition persists, notify a service representative.

PRINT QUALITY ACTIONS

The HP 2680A Page Printer's electrophotographic operating characteristics are monitored on an on-going basis; however, the monitoring of these parameters alone can not ensure that the printer 's providing quality output. The operator, therefore, must use his/ her judgement in determining if the print quality is acceptable.

If the operator feels that the print quality has degraded, the following steps should be performed in the sequence listed. Following each step the print quality should be checked. If the quality has not improved, the operator should proceed to the next step.

1. Clean the Corona Assemblies
2. Replace the Developer Mixture
3. Replace the Photoconductive Drum and the Cleaner Station Wiper Blade

Although different operators judge print quality differently, certain failure criteria is evident and may be used by the operator to help assist in deciding what action needs to be taken to correct a print quality problem.

The following is a list of failure criteria to assist the operator in determining if the developer mixture or if the photoconductive drum has failed.

Developer Mixture Failure Criteria

- Examine the printed output for high levels of background toner deposits (the paper appears gray or dirty). The presence of background toner may indicate that the developer mixture has degraded and needs to be replaced.
- Examine the printed output; note the printed character sharpness. Loss of sharp, clear print indicates that the developer mixture has degraded and needs to be replaced.
- Execute the printer self test (refer to the Self Test procedure in Section IV of this manual). Note the readings listed under the heading of Development Parameters in the Self Test diagnostic print-out. If the "**Solid rfl avg=XXX**" is greater than 350, replace the developer mixture.

Photoconductive Drum/Wiper Blade Failure Criteria

- Examine the printer output. Light or faded areas consistently REPEATED in the same position in the printed output indicates that the photoconductive drum has degraded and needs to be replaced.

NOTE

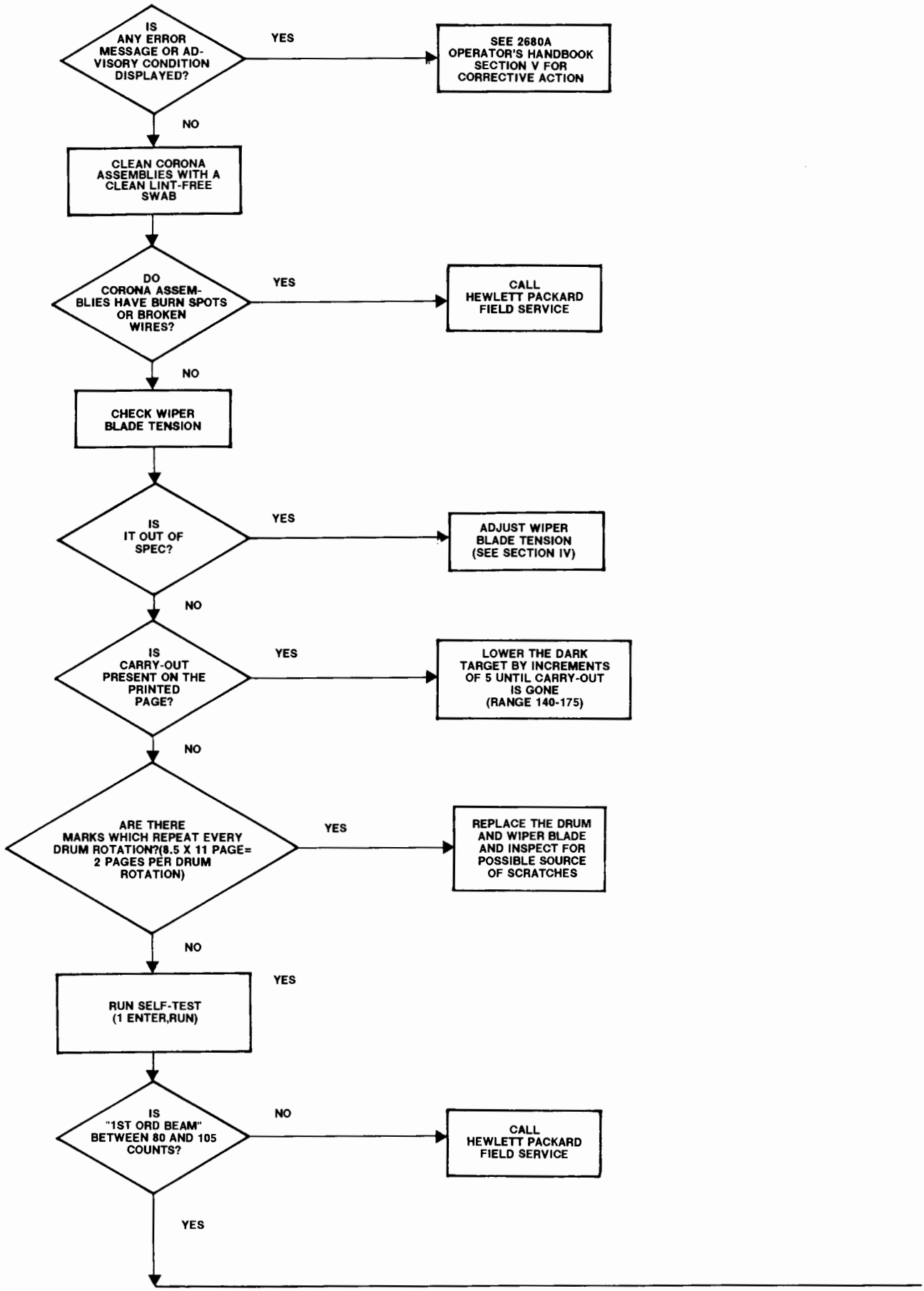
When printing on paper with an 8.5 inch page length, the spots caused by a scratched drum or a faded area caused by a defective drum appear repeatedly in the same area on every other page of the printed output.

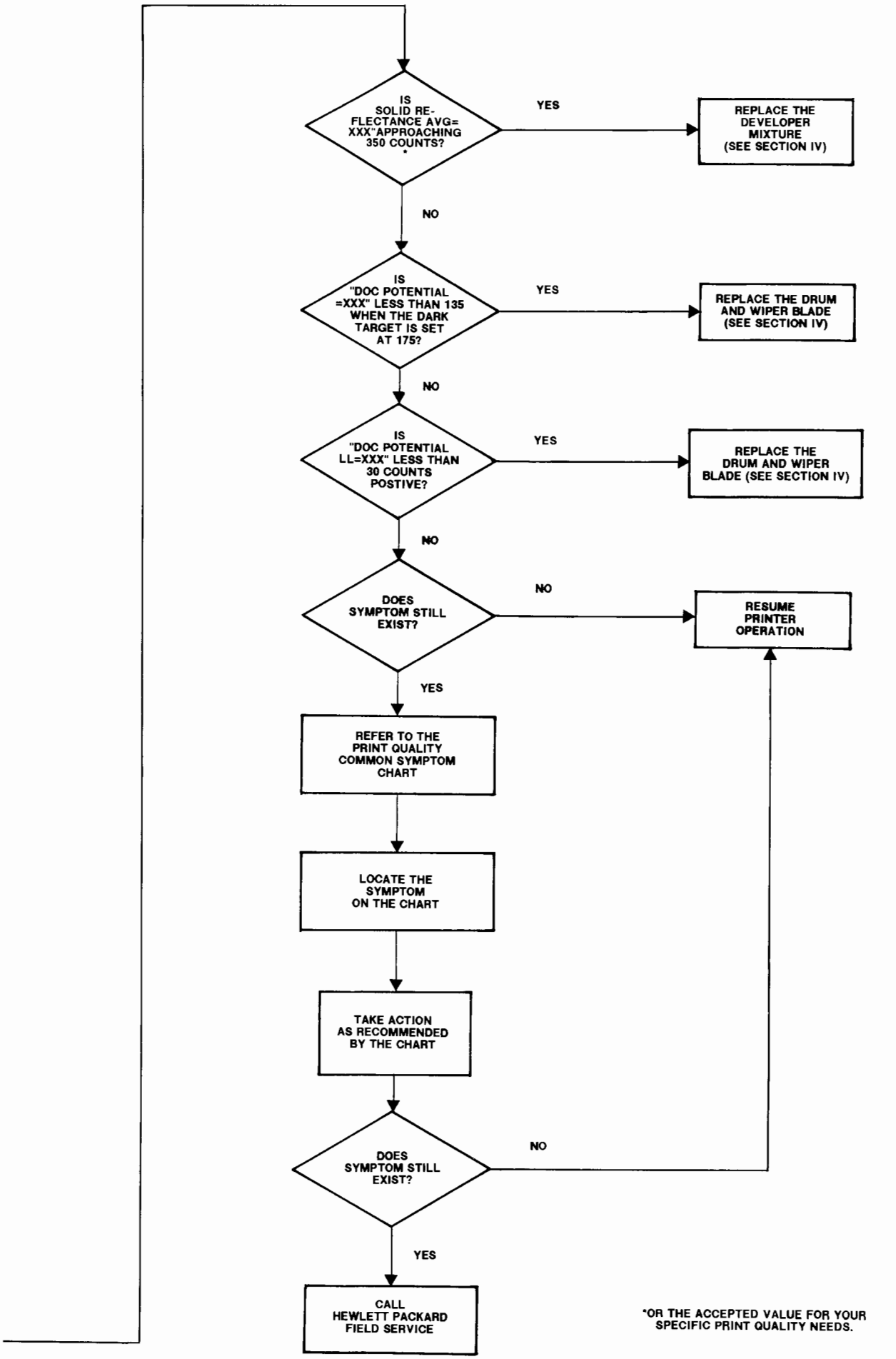
- Examine the printed output. Consistent REPEATED dark or light streaks or spots in the printed output indicate that the drum is damaged (scratched) and needs to be replaced.
- Execute the printer self test, refer to the Self Test procedure in Section IV of this manual. Note the readings listed under the Drum Potentials heading in the Self Test diagnostic print-out. If the "**Dark poten.=XXX**" is less than 135, with a dark target of 175, replace the photoconductive drum.

PRINT QUALITY TABLES

The following tables provide the operator with reference information necessary to make a decision on what action needs to be taken to correct the print quality problems that are occurring.

Table 5-1. PRINT QUALITY FLOWCHART





*OR THE ACCEPTED VALUE FOR YOUR SPECIFIC PRINT QUALITY NEEDS.

Table 5-2. PRINT QUALITY COMMON SYMPTOMS

PROBLEM	DESCRIPTION	ACTION			
		1	2	3	4
Blotches	Patches of black in the print.				•
Background	The paper looks gray or appears dirty	•	•	•	
Blank Page	Printer is moving paper but no printing is appearing.				•
Carry-out	Dark specs in the print, the paper feels gritty.	•	•	•	
Edge of print lost	Print is missing along the edges of the tractor strips.				•
Garbled print	The print quality is normal but the print-out is incorrect.				•
Ghosting	Images from previous drum rotations appear in the print.			•	
Horizontal lines	Lines parallel to the raster scan motion.				•
Faded areas* (drop-outs)	Areas of print which are less dense than the surrounding print.		•	•	
Loss of print density	The print blackness is less than normal.		•		
Print sharpness	The print-out appears to be fuzzy along the bottom edge of the line.		•		
Repeating marks or spots in the print	Repeated every drum rotation.			•	
Repeating black streak	Black streak repeated every drum revolution in the direction of paper motion.			•	
Spurious dots/lines	Marks randomly positioned in the printed output.				•

PRINT QUALITY COMMON SYMPTOMS (continued)

PROBLEM	DESCRIPTION	ACTION			
		1	2	3	4
Smeared print/ poor fusing	Print easily smeared after passing through the fuser.				•
Streaking lines	Sharp white lines in the print in the direction of the raster scan.	•			
Streak on tractor strip edge	Toner is being deposited on the tractor strips.				•

ACTION:
1. Clean/inspect/replace corona wires.
2. Replace developer mixture.
3. Replace/inspect/adjust drum and wiper assembly.
4. Call Hewlett Packard Field Service.

* Faded areas can occur with the Dark Target set too high when using new or near new Drum and Developer mixture.

OPERATOR MESSAGES

Operator messages, visible on the alphanumeric display, are generated either automatically by the printer when certain conditions exist, or in response to a command entered from one of the Service Control Panel keys. The following table describes these messages and the action required by the operator when a message is displayed. If the prescribed operator action fails to restore printer operation, the operator should notify a service representative.

NOTE

The messages indicated with an asterisk (*) are only displayed after either an "**Advisory condition**" or a "**Hardware malfunction**" message has been displayed and the operator has pressed 5, ENTER (display additional fault information) at the Service Control Panel.

TABLE 5-3 OPERATOR MESSAGES

MESSAGE	EXPLANATION	OPERATOR ACTION
Access denied	A service command has been entered. Service commands may not be entered by the operator except under the supervision of a Service Representative.	Enter an appropriate command or call the service representative.
Advisory Condition	This message warns the operator of a possible failure.	The printer does not stop printing; however, the operator should investigate to determine the nature of the message. Refer to the Operator Hints in Section V of this manual.
Can't maintain target	Message occurs when the VPD target (#50) is set too high and the printer cannot maintain correct print darkness.	Lower the target. If the message persists, contact your HP service representative.
Carrier low	Carrier volume in developer assembly is low.	Add carrier mixture to the developer assembly in accordance with the Adding Carrier instructions stated in Section III of this manual.

Command not allowed	This message is displayed if a command which can not be acted upon is entered from the Service Control Panel key.	Refer to the control panel key description for the specific command used. See Table 2-1. Operator Commands, in Section II of this manual.
Command not defined	A non-existent command has been entered.	Enter the correct command. See Operator Commands in Table 2-1 of this manual.
Corona cleaning due	When the current print job is completed or the printer is halted or stops, the corona assemblies must be cleaned.	Refer to Corona Cleaning procedure in Section IV of this manual.
Coronas contaminated	A condition which affects the operation of the coronas has been detected out of range.	The corona assemblies should be cleaned. Refer to the Corona Cleaning procedure in Section IV of this manual.
Developer short cct *	A short circuit has been detected in the Developer Assembly.	The operator should remove the developer assembly and thoroughly clean the developer top seal and the printer's electrophotographic area. Refer to the Developer Assembly Removal and the Electrophotographic Area Clean-Up procedures in Section IV of this manual.
Disposal bottle full	The waste toner bottle is full.	Refer to the Disposal Bottle Replacement procedure in Section IV of this manual. (The bottle must be emptied in order to return to online operation).
Drum counter= XXXXXX	This message provides a cumulative count of drum revolutions from the initial machine installation to the present.	Press 3, ENTER to display the drum revolution count. This message is automatically cleared after releasing the ENTER key.
Eject warming up	The printer's fuser temperature is adjusting to the correct level.	No action is required.
Erase lamp warn *	An erase lamp has been detected as faulty.	Refer to the Lamp Replacement procedure in Section IV of this manual.
ES loop fail 1 through 3 *	An unsatisfactory operating parameter has been detected during the testing of the electrostatic process.	The operator should clean the corona assemblies (refer to the Corona Cleaning procedures in Section IV of this manual.

ES loop warn 1 through 3 *	A marginal operating parameter is detected during the testing of the electrostatic process.	The operator should clean the corona assemblies (refer to the Corona Cleaning procedures in Section IV of this manual.
ESM door reference *	A marginal operating condition has been detected during the testing of the Electrostatic Monitor.	The operator should reseat the Electrostatic Monitor (remove the monitor from it's socket and then reinstall it). To remove the monitor, perform steps a through e of the Photoconductive Drum Removal procedure in Section IV of this manual. Reinstall the monitor by reversing these steps.
ESM open door test F *	An inadequate voltage condition has been detected during the testing of the printer's operating conditions.	Refer to the recommended operator action provided for the "**ESM door reference**" message.
ESM shut door test F/W *	An Electrostatic Monitor voltage has been detected out of range.	Refer to the recommended operator action provided for the "**ESM door reference**" message.
Firmware trap XX	A firmware condition was detected which resulted in a Machine Control Processor failure.	The operator should record the displayed message and then perform a hard reset on the printer (toggle the Front ON/OFF switch to OFF then ON).
Front door is open	Front panel door is open or unlatched.	The operator should close the front door and press RUN to continue.
Hardware malfunction	A failure which may require repair has occurred.	Refer to Operator Hints in Section V of this manual.
High reflectance	The printer's diagnostics have detected the reflectance out of range and that the toner hopper is not sensed as being empty.	The operator should open the toner hopper (refer to the Adding Toner procedure in Section III) and visually inspect the interior of the toner hopper. If toner is bridged over the toner auger, stir the contents of the hopper with the toner bag seal; if the hopper is empty, add toner. If the message persists, perform the recommended operator action given for correcting a "**Low reflectance**" message.

High reflectance Warn	See **High reflectance**	
High screen V fail/warn *	A primary corona operating parameter has been detected out of range.	Remove the primary corona assembly and clean the corona wires and primary corona screen. Refer to the Corona Cleaning procedure in Section IV of this manual.
High sim corona fail/warn *	A simultaneous corona operating parameter has been detected out of range.	Remove and clean the simultaneous corona assembly. Refer to the Corona Cleaning procedures in Section IV of this manual.
High transfer I fail *	A transfer corona operating parameter has been detected out of range.	Remove and clean the transfer corona assembly. Refer to Corona Cleaning procedures in Section IV of this manual.
Hopper motor warn *	The toner hopper is detected as being open.	The operator should verify that the toner hopper is fully closed (the base of the toner hopper is positioned firmly on it's stopblock).
Interrupt fail X	The printers internal interrupt diagnostics have detected a failure.	The operator should record the displayed message and then perform a hard reset on the printer (toggle the Front ON/OFF switch to OFF then ON).
Jam recovery ready	The fuser temperatures are correct, the printer is in the Jam Recovery Mode.	Operator should use the PAPER FORWARD key to complete required action. Refer to Jam Recovery Mode in Section V of this manual.
Jam recovery warming up	The printer enters Jam Recovery Mode when the fuser temperatures are correct.	No action is required.
Job active power fail	The printer lost power during a print job.	The operator should investigate to determine if all print jobs were completed. If not, the job(s) should be rerun. Pressing RUN clears the message.
Job already active	This message is displayed when the operator attempts to run Self Test while the printer is currently executing a job.	The operator may either press RUN to clear the display and wait for the current job to complete, or terminate the job at the system console.

Key Invalid	The key pressed is not valid at this time.	Wait for the current operation to terminate and try entering the command again.
Line overvoltage	Line voltage is too high.	Press RUN. If display does not clear, turn the printer off and notify a service representative.
Low line voltage	Line voltage is too low.	Press RUN. If display does not clear, turn the printer off and notify a service representative.
Low primary I fail/warn *	A primary corona operating condition has been detected out of range.	Remove and clean the primary corona screen and the primary corona wires. Refer to the Corona Cleaning procedures in Section IV of this manual.
Low reflectance *	The printer's diagnostics have detected an incorrect toner/carrier ratio.	Press 441, ENTER at the Service Control Panel and allow the printer to operate for approximately five minutes. At the end of this period press 541, ENTER. If the message persists, repeat the procedure for a second three minute interval. If at the end of the second interval, the message persists, notify a service representative.
Low reflectance Warn	See **Low reflectance**	
Low screen V fail/warn *	A primary corona assembly operating parameter has been detected out of range.	Remove and clean the primary corona screen and the primary corona wires. Refer to the Corona Cleaning procedures in Section IV of this manual.
Low sim corona fail/warn	A simultaneous corona assembly operating parameter has been detected out of range.	Remove and clean the simultaneous corona assembly. Refer to the Corona Cleaning procedures in Section IV of this manual.
Low transfer V fail *	A transfer corona assembly operating parameter has been detected out of range.	Remove and clean the transfer corona assembly. Refer to the Corona Cleaning procedure in Section IV of this manual.

No top of drum *	The top of drum position has not been detected.	Verify that the wiper blade/drum pressure adjustment is correct. Refer to steps D and E of the New Drum/Wiper Routine and Blade/Drum Pressure Adjustment procedure in Section IV of this manual. If the message persists, raise the wiper blade and perform steps A through J of the routine.
Output door is open	The paper output door is open or unlatched.	Close the door and press RUN to continue printing.
Output paper misfold	Paper is misfolded in stacker.	Correct the misfold and continue. Refer to Output Paper Misfolds in Section V of this manual.
Out of Paper	The printer is out of paper.	Reload or splice paper in accordance with the Paper Loading or Splicing instructions in Section III of this manual.
Overall illum warn *	An Overall Illumination Lamp has been detected as faulty.	Refer to the Lamp Replacement procedure in Section IV of this manual.
Paper Jam	A paper jam has occurred.	Refer to Clearing Paper Jams in Section V. Clear the jam in accordance with instructions for the specific type of jam which has occurred.
PM due call CE	Routine maintenance interval has expired. Service is required.	Refer to Maintenance Schedule, Section IV. The printer may be operated long as the print quality is acceptable.
PM due	See **PM due call CE**	
Print lost on left	Print is cut-off at the left boundary of the physical page (see Figure 1-1).	The operator should reposition the print on the page via the DISPLAY /ADJUST PRINT POSITION keys (refer to Section II of this manual). Ensure that the print job is formatted to lie within the boundaries of the print image area (see Figure 1-1).

Print lost on right	Print is cut-off at the right boundary of the physical page (see Figure 1-1).	The operator should reposition the print on the page via the DISPLAY /ADJUST PRINT POSITION keys (refer to Section II of this manual). Ensure that the print job is formatted to lie within the boundaries of the print image area (see Figure 1-1).
Process adjusting **Ready for Data**	Internal adjustments are being recalibrated. See **Waiting for data**	None. The message is cleared when calibration is complete.
Recovering data	The printer is recovering data.	None. Note: Recovery time is proportional in length of time to the size of the print job.
Right/Left XX **Up/Down XX**	The DISPLAY key has been pressed. The cumulative image movement is being displayed.	Refer to Adjust Print Position key explanation in Section II of this manual.
RAM failure XXXX	The printers internal diagnostics have detected a failure in the Random Access Memory.	The operator should record the displayed message and then perform a hard reset on the printer (toggle the Front ON/OFF switch to OFF and then ON).
ROM failure XXXX	The printers internal diagnostics have detected a failure in the Read Only Memory.	The operator should note the displayed message and perform a hard reset on the printer (toggle the Front ON/OFF switch to OFF and then ON).
Self Test	Continuous self test is executing.	Press 1, ENTER then RUN to initiate Self Test. Press HALT to stop Self Test. Refer to Section IV for a description of Self Test.
Stacker full	Paper stack is at maximum height.	Refer to Paper Unloading in Section III of this manual.

Stack safety switch *	The stacker safety switch is sensed as always active.	The operator should determine if the stacker is full, or if the auxilliary stacker tray is pressing against the stacking mechanism. If an obstruction is found, correct and RESET printer via and 0, ENTER Command. If the problem persists, open then close the paper output door to reset the stack safety switches.
Stopped by operator	Printer is in halt mode because of operator action.	Complete required action and press RUN to continue printing.
Toner hopper empty	Toner must be added to the printer.	Reload toner in accordance with the Adding Toner instructions in Section III of this manual.
Toner hopper low	Printer is low on toner.	Reload toner as soon as convenient. Refer to the Adding Toner instructions in Section III of this manual.
Top of Form error	The input tractors did not stop in the correct position.	Use the PAPER FORWARD key to align the paper to the next Top of Form. See Top of Form alignment in Section III of this manual.
Unrecoverable fault	A fault has been encountered from which the printer can not recover.	See Operator Hints in Section V of this manual.
Use custom shield	A custom shield must be installed on the Transfer Corona assembly corresponding to the paper width being used.	Refer to Corona Shield Installation in Section III of this manual. If correct shield is installed, press RUN and resume printing.
Use no shield	No corona shield is required for operation.	Remove the transfer corona shield if installed.
Use shield #	The message specifies which Corona Shield must be installed on the Transfer Corona Assembly.	Refer to Corona Shield Installation in Section III of this manual. If correct shield is installed, press RUN and resume printing.
Vac bag full	The vacuum bag is full and must be changed.	Change the vacuum bag and check the system for leaks.
Vac sys fail	See "**Vac bag full**" message	

Waiting for data	The printer is in the print mode waiting for data transmission from the computer.	None. The message is cleared when the computer transmits data.
Warming up	The printer is allowing time for the fusing system to warm up.	None. The time required for this warm up is approximately 40 seconds.
Wiper blade is up *	The cleaner station's wiper blade has been sensed in the up position.	The operator should ensure that the cleaner station handle is down and locked into the correct position (the black knob should be pushed in until the metal tab behind the locking bracket is depressed).

HEWLETT PACKARD

HP 2680A

OPERATOR'S MAINTENANCE

CHECKLIST

Serial number _____

Date _____

Drum rotations _____

Operator _____

1 General cleaning. . . . . ☐

2 Corona cleaning . . . . . ☐

3 Disposal bottle replacement. . . . . ☐

4 Adding carrier . . . . . ☐

5 Adding toner . . . . . ☐

6 Splicing paper . . . . . ☐

7 Adjusting the vacuum valve . . . . . ☐

8 Clearing paper jams. . . . . ☐

9 Paper tension adjustment . . . . . ☐

QUALIFIED OPERATOR'S

MAINTENANCE CHECKLIST

1 All operator maintenance procedures. . . . . ☐
(use the Operator's Checklist)

2 Drum replacement . . . . . ☐

3 Cleaner blade replacement . . . . . ☐

4 Cleaner blade tension adjustment . . . . . ☐

5 Developer mixture changing . . . . . ☐

6 New drum routine . . . . . ☐

7 Dark target adjustment . . . . . ☐

8 Erase and illumination lamp replacement. . . . . ☐

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