

COMPUTER APPLICATIONS
UNIT 2/340 GEORGE ST
WATERLOO ONTARIO
N2L 2G1
PH (519) 336-8011

2602A

DAISYWHEEL PRINTER



OWNER'S MANUAL

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

COMPUTER APPLICATIONS PTY. LTD.
UNIT 2/840 GEORGE ST.
WATERLOO NSW 2017
PH: (02) 318 2911 ✓



A NOTE TO ALL WHO READ THIS MANUAL

This manual is structured by level of information. If you want basic instructions, background material, and all the other details, read through the whole manual. The text will guide you, defining terms as it goes. If you already know what information you need, you can find it readily.

IF you want to know only how to set up the printer and get it running with your system, skim through the first few sections. The Preface contains general printer information and instructions for installing the 2602A. **Section 1, Getting to Know Your Printer**, contains basic information on setting up the printer and loading paper. **Section 2, Starting Out**, gives specific information on using the printer with various Hewlett-Packard controllers.

IF you already understand device control and want only programmer's details, turn to **Section 7, Appendices**. **Section 7** contains complete charts of the control codes and escape sequence commands recognized by the 2602A printer.

TABLE OF CONTENTS

PREFACE	vii
Unpacking and inspecting your printer	
Assembling your printer	
Caring for your printer	
Options and supplies	
System interfacing guide	
SECTION 1: GETTING TO KNOW YOUR PRINTER	1-1
Introducing the 2602A	
Specifications	
Connecting the cables	
Loading and replacing paper	
Changing the daisywheel	
Changing the ribbon cartridge	
In case of difficulty	
SECTION 2: STARTING OUT	2-1
Using your printer with the HP 262X series terminals	
Using your printer with the Series 80 personal computers	
Using your printer with the HP 120 and HP 125 computers	
SECTION 3: CONFIGURATION	3-1
Configuring the 2602A with an RS-232C interface	
Configuring the 2602A with an HP-IB interface	
SECTION 4: TEXT FORMATTING	4-1
How your printer works	
Controlling basic printer features	
Page formatting	
Text formatting	

SECTION 5: INTERFACING AND DATA COMMUNICATIONS	5-1
RS-232C serial interface	
HP-IB interface	
SECTION 6: ACCESSORIES	6-1
HP 26020A Forms Tractor for the 2602A	
SECTION 7: APPENDICES	7-1
Printer reset	
Printer self-test	
Printer status	
Character code information	
Control codes	
Escape sequences	
Industry-compatible escape sequences	
INDEX	I-1
HP SALES AND SERVICE OFFICES	SS-1

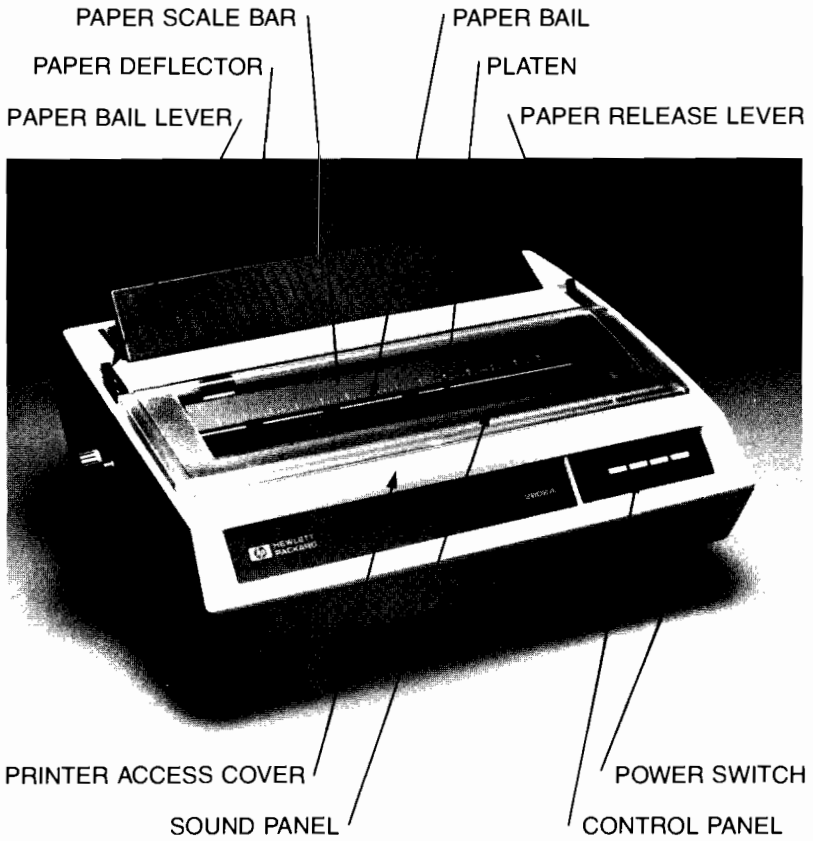


Figure P-1 2602A Daisywheel Printer

PREFACE

This manual will tell you how to assemble the 2602A printer and will guide you in its use. For your convenience a full table of control codes and escape sequence commands appears in **Section 7, Appendices**.

UNPACKING AND INSPECTING YOUR PRINTER

NOTE: Open the carton carefully to preserve the shipping materials.

Check the carton and shipping materials as you unpack the printer.

Remove the printer components packed around the printer. You should find the platen (packed separately in a tube), the paper deflector, the power cord, one daisywheel and one multistrike film ribbon cartridge, and your Owner's Manual.

Carefully lift the printer out of the carton. Remove the foam packing end caps and the plastic dust bag.

Put the printer on a sturdy workbench or table.

Make sure to attach the warranty tag to the rear of the printer. The warranty tag is contained in a packet on the outside of the shipping carton, along with a letter outlining where to mount the tag. This tag is essential if you need to request service from Hewlett-Packard during the warranty period.

Save the box and materials, and store them in a dry place. You may need them again if you ship your printer for servicing.

Check for Damages

Check your printer and accompanying components for damage that may have occurred during shipping. If you discover any damage, contact your local HP Sales and Service Office. You'll find the offices listed at the back of this manual.

Remove Tag and Restraint

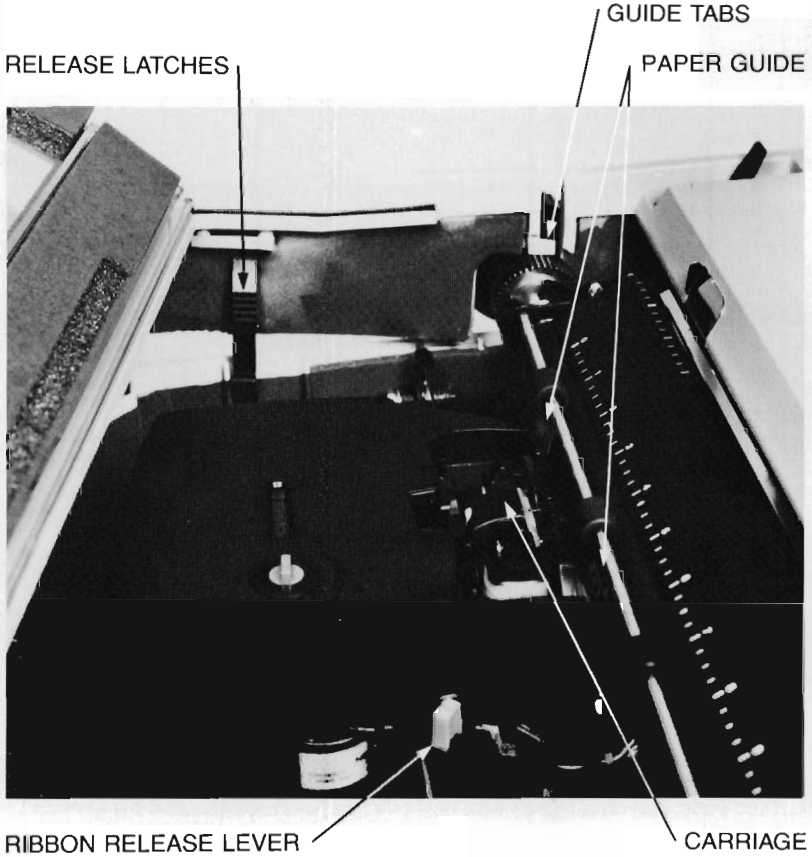


Figure P-2 Inside the 2602A

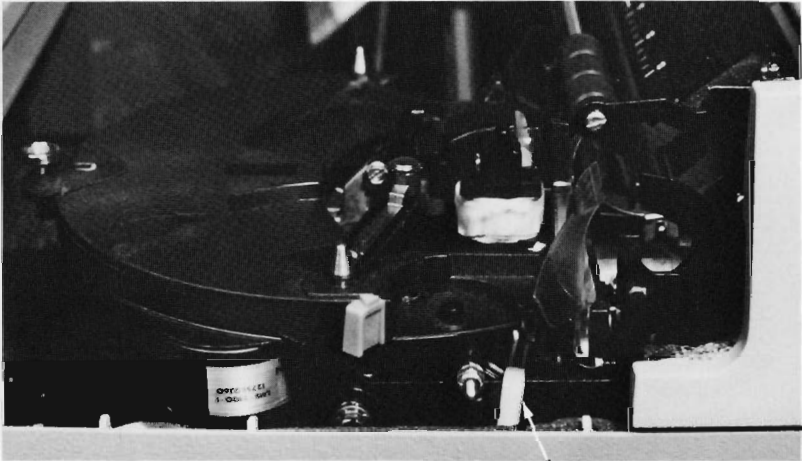
Remove the tag attached to the paper bail with wire cutters.

To remove the restraint that held the carriage to the frame during shipping, first remove the printer access cover by pressing outward with your thumbs on the releases located inside the printer. (Refer to Figure P-2 for location.)

As you look down into the printer from the top front, you will see two plastic tie-downs. One held the carriage in place during shipping, and must be removed before you use the printer. The other keeps cables away from the carriage during operation, and should not be removed.

DO NOT clip the tie-down you can see from the top in the middle of the carriage; it holds the cables away from the carriage during operation, and should stay in place.

With wire cutters, CUT AND REMOVE the plastic tie-down on the right, underneath the carriage. Gently move the carriage to the center.



PLASTIC TIE-DOWN

Figure P-3 Removing Plastic Tie-Down

CAUTION: BE SURE TO REMOVE the plastic tie-down that held the carriage to the frame during shipping (between the carriage bottom and the righthand side of the printer) BEFORE you turn the printer on.

ASSEMBLING YOUR PRINTER

To assemble your printer, first install the platen, as outlined below.

Lift the paper scales bar and the paper bail. Remove the elastic band that held the curved metal platen tray in place during shipping. Remove the platen from its shipping tube.

NOTE: The elastic band on the metal platen tray must be removed before operation.

Center the carriage. Open the daisywheel compartment by pulling the daisywheel lock tab toward you.

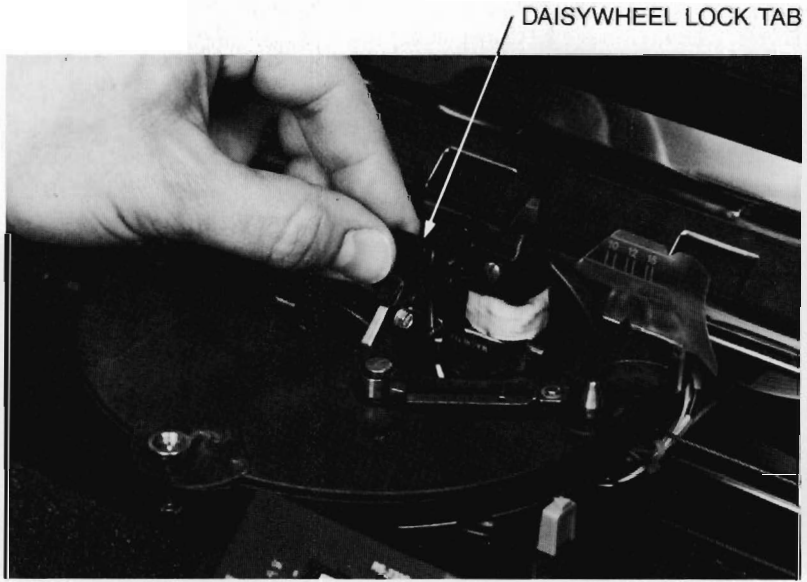


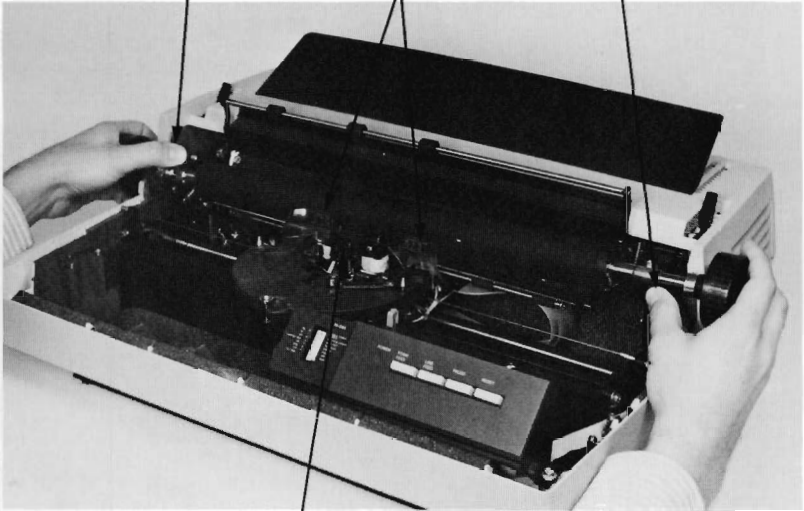
Figure P-4 Daisywheel Lock Tab

Now gently work the platen into the platen holder as follows. Starting on the left side as you face the printer, hold the platen behind the clear plastic paper guide. This paper guide is very flexible and not easily broken. Make sure that the gear on the platen goes on the left side of the printer.

PLATEN CLAMP

PLATEN CLAMP

PAPER GUIDE



DAISYWHEEL LOCK TAB

Figure P-5 Depressing Platen Clamps and Installing Platen

Place the notched collar of the platen on the left side of the spring-loaded platen clamp, and ease the platen into place. Close the left platen clamp. Fit the right end of the platen into place, and close the right clamp.

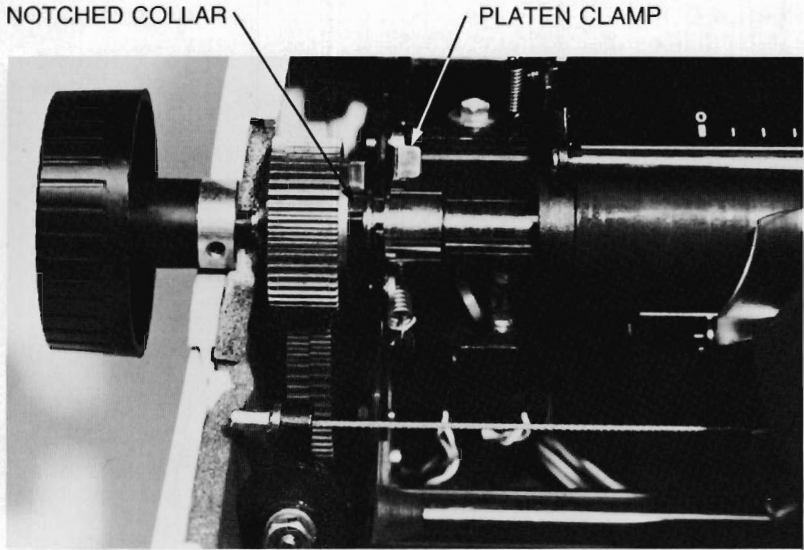


Figure P-6 Close Up of Left Side of Platen

Replace the printer access cover by inserting the guide tabs into the back of the printer body, making sure that the latches on the side of the panel go inside their wires. Press down firmly on the printer cover until the latches lock securely under the wire.

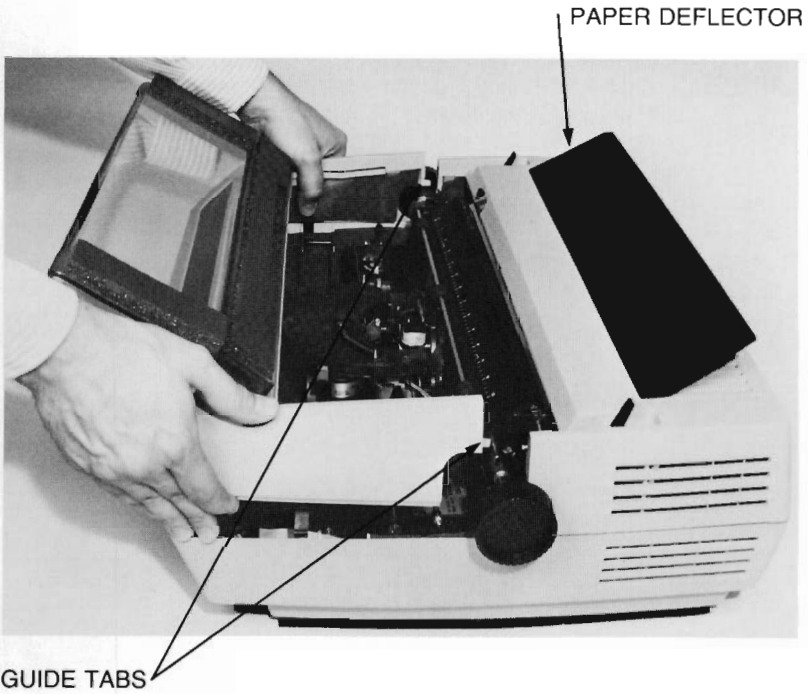


Figure P-7 Replacing Access Cover

Lower the paper bail and paper scale bar onto the platen.

Snap the paper deflector into slots on the top of the printer. The paper deflector must be in place to provide proper ventilation.



Installing a Ribbon Cartridge

CAUTION: To avoid injury and machine damage, be sure to turn the printer off or press the PAUSE button before installing the ribbon cartridge.

To install the ribbon cartridge, first open the sound panel.

To prepare the ribbon cartridge for use, you must adjust ribbon tension. On top of the ribbon cartridge, you'll see a light-colored tab and an arrow. Turn the tab counterclockwise, the direction of the arrow, to pull the ribbon taut.

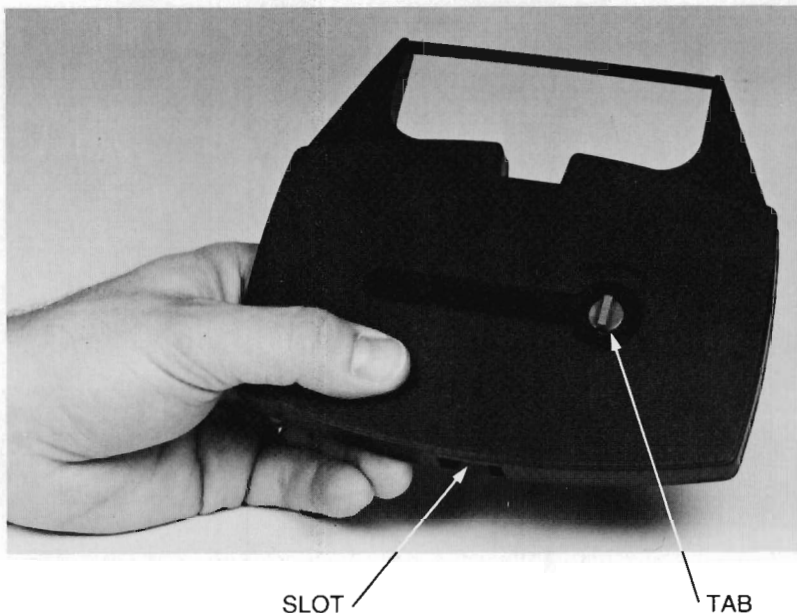


Figure P-8 Ribbon Cartridge

Gently push the ribbon release lever toward the platen as far as it will go. (Refer to Figure P-10)

Now locate the slot molded into the lower front edge of the cartridge. Carefully lower the cartridge down onto the carriage platform, making sure you pass the forward edge of the cartridge, opposite the exposed ribbon, under the back edge of the printer access cover to engage the guide knob on the front of the carriage platform.

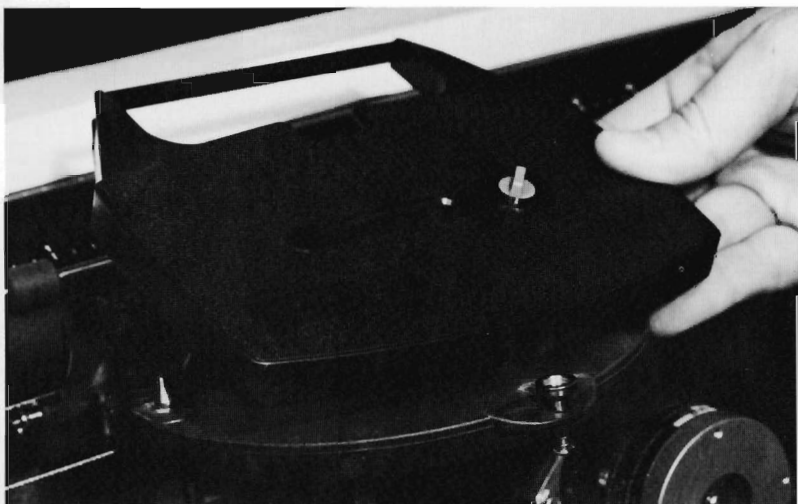
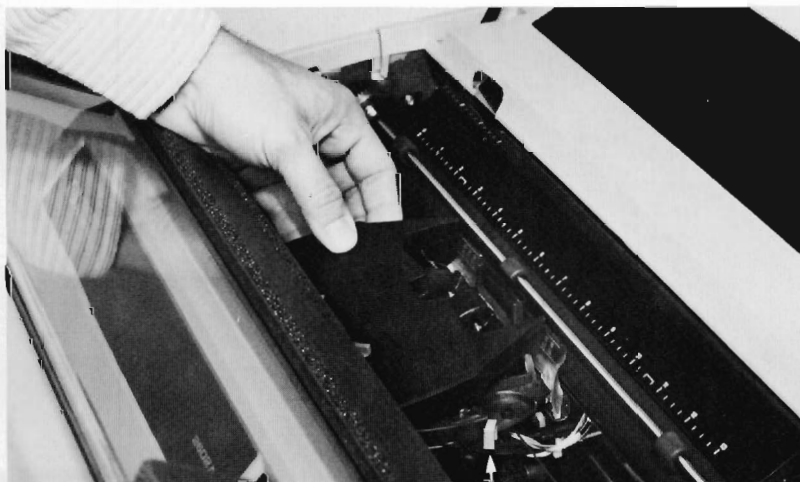


Figure P-9 Loading Cartridge onto Carriage Platform

Continue to lower the cartridge, passing the ribbon over and behind the ribbon guides on the daisywheel compartment cover, and in front of the clear plastic paper guide, until the cartridge is resting on the carriage platform.



RIBBON RELEASE LEVER

Figure P-10 Loading Ribbon Cartridge

When you've put the ribbon cartridge into place, move the ribbon release lever, away from the platen, to lock the cartridge into place. DO NOT turn the tab you used for tightening the ribbon once you've locked the ribbon release lever—you might break the ribbon if you do.

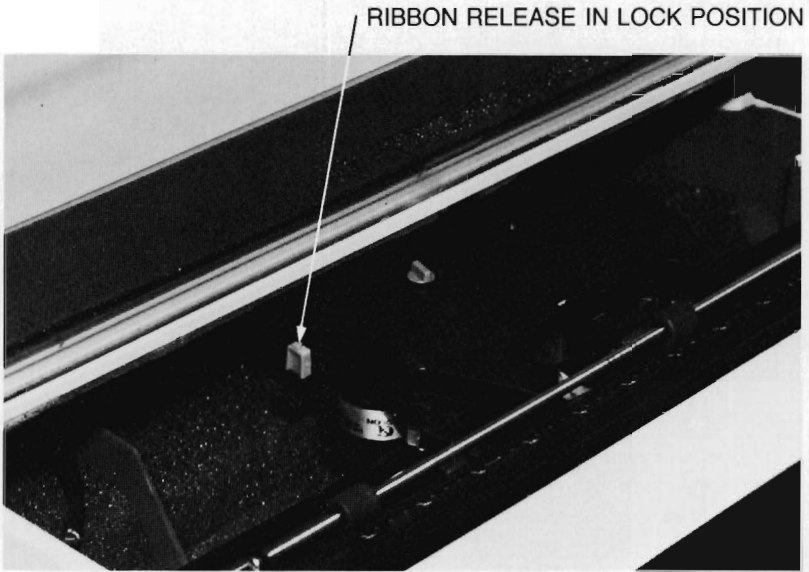


Figure P-11 Ribbon Cartridge in Place



Figure P-12 Properly Loaded Ribbon Carriage

If you used the PAUSE button to stop the printer for the ribbon change, press RESET to resume operation.

Installing a Daisywheel

CAUTION: To avoid injury and machine damage, be sure to turn the printer off or press the PAUSE button before changing the daisywheel.

Locate the daisywheel lock tab in the center of the carriage and pull it toward you, if it is not already open. (Refer to Figure P-4 for location)

Now study the photograph of the daisywheel on this page. The daisywheel must be positioned in the printer with the foil strips facing the platen.

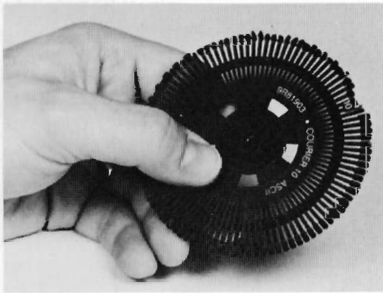


Figure P-13 Front of Daisywheel

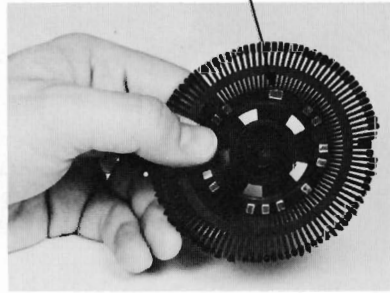


Figure P-14 Back of Daisywheel

Carefully holding the daisywheel by the spokes, gently drop it down into the daisywheel compartment. Make sure that the daisywheel doesn't fall between the ribbon and the platen.

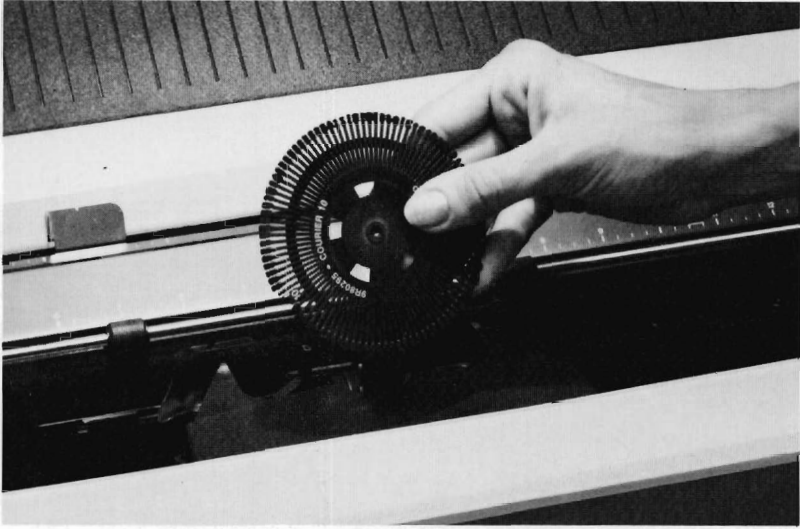


Figure P-15 Placing Daisywheel into Compartment

NOTE: Daisywheels are rugged and dependable, but they can be damaged. Avoid bending the spokes when handling them. Always store them in their plastic containers when you're not using them.

While holding the daisywheel compartment closed, firmly latch the lock tab into place.

If you used the **PAUSE** button to stop the printer and change the daisywheel, press **RESET** to resume operation.

CARING FOR YOUR PRINTER

CAUTION: To avoid injury and machine damage, be sure to turn the printer off before cleaning your printer.

Care for your 2602A printer just as you would a typewriter. Keep up its appearance by wiping off the outside with a soft, damp cloth. Also vacuum the inside periodically to remove paper dust and other foreign matter that will accumulate. More intensive care and lubrication are best left to your service technician.

Cleaning the Platen and Paper Rollers

CAUTION: DO NOT use alcohol to clean the platen and other rubber parts; it will cause the surface to harden. Use only platen cleaner.

Clean the printer's platen, paper bail rollers, and pressure rollers with soft tissues or cloth wipers and a good, commercially available platen cleaner (such as Fedron). Cleaning renews the surface for better paper handling.

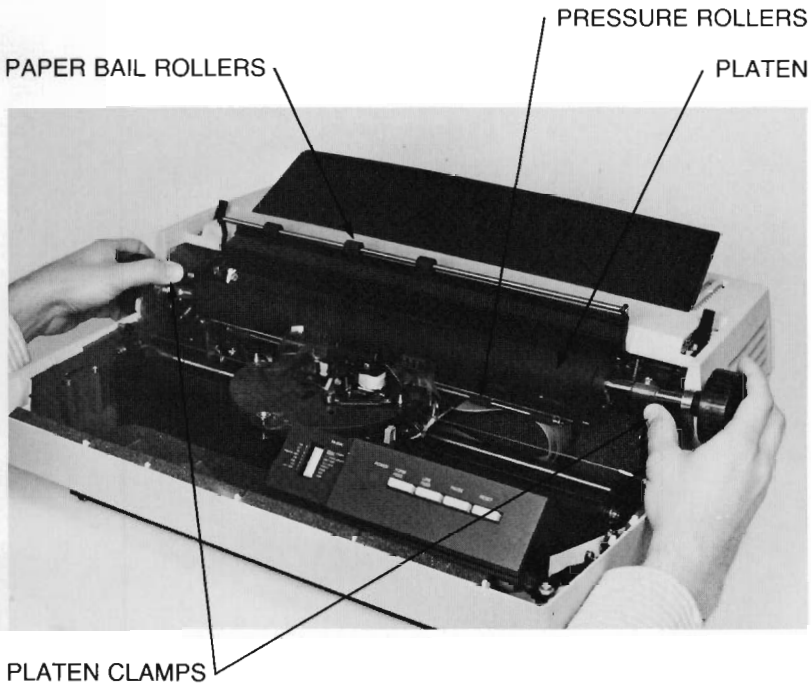


Figure P-16 Removing Platen

To clean the paper bail rollers and pressure rollers, first remove the platen. Remove the printer access cover, and open the daisywheel compartment by pulling the daisywheel lock tab toward you. Lift the paper bail lever and rotate the paper scale bar up and back. Press the two platen clamps (refer to Figure P-6 for location) toward the back of the printer and carefully lift the platen up and out of the paper handler assembly. Clean the paper bail rollers and pressure rollers and reinstall the platen.

Cleaning the Paper Guide

CAUTION: DO NOT use platen cleaner to clean the paper guide or other plastic parts. Platen cleaner corrodes the plastic.

To clean the paper guide, first remove the ribbon cartridge. Open the sound panel and gently push the ribbon release lever toward the platen as far as it will go. Lift the ribbon cartridge out. Now release the daisywheel lock tab and raise the paper bail. Remove the paper guide by grasping it firmly on each end and pulling up. (It is held in place by spring clips.)

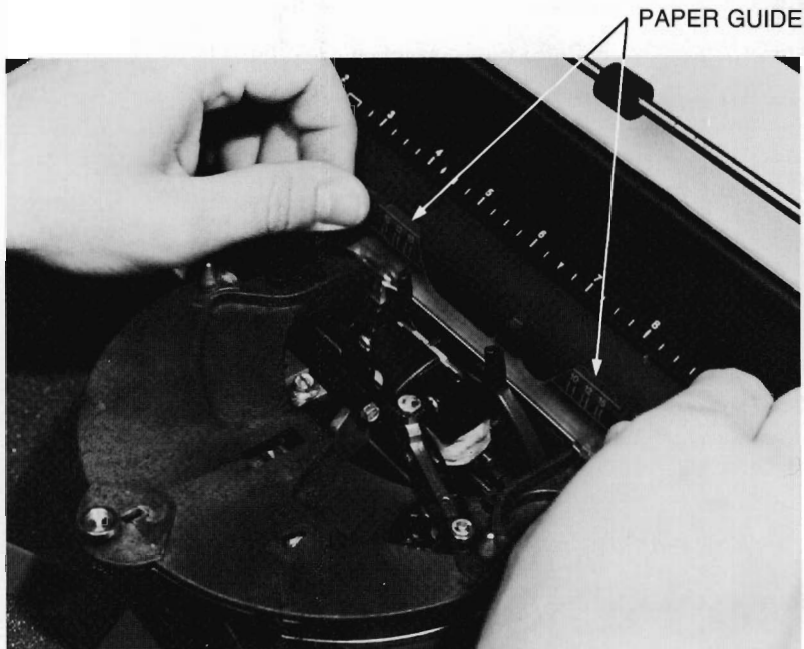


Figure P-17 Removing the Paper Guide

Clean the card guide with soft tissue or cloth and alcohol. Replace the ribbon cartridge and close the daisywheel compartment before running the printer.

Cleaning the Daisywheel

CAUTION: DO NOT clean daisywheels with water, alcohol, or platen cleaner. Use only toluene or naphtha, available in drugstores.

NOTE: Be careful not to bend the spokes when cleaning the daisywheel.

The daisywheel will seldom need cleaning. If it does, remove the daisywheel by first pulling the daisywheel lock tab toward you and carefully lift it out. Clean with toluene or naphtha, and a soft brush or wiper. Be sure the foil strips on the back of the daisywheel are clean and shiny.

OPTIONS AND SUPPLIES

The chart below lists the options and supplies available for the 2602A Daisywheel Printer. Contact your local HP Sales and Service office for ordering information. Supplies can be ordered by telephone from the HP Computer Supplies Operation. For immediate price and availability information, in the U.S. dial, toll free, (800) 538-8787. In California, Alaska, and Hawaii, call (408) 738-4133 collect; in West Germany, 07031-667-829 (Boëblingen); in the United Kingdom, 734792-868/959 (Winnersh).

OPTIONS AND SUPPLIES

OPTIONS (ordered at same time as printer)

-015	220V Power Supply
-017	240V Power Supply
-046	HP-IB Interface

SUPPLIES

USASCII Printwheels

92262A	Courier 10
92262B	Prestige Pica 10
92262D	Courier 12
92262E	Prestige Elite 12
92262F	Letter Gothic 12
92262G	Bold PS

(continued next page)

SUPPLIES (continued)

United Kingdom Printwheels

92263A Courier 10
92263B Prestige Pica 10
92263C Prestige Elite 12
92263D Courier 12
92263E Bold PS

Spanish Printwheels

92263R Courier 10
92263S Bold PS

German Printwheels

92263F Pica 10
92263G Letter Gothic 12
92263H Square PS

French Printwheels

92263J Courier 10
92263K Prestige Elite 12
92263L Bold PS

Swedish/Finnish Printwheels

92263M Courier 10
92263N Bold PS

Norwegian/Danish Printwheels

92263P Courier 10
92263Q Bold PS

Ribbon

92151H Multistrike ribbon, box of 12

SYSTEM INTERFACING GUIDE

You need to have the right interface to successfully use the printer with your system. To make sure you have all the cables and interface boards needed to connect the 2602A printer to your controlling device, check the following table.

Product or System	Cables and Interfaces Required
Series 80 Personal Computers: HP 86	Computer ordered with 82937A HP-IB interface. Cable required: Comes with 82937A interface. Printer ordered with option -046 (HP-IB). OR Computer ordered with 82939A Serial interface. Cable required: #13242N. Printer ordered with standard interface. Printer configuration required: <ul style="list-style-type: none"> ● 1200 baud ● Xon/Xoff handshake ● Parity checking ON ● Even parity
Series 80 Personal Computers: HP 87	Computer ordered with standard interface (HP-IB) Cables required: #10833 HP-IB cable. Printer ordered with option -046 (HP-IB)

(continued next page)

Product or System	Cables and Interfaces Required
<p data-bbox="168 240 374 293">Series 80 Personal Computers:</p> <p data-bbox="181 354 366 380">HP 83 and HP 85</p>	<p data-bbox="426 240 934 347">Computer ordered with 82937A HP-IB interface. Cable required: Comes with 82937A interface. ROM required: #00085-15002 Printer-Plotter ROM</p> <p data-bbox="426 354 859 407">Printer ordered with option -046 (HP-IB). OR</p> <p data-bbox="426 414 944 521">Computer ordered with 82939A Serial interface. Cable required: #13242N. ROM required: #00085-15002 Printer-Plotter ROM.</p> <p data-bbox="426 527 855 581">Printer ordered with standard interface. Printer configuration required:</p> <ul data-bbox="472 587 727 699" style="list-style-type: none"> ● 1200 baud ● Xon/Xoff handshake ● Parity checking ON ● Even parity

Product or System	Cables and Interfaces Required
<p data-bbox="168 841 374 894">Series 100 Computers: Models 120 and 125</p>	<p data-bbox="426 841 876 894">Computer ordered with standard interface (RS-232C).</p> <p data-bbox="426 901 717 1036">Cable required: #13242G. <ul data-bbox="472 927 738 1036" style="list-style-type: none"> ● 1200 baud ● Xon/Xoff handshake ● Parity checking ON ● Even parity selected </p>
<p data-bbox="168 1068 374 1122">Series 200: Models 16, 26, 36</p>	<p data-bbox="426 1068 876 1122">Computer ordered with standard interface (HP-IB)</p> <p data-bbox="426 1128 859 1182">Cable required: #10833 HP-IB cable. Printer ordered with option -046 (HP-IB).</p>
<p data-bbox="168 1208 280 1261">HP 3000 Series III</p>	<p data-bbox="426 1208 940 1261">Computer equipped with 30032B (ATC) interface. Modem capability port must be used.</p> <p data-bbox="426 1268 855 1321">Cable required: #13242N. Printer ordered with standard interface.</p> <p data-bbox="426 1328 866 1463">Configuration required: <ul data-bbox="472 1351 866 1463" style="list-style-type: none"> ● 1200 baud ● Xon/Xoff handshake ● Parity checking OFF ● Odd parity selected (transmit 0's) </p>

(continued next page)

Product or System	Cables and Interfaces Required
HP 3000 Series 30,33,40,44	Computer ordered with #30018A/30019A (ADCC) interface. Cable required: #13242N. Printer ordered with standard interface. Printer configuration required: <ul style="list-style-type: none"> ● 1200 baud ● Xon/Xoff handshake ● Parity checking OFF ● Odd parity selected (transmit 0's)
HP 3000 Series 64	Computer ordered with #30145A (ATP) interface. Cable required: #13242X. Printer ordered with standard interface. Configuration required: <ul style="list-style-type: none"> ● 1200 baud ● Xon/Xoff handshake ● Parity checking OFF ● Odd parity selected (transmit 0's)

Product or System	Cables and Interfaces Required
HP 2623A, 2624A, 2626A, and 2626W	Standard terminal ordered. Cable required: #13242G. Printer ordered with standard interface. Printer configuration required: <ul style="list-style-type: none"> ● 1200 baud ● Xon/Xoff handshake ● Parity checking OFF ● Odd parity selected (transmit 0's)







GETTING TO KNOW YOUR PRINTER

INTRODUCING THE HP 2602A

Designed for light to moderate desktop use in office environments, the 2602A Daisywheel Printer prints letter-quality text on sheet paper, continuous forms, or multiple copy forms. The unit prints at 20 to 25 characters per second, and is supported with HP software on many systems.

The purpose of this chapter is to acquaint you with the 2602A. You'll find information on its everyday use, including how to load and replace paper, how to change the daisywheel and ribbon cartridge, and what to do if you run into problems.

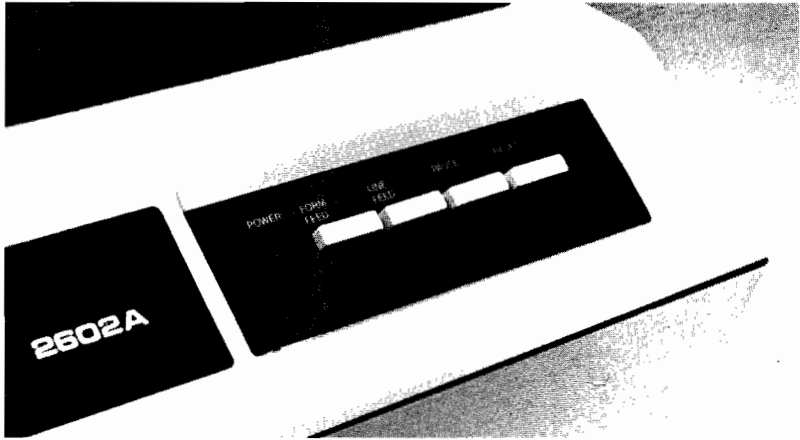


Figure 1-1 Control Panel

The Printer Control Panel

The control panel on the front of the printer has four buttons: **FORM FEED**, **LINE FEED**, **PAUSE**, and **RESET**.

FORM FEED Button

The **FORM FEED** button advances paper to the next page. The paper will feed to the first line of the next page if the page size configuration switch is set properly. Instructions for setting the page size switch are in **Section 3, Configuration**.

LINE FEED Button

The **LINE FEED** button causes the printer to feed one line of paper upward. When you hold the button down, the printer feeds line by line until you release the button.

PAUSE Button

The **PAUSE** button lets you stop printing without losing any text. When you have pressed **PAUSE**, the power indicator light flashes in the following pattern: blink, blink—pause—blink, blink—pause. You can start printing again by pressing the **RESET** button.

(Note that if you press the **LINE FEED** or **FORM FEED** buttons while the printer is **PAUSED**, the printer will add those instructions to the contents of its buffer and perform them after printing has resumed.)

RESET Button

The **RESET** button lets you start printing again after a pause. (See the preceding description of the **PAUSE** button.) It also clears an error condition and lets you start printing again. See **Section 7, Appendices** for more information on printer reset.

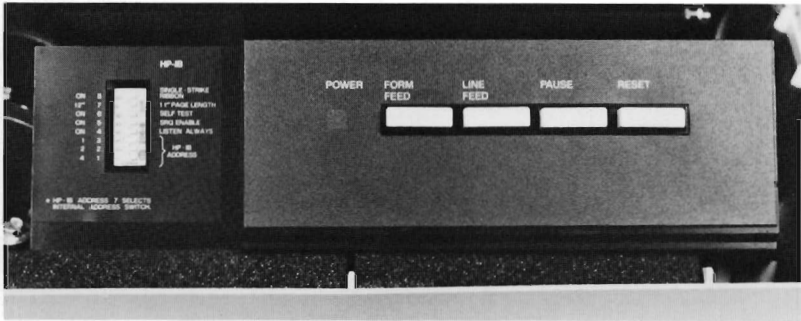


Figure 1-2 Configuration Switches and Control Panel

Configuration Switches

The eight configuration switches, found underneath the printer access cover, are different depending on whether you have a standard RS-232C model or an HP-IB model. For either model, three configuration switches let you set up the printer for page size, single-strike (rather than multistrike) ribbon, and self test. The remaining switches control data transmission. Once set, the switches are normally left alone unless the operating situation changes. You'll find more information about the configuration switches in **Section 3, Configuration**.

The Power Indicator Light

The power indicator light on the printer front panel glows steadily when the 2602A is on. When the **PAUSE** button has been pressed, the light flashes in the special pattern described earlier. It starts flashing an even pulse when one or more of the following conditions exists:

- A print wheel is not installed.
- The print buffer (or memory) has overflowed and data may be lost.
- The printer detects a parity error, which can happen only when the **PARITY ON-OFF** configuration switch is set to on.

- The printer is not cabled to a powered host device.
- The printer detects other communications problems.

For information on what to do when the power indicator light is flashing, refer to **IN CASE OF DIFFICULTY** at the end of this section, and to **Section 5, Interfacing and Data Communications**.

Power-on Switch

The power-on switch on the printer front panel turns the printer on and off. To turn the printer on, rock the switch to the right; to turn it off, rock the switch to the left.

SPECIFICATIONS

Print Speed	20 characters/second average speed (25 characters/second top speed), bidirectional
Character Type	Full-font daisywheel
Daisywheels	96-character USASCII HP ISO character sets: French, German, Norwegian/Danish, Spanish, Swedish/Finnish, United Kingdom, Italian
Formatting	10 and 12 pitch. Automatic proportional spacing (with use of proportional space daisywheel)
Input Buffer Size	Approximately 1500 characters
Front Panel	FORM FEED, LINE FEED, PAUSE, and RESET buttons
Configuration	Eight-position DIP switch under printer access cover. Three common settings for page size, ribbon type, and self-test. Standard RS-232C model: settings for handshake, parity checking, baud rate. HP-IB model: settings for HP-IB address, Listen Always, and SRQ.

(continued next page)

SPECIFICATIONS (continued)

Commands	Escape sequence control of various printer functions and text formatting.
Interfaces	RS-232C serial, standard HP-IB (Hewlett-Packard Interface Bus), optional
Electrical (standard unit)	Voltage: 120V, 220V, 240V Frequency: 49.5–61 Hz Power consumption: 120W maximum, operating
Physical	Dimensions: Width, 24.25 inches (616 mm) Depth, 17.75 inches (451 mm) Height, 9.25 inches (235 mm) Shipping weight: less than 50 lb (22.7 kg)
Temperature	Storage: -20°F to $+135^{\circ}\text{F}$ (-29°C to $+57^{\circ}\text{C}$) Operating: $+45^{\circ}\text{F}$ to $+105^{\circ}\text{F}$ ($+7^{\circ}\text{C}$ to $+40^{\circ}\text{C}$)
Humidity	Storage 9% to 90% Operating: 10% to 80% without condensation
Altitude	Storage: -1000 ft to $25,000$ ft (-305 m to 7620 m) Operating: -100 ft to $10,000$ ft (-31 m to 2438 m)
Safety Certification	UL, CSA, VDE 0730
Additional Certification	VDE 0804 FCC Class B Peripheral VDE 0871/0875 Class B



CONNECTING THE CABLES

Place the printer on a convenient work surface. Make sure the printer is completely assembled according to the instructions in the Preface. Turn the power off by rocking the power-on switch to the left.

Connect the power cable to the power receptacle on the printer rear panel. Make sure that the power requirements of the printer (as marked on the label on the rear panel) match the local voltage to be supplied to the printer. Plug the three-prong power connector into the power outlet.

WARNING: For your safety, always use a 3-prong grounded power outlet.

Now connect the printer to the host by plugging the interface cable into the connector on the right side of the rear panel. Screw the interface cable into place with the two screws provided. (Your interface cable should have been ordered separately. Contact your local HP Sales and Service Office, listed in the back of this manual, to order.)

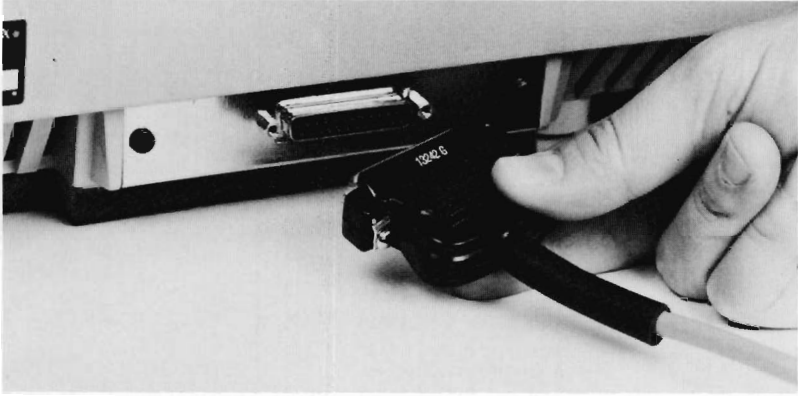


Figure 1-3 RS-232C

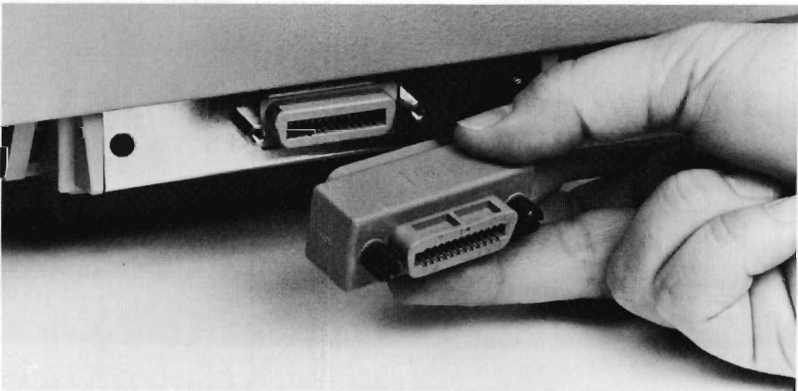


Figure 1-4 HP-IB

LOADING AND REPLACING PAPER

Standard Paper and Forms

Your printer can use standard sheet paper or multiple forms of up to five parts.

To put paper into the printer, follow much the same procedure as you would for a typewriter. Pull the paper bail lever forward to move the paper bail away from the platen. Put the paper down behind the paper scale bar and platen, and turn the platen by hand to bring the paper up and around in front of the platen. The left-hand platen knob pushes in to disengage the platen from the drive mechanism for manual setting of paper position and fine positioning. (Refer to **Figure P-1** for the location of the paper bail lever and the other printer parts mentioned here.)

Once you have put the paper in, move the paper release lever forward to release roller pressure so that you can properly align the paper. After you've positioned the paper, return the paper bail lever and the paper release lever to their original positions.

CHANGING THE DAISYWHEEL

CAUTION: To avoid injury and machine damage, be sure to turn the printer off or press the PAUSE button before changing the daisywheel.

NOTE: The daisywheels you're using are sturdy and dependable, but they can be damaged with improper handling. Be careful not to bend the spokes. Store them in their plastic containers for safekeeping when you're not using them.

Change the daisywheel when you want to change typestyles, when you notice print quality is deteriorating, or if the daisywheel breaks.

To open the daisywheel compartment, locate the daisywheel lock tab in the center of the carriage and pull it toward you. (See **Installing the daisywheel** on page xvii)

Lift out the old daisywheel. Carefully holding the new daisywheel by its spokes, gently drop it down into the daisywheel compartment, making sure that the foil strips are facing the platen. Make sure the daisywheel doesn't fall between the ribbon and the platen.

While holding the daisywheel compartment closed, firmly latch the lock tab into place.

Now you're ready to turn the printer on or to resume operation by pressing RESET.

CHANGING THE RIBBON CARTRIDGE

CAUTION: To avoid injury and machine damage, be sure to turn the printer off or press the PAUSE button before changing the ribbon cartridge.

To change the ribbon cartridge, first open the sound panel. Gently push the ribbon release lever toward the platen as far as it will go.

Grasp the ribbon cartridge and lift cartridge out of printer.

To install new ribbon cartridge refer to "Installing a Ribbon Cartridge" on page xiii.

IN CASE OF DIFFICULTIES

When you're trying to locate a problem with your printer, first run through the following checklist.

Checklist for Operational Problems

- Make sure the power cable is connected to a powered source.
- Check that the plastic tie-down that held the carriage in place during shipping has been removed. (Refer to the instructions in the Preface to remove it correctly.)
- See that there's a daisywheel in the daisywheel compartment, and make sure it's placed so that the foil strips face the platen. Make sure the daisywheel compartment is closed. (Refer to the instructions in this section to install or replace a daisywheel. Refer to the photo at the start of the Preface for the location of the platen, daisywheel compartment, and other printer parts mentioned here.)
- Check to make sure the ribbon cartridge is properly installed and in its latched position. (Refer to the instructions in this section to install or replace a ribbon cartridge.)

- Make sure that the paper bail lever and the paper release lever are in their proper positions. Without a tractor feed mechanism installed, the two levers should be positioned toward the back of the printer.

When the Power Indicator Light is Flashing

When the power indicator light is flashing in the following pattern:

blink, blink–pause–blink, blink–pause–

the **PAUSE** button has been pressed. Press the **RESET** button to resume printing.

When the power indicator is flashing in an even pulsing pattern, something is wrong, and the printer cannot operate properly until the problem is corrected. The light will flash an even pulse when one or more of the following conditions exists:

- 1: A daisywheel is not in the daisywheel compartment.
- 2: The printer detects a parity error, which can happen only when the **PARITY ON-OFF** configuration switch is set to on.
- 3: The print buffer has overflowed and data may be lost.
- 4: The printer is not cabled to a powered host device.
- 5: The printer detects other communications problems.

Once you've identified and corrected the problem, press the **RESET** button to clear the "error" condition and resume operation.

When the power indicator light is flashing and you're not sure what's wrong, execute the self test as explained in **Section 7, Appendices**. If the self test fails, turn the printer off by rocking the power-on switch to the left, and contact your local HP Sales and Service Office, listed at the back of this manual.



2

STARTING OUT

The 2602A printer is supported on a number of HP terminals and systems, more than can be documented here. For details on configuring and using your system, consult the manual for your terminal or software package.

This section outlines how to use your printer with the HP 262X terminals, the Series 80 personal computers, and the HP 120 and 125 business computers. Consult the System Interfacing Guide in the Preface if you need information on cables required to connect the printer to your system.

USING YOUR PRINTER WITH THE HP 262X SERIES TERMINALS

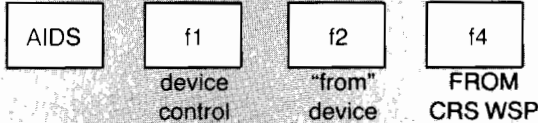
To set your terminal and printer to work with each other, set the printer's configuration switches as outlined in the **System Interfacing Guide in the Preface**, and connect the proper interface cable to Port 2 on the back of the terminal. Once the two devices are connected, enter the terminal's configuration mode by pressing AIDS, then CONFIG KEYS. Make the following changes to the terminal's configuration:

- In Datacomm 1: RecvPace = Xon/Xoff
- In Datacomm 2: BaudRate = 1200
XmitPace = Xon/Xoff

The special function keys (numbered f1 through f8) of the HP 262X terminals include a "device control" keyset, which allows you to copy from the display to an external printer, such as the 2602A. Before you can copy text to the printer, however, you must define the Source (i.e., the device from which text will be copied) and the Destination (i.e., the device that added text will be copied to). Once you have defined these "from" and "to" devices, they will remain in effect until the terminal is reset or turned off.

Defining the "from" device:

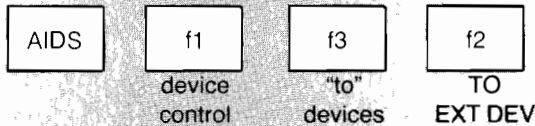
To prepare the HP 262X terminal to copy from the currently displayed workspace (the workspace that the cursor is in), **press:**



(Another workspace may be defined as the "from" device with keys f5 through f8 in the same keyset. You may specify only one "from" device.)

Defining the "to" device:

To tell the terminal to copy to the 2602A printer, **press:**



(More than one device may be specified as a "to" device using keys f5 through f8 in the same keyset.)

Once you have defined the "from" and "to" devices, you may easily copy text from the terminal to the printer.

To copy text from the printer, you must be in the "device control" keyset of the terminal. To enter this keyset, press:

AIDS

f1

device
control

To copy the full display memory from the defined Source (the current display or the assigned workspace), press:

f6

COPY
ALL

As with other HP devices, the HP 262X terminals allow you to choose how much text you want to copy at a time: the full display memory, as outlined above, just the text visible on the screen, or a single line.

From the "device control" keyset:

To copy just the text visible on the screen, press:

f7

COPY
PAGE

To copy just the line of text which contains the cursor, press:

f8

COPY
LINE

USING YOUR PRINTER WITH THE SERIES 80 PERSONAL COMPUTERS

To interface the 2602A printer with a Series 80 personal computer, you will need the correct interface options and cables. Refer to the **System Interfacing Guide** in the Preface for information.

Before copying anything from the Series 80 computer to your printer, you must tell the device where to look for its printer. To do this, enter a " **PRINTER IS** " statement which includes a select code and the HP-IB address. The select code for the HP-IB interface is factory set to " 7 ". In the PRINTER IS statement, the HP-IB address is simply added to the select code. So, for example, if the address of your printer is " 01 ", your PRINTER IS statement would read, " **PRINTER IS 701** ". (See **Section 5, Interfacing and Data Communications**, for more information on HP-IB addressing.)

To get a full-width 80-column printout from the Series 80 computer, you must specify the printer width in the PRINTER IS statement: " **PRINTER IS 701,80** ".

To get a full-width 132-column printout, you must specify the wider printer width in the PRINTER IS statement, as follows: " **PRINTER IS 701,132** ".

Copying Text from the Series 80 Personal Computer

Once you have entered the PRINTER IS statement, any statements or operations on the Series 80 device that would normally result in printed output (such as PRINT statements) will cause the 2602A printer to print. No additional instructions are required.

Consult the User's and Reference Manuals for your Series 80 computer for detailed information on specific PRINT statements.

USING YOUR PRINTER WITH THE HP 120 AND HP 125 COMPUTERS

To interface your printer with an HP 120 or HP 125 computer, you will need the correct interface options and cables. Refer to the **System Interfacing Guide** in the **Preface** for information.

To set your computer up to work with the printer, connect the interface cable to Port 2 on the back of the console. Set the configuration switches of the printer to match the settings outlined in the **System Interfacing Guide** in the **Preface**. To set the configuration of the computer, press AIDS, then CONFIG. Make the following changes to the HP 120/125 Datacomm 2 configuration:

- Baud Rate: 1200
- Parity: Even
- Xon/Xoff: Xmit
- Handshaking: etX

To use your printer with the HP 120 or HP 125, consult the manuals for your particular application. The software packages offered on these systems support your 2602A printer, and you can most easily use your printer by understanding how to use your HP 120/125.



3

CONFIGURATION

Before you can use the 2602A printer, you'll need to set it up to work with your system. The 2602A is designed so you can easily adapt it to your operating environment by setting switches that make it compatible with the host. The switch settings differ depending on whether you have a standard RS-232C model or an HP-IB model. Configuration settings for both models include page size, single or multistrike ribbon, and self-test.

Configuration of the 2602A is controlled with a bank of eight switches located underneath the printer access cover. Anyone who is familiar with your data processing system can set the configuration switches. Once the 2602A is configured to your system, the switches normally need to be reset only if the system changes, when you're performing a self test, or when a technician is testing the equipment.

NOTE: The printer uses both the configuration switch settings and escape sequence commands to define its features. This section tells how to set the configuration switches. You'll find information on escape sequence commands in Section 4, Text Formatting, and in Section 7, Appendices.



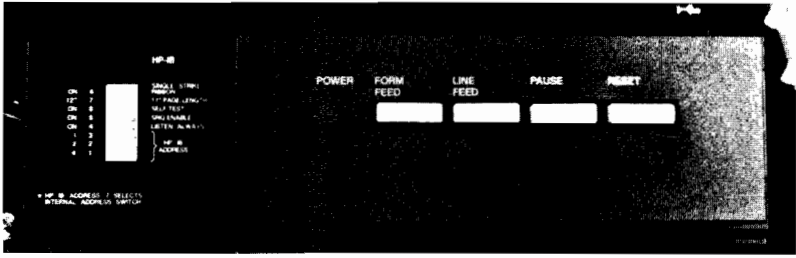


Figure 3-1 Configuration Switches and Control Panel

You'll find the panel of configuration switches just to the left of the power light underneath the printer access cover. To remove the printer access cover, press outward with your thumbs on the releases located inside the printer. (Refer to Figure P-2 for the location of the release latches and other printer parts mentioned here.)

CAUTION: To avoid injury or machine damage, make sure the printer is turned off or unplugged whenever the cover is removed.

Set each of the eight switches individually, after carefully reading the descriptions below. To set a switch, simply slide the plastic tab to the right or to the left.

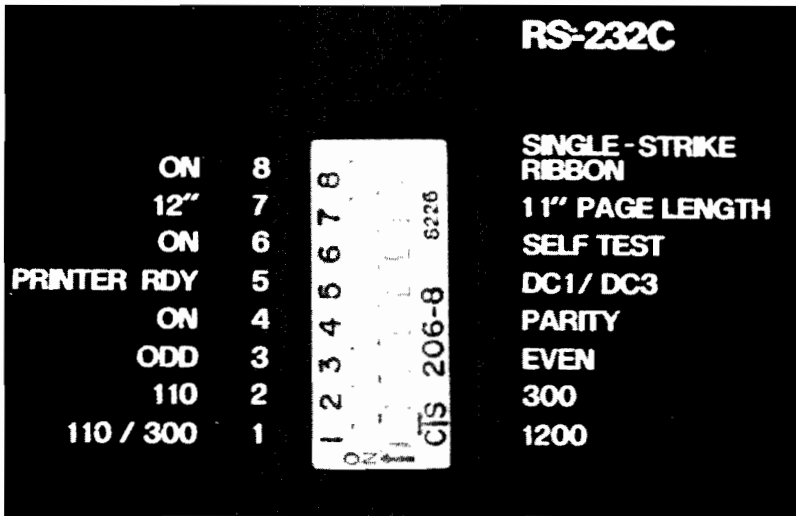


Figure 3-2 RS-232C Configuration Switches

SETTING THE CONFIGURATION OF YOUR PRINTER

The functions of some of the configuration switches depend upon whether your printer has the standard RS-232C interface or the optional HP-IB interface. We'll first describe the switches on a printer with an RS-232C interface, and then we'll describe the switches that come with the HP-IB option. In either instance, you may find it helpful to start out with all switches set to the right.

Configuring the 2602A with an RS-232C Interface

Single-strike or Multistrike Ribbon: Switch 8

Your printer operates with a single-strike ribbon or a multistrike ribbon. When you configure the printer for a single-strike ribbon, the ribbon advance mechanism advances a full character space with each strike of the daisywheel. When configured for a multistrike ribbon, the advance mechanism advances the ribbon only a partial character space for each strike.

To select operation with a multistrike ribbon, slide the switch marked 8 on the configuration switch to the right. To select operation with a single-strike ribbon, slide the switch to the left.

Setting Default Page Size: Switch 7

You can configure your printer to recognize one of two page sizes at power-on or reset: the United States standard 11 inches or the European standard 12 inches. (Refer to the escape sequence commands in **Section 4, Text Formatting**, and **Section 7, Appendices**, for more information on setting other page parameters.)

To select page size, locate the switch marked 7 on the configuration switch. Slide it to the right for an 11-inch page size, and to the left for a 12-inch page size.

Self-Test: Switch 6

Normally, the self-test switch is used by your service technician to sequence the printer through its self-test program. You'll find more information on self-test in **Section 7, Appendices**. When configuring your printer, make sure the switch for setting self-test, marked 6, is off (to the right).

Handshake: Switch 5

To prevent the host from transmitting data faster than the printer can handle it, you must set the handshake switch when the baud rate setting is 300 or 1200 baud. You'll find more information on the use of handshakes and the switch settings in **Section 5, Interfacing and Data Communications**.

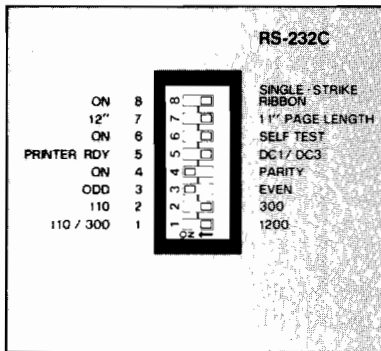
The Enq/Ack handshake is always enabled. You may also select either Xon/Xoff or hardware handshake with the switch marked 5 on the configuration switch. To set the hardware handshake, slide the switch to the Printer Ready (to the left), and to set Xon/Xoff, slide the switch to DC1 /DC3 (to the right).

Parity: Switches 3 and 4

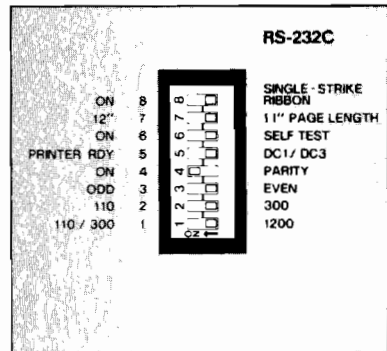
Parity allows the printer to check the accuracy of incoming data, and to attach a parity bit to transmitted data. You can set several parity parameters with the switches marked 3 and 4 on the configuration switch.

To enable parity checking on incoming data and set up the printer to transmit the appropriate parity on status responses, set switch 4 to ON by sliding the switch to the left. Now parity expected on incoming data will be odd or even, depending on the setting of switch 3, and the same parity will be attached to transmitted data.

Parity Switch Settings

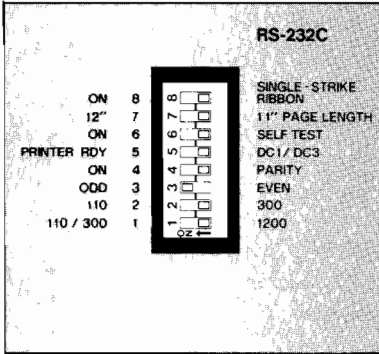


Parity checking enabled; odd parity expected on incoming data and attached to transmitted data.

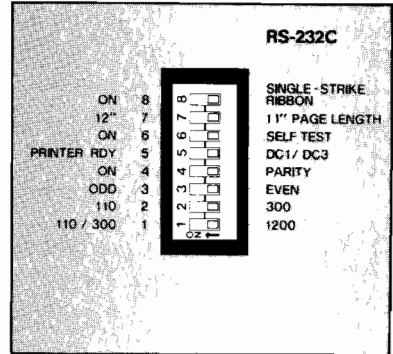


Parity checking enabled; even parity expected on incoming data and attached to transmitted data.

To disable parity checking on incoming data, set switch 4 to OFF by sliding it to the right. When parity checking is turned off, the parity bit on transmitted data will be a 1 or a 0, depending on the setting of switch 3. To set the printer to transmit 0s for parity, set switch 3 to odd, and to set the printer to transmit 1s, set switch 3 to even.



Parity checking disabled; printer transmits zeroes instead of parity.



Parity checking disabled; printer transmits ones instead of parity.

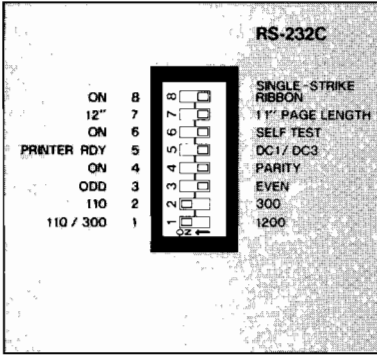
Setting the Baud Rate: Switches 2 and 1

The baud rate sets the speed of data transmission between the host and the printer. Baud rate is measured in bits per second. If, for example, you have a data transfer at 1200 baud, you are transferring 1200 bits per second (with one ten-bit byte representing one character).

You may select one of three baud rates using the configuration switch settings: 110, 300, or 1200. The baud rate you select for the printer **must** match the baud rate setting of the host.

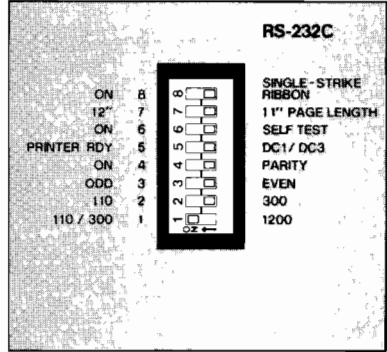
When the baud rate is set to 110 baud, the printer assumes that data carries two stop bits. When the baud rate is set to 300 or 1200, the printer assumes that data carries one stop bit. For settings of 300 or 1200 baud, the printer must use a handshake to interface with the host. You'll find more information about handshakes in **Section 5, Interfacing and Data Communications**.

Two switches determine the baud rate setting for your printer: switches 2 and 1. When switch 1 is set to 110 / 300, the baud rate setting is determined by switch 2.



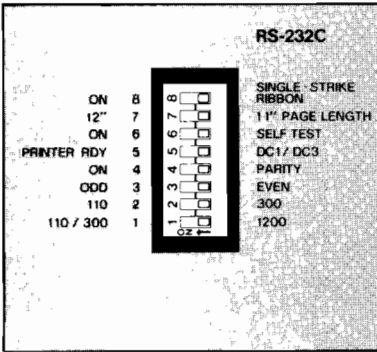
110 Baud

To select 110 baud, set switch 1 to 110/300 (to the left) and set switch 2 to 110 (to the left).



300 Baud

To select 300 baud, set switch 1 to 110/300 (to the left) and set switch 2 to 300 (to the right).



1200 Baud

To select 1200 baud, set switch 1 to 1200 (to the right). When 1200 baud is selected, the setting of switch 2 is ignored.

Configuring the 2602A with an HP-IB Interface

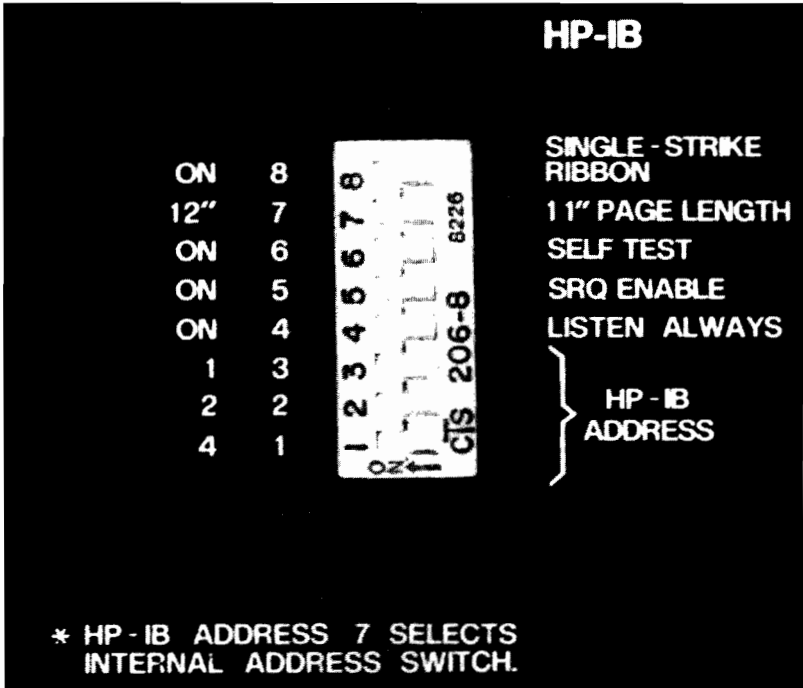


Figure 3-3 HP-IB Configuration Switches

Single-strike or Multistrike Ribbon: Switch 8

Your printer operates with a single-strike ribbon or a multistrike ribbon. When you configure the printer for a single-strike ribbon, the ribbon advance mechanism advances a full character space with each strike of the daisywheel. When configured for multistrike ribbon, the advance mechanism advances the ribbon only a partial character space for each character printed.

To select operation with a multistrike ribbon, slide the switch marked 8 on the configuration switch to the right. To select operation with a single-strike ribbon, slide the switch to the left.

Setting Default Page Size: Switch 7

You can configure your printer to recognize one of two page sizes at power-on or after a reset: the United States standard 11 inches or the European standard 12 inches. (Refer to the escape sequence commands in **Section 4, Text Formatting**, and **Section 7, Appendices**, for more information on setting other page parameters.)

To select page size, locate the switch marked 7 on the configuration switch. Slide it to the right for an 11-inch page size, and to the left for a 12-inch page size.

Self-Test: Switch 6

Normally, the self-test switch is used by your service technician to sequence the printer through its self-test program. You'll find more information on self-test in **Section 7, Appendices**. When configuring your printer, make sure the switch for setting self-test, marked 6, is off (to the right).

Setting the Address: Switches 1, 2, and 3

The controlling device locates each HP-IB device on the bus by its address. In this way, the controller can pass information to all the devices, and ask each one to "talk" or "listen"—that is, to send or receive data.

The configuration switches marked 1, 2, and 3 set the 2602A's address for any number from 0 to 6. If you must set the address higher, refer to **Section 5, Interfacing and Data Communications**.

Like most computer-controlled devices, your printer counts in binary rather than decimal numbers (in base 2 rather than base 10). Use the following conversion chart to determine the proper address setting for switches 1, 2, and 3. Then move all three switches to the setting shown in the chart below, sliding each switch to the left for a setting of ON and to the right for a setting of OFF.

For example, to set the 2602A's address to 5, set switch 1 to ON, set switch 2 to OFF, and set switch 3 to ON.

Setting the 2602A's address			
Switch	1	2	3
Address			
0	Off	Off	Off
1	Off	Off	On
2	Off	On	Off
3	Off	On	On
4	On	Off	Off
5	On	Off	On
6	On	On	Off
Other*	On	On	On

*For a setting of 7 or above, consult **Section 5, Interfacing and Data Communications**.

Listen Always: Switch 4

The 2602A is usually a "listener"—that is, it usually receives data from the controller rather than sends data to it. You can set the printer to Listen Always—which you would do if the printer were the only device on the bus, for example—or to be addressed to listen. If set to Listen Always, the printer receives everything that comes over the data lines, even material intended for other devices on the bus. If set to be addressed to listen, it receives only data sent to its address and ignores everything else coming over the bus.

To set the printer to Listen Always, slide the switch marked 4 to the left.

NOTE: If Listen Always is on, you cannot define the printer's address, perform polling, or enable the service request.

Service Request (SRQ): Switch 5

The service request is a signal the printer sends to the controller to request attention. Some systems will not recognize the service request; consult your system manual to find out whether your system will.

NOTE: If Listen Always is enabled, the printer will not assert SRQ.



4

TEXT FORMATTING

This section explains how to format and print text and preprinted forms with the 2602A printer. After some background material on using escape sequence commands, you'll find instructions on how to control basic printer functions such as line feed and form feed, and how to set page margins and print pitch.

For a complete list of escape sequence commands and control codes, turn to **Section 7, Appendices**.

HOW YOUR PRINTER WORKS

When you turn your printer on, it is set for default operation. To change the default settings, you program the printer by sending escape commands from the device controlling the printer.

Default Operation

If you don't change any of the settings on your printer, it prints out your material according to the default settings. It returns to default settings when you turn it off or reset it with an escape sequence (described later).

Default settings are as follows:

Margins The left margin is set to column 0 and the right margin is set to 13.2 inches to the right of the left margin (column 131 with a 10-pitch daisywheel).

Line Termination Each line ends as specified by the host, usually with both a carriage return and a line feed.

Printing Mode Printing is smart bidirectional. That is, the printer determines whether to print from left to right or from right to left for any given line, with the goal of printing that line in the fastest way possible.

Perforations Perforations are not automatically skipped over.

Position of the Daisywheel The daisywheel is positioned at the start of the first line of the page.

Escape Sequence Commands

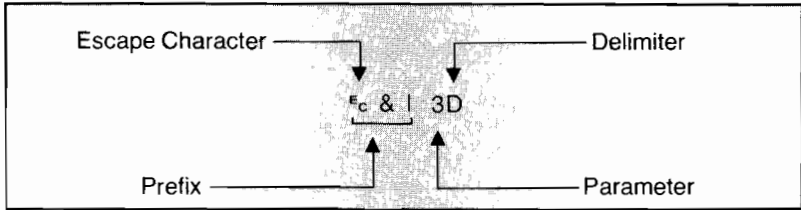
To change your printer's settings, you use **escape sequence commands**. They're called escape sequences because each one begins with the USASCII escape character (€c)—a control code generated by the ESC key of the host terminal's keyboard.

An escape sequence is composed of the following elements:

- The ASCII escape character (€c) (decimal value 27).
- A **Prefix**, made up of characters that define the general type of the escape sequence. (Prefixes are used only in parameterized escape sequences, described below.) In the prefix a lowercase L is represented as l.
- A **Delimiter** which sets the outline of the command. Delimiters are entered as lowercase alpha characters.
- A **Parameter** (or **Value**), which appears right before the delimiter and specifies the exact meaning of the command. The parameter may be any integer from -9999 to +9999.
- A **Terminator**, the last delimiter in the sequence, which signals the end of the escape sequence. The terminator is always an uppercase letter.

For example, the escape sequence following sets up the printer to double space; that is, to print 3 lines per inch. The prefix of the escape sequence (€c&l) says that the sequence is used to define a page formatting function.

The **Delimiter (D)**, which also functions as the **Terminator** in this instance, says the command is used to specify line spacing. The **Parameter (3)** defines the selection: 3 lines per inch.



NOTE: This manual represents parameters in escape sequences by using brackets around the parameter description. Using the above example, the line spacing escape sequence is represented as

`Esc & | <lines per inch> D`

and 3 takes the place of `<lines per inch>`.

Parameters are optional and may be omitted. If you send a command without specifying the parameter, the printer will set the value of the parameter at zero. If you specify a parameter in a command that doesn't require one, the printer will usually ignore the parameter. If you specify a parameter that is out of the acceptable range, the printer will generally ignore that portion of the escape sequence. (A chart of escape sequence commands and their parameters appears in **Section 7, Appendices**.)

Combining Escape Sequences

Several commands with the same prefix may be combined into a single sequence, as shown in the following example. To combine escape sequences, begin the sequence with `Esc` and the rest of the shared prefix, then append the remaining characters from each command. The delimiters of the combined commands must appear in lower case, with the exception of the last delimiter, which must be in upper case, because it serves as the Terminator for the sequence.

EXAMPLE: Combining Escape Sequences

`Esc&l 5E`, which sets the top margin at line 5, and

`Esc&l 50F`, which sets the text length at 50 lines,
may be combined in the sequence

`Esc&l 5e 50F`.

When You Make a Mistake

If you send the printer an escape sequence containing a mistake (or an escape sequence that the printer does not recognize), one of two things will happen: either the printer will ignore the escape sequence, or the printer will print some characters that will resemble the last part of the command.

If the printer ignores the command, you have asked it to perform a function that it does not support.

If the printer prints some characters, you made a mistake in syntax while entering the escape sequence and included an unacceptable character in the command. The printer will print all characters in the escape sequence following the error.

CONTROLLING BASIC PRINTER FEATURES

Line Feed and Form Feed

Your printer can advance paper without printing in several ways, described below.

Line Feed

When you push the **LINE FEED** button on the control panel, the printer feeds the paper up one line. When you hold the button down, the printer performs continuous line feeds.

You can also cause a line feed by sending the Line Feed (**LF**) control code (decimal value 10) from the device controlling the printer.

Form Feed

When you push the **FORM FEED** button on the control panel, the printer feeds the paper up until the daisywheel is positioned at the first line of the next page.

You can also cause a form feed by sending the Form Feed (**FF**) control code (decimal value 12) from the device controlling the printer.

NOTE: Pressing the **LINE FEED** or **FORM FEED** buttons while the printer is printing causes the printer to store those instructions in with the text. If you press one of these buttons while printing, you may get undesirable results, because the printer will not perform them until later.

Line Termination

The Line Termination escape sequences allow you to define how the printer will interpret and perform the line terminators: Carriage Return (C_R), Line Feed (L_F), and Form Feed (F_F). Because most systems automatically take care of this, you probably will never have to worry about this setting.

The printer can automatically terminate lines in a number of ways, as shown in the box below. At power-on or after a printer RESET, the printer defaults to performing a Line Feed (L_F) as a line feed, a Carriage Return (C_R) as a carriage return, and a Form Feed (F_F) as a form feed.

Line Terminators	
$\text{E}_c\&k\ 0G$	$\text{C}_R = \text{C}_R$; $\text{L}_F = \text{L}_F$; $\text{F}_F = \text{F}_F$ (Default)
$\text{E}_c\&k\ 1G$	$\text{C}_R = \text{C}_R\ \text{L}_F$
$\text{E}_c\&k\ 2G$	$\text{L}_F = \text{C}_R\ \text{L}_F$; $\text{F}_F = \text{C}_R\ \text{F}_F$
$\text{E}_c\&k\ 3G$	$\text{C}_R = \text{C}_R\ \text{L}_F$; $\text{L}_F = \text{C}_R\ \text{L}_F$; $\text{F}_F = \text{C}_R\ \text{F}_F$

Line Wraparound

The line wraparound feature allows the printer to automatically place any text that won't fit onto one line on the next line. When the printer reaches the right margin, if it still has text left to print, it automatically performs a carriage return and line feed and prints the text on the next line. At power-on or after RESET, the printer defaults to automatic line wraparound disabled (off).

Automatic Line Wraparound	
With $\text{E}_c\&s\ 0C$	the printer automatically wraps text around to the next line when it reaches the right margin.
With $\text{E}_c\&s\ 1C$	the printer does not wrap automatically to the next line, and any character that would print to the right of the right margin is ignored.

Bidirectional Printing

Your printer can print from left to right, from right to left, or bidirectionally. The default setting is bidirectional printing enabled.

If you wish to change from the bidirectional default setting, use the escape sequences shown in the box below.

If you set up the printer to print from right to left, sending a backspace will cause the printer to space to the right rather than to the left, and sending a space will cause the printer to space to the left rather than to the right. Printing from right to left is a temporary mode, and is cleared with a carriage return (CR).

Bidirectional Printing	
With <code>ESC&k 0W</code>	the printer prints from left to right.
With <code>ESC&k 1W</code>	the printer prints bidirectionally (default mode).
With <code>ESC&k 2W</code>	the printer prints from right to left (temporary mode, cleared with carriage return).

Page Formatting

The page formatting features described here allow you to set and clear left and right and top and bottom margins, to supercede margin settings, to determine page length and text length, and to enable Perforated Page mode. The Perforated Page mode causes the printer to move ahead so that it will not print on a perforation.

Margins

Setting Left and Right Margins

To set the left and right margins to the desired columns, send the escape sequences shown in the box following. If you try to set the left margin to the right of the right margin, the printer will ignore your command. The default left margin is at column 0, the leftmost position the daisywheel can assume. The default right margin is at the rightmost position the daisywheel can assume, depending on print pitch. In 10-pitch, the rightmost position the daisywheel can assume is at the 131st column, and in 12-pitch, it is at the 157th column.

The Column Numbers specified in the escape sequence below are defined in terms of the current print pitch. If you change print pitch or change to a different pitch daisywheel, the margin will be remembered as the physical position.

Setting Left and Right Margins

With `Ⓕc&a<column number>L` the left margin is set to the column specified.


With `Ⓕc&a<column number>M` the right margin is set to the column specified.

Clearing Left and Right Margins

To clear the margins to their default settings (columns 0 and 131 in 10 pitch), use the escape sequence shown in the box below.

Clearing Left and Right Margins

With `Ⓕc9` clear the margins to their default settings.



Computer
Museum

Setting Top Margin

The top margin is set in much the same way the left and right margins are. The bottom margin is determined by the setting for text length.

To set the top margin, send the escape sequence shown in the box below. Enter the appropriate line number in place of the brackets `<>` to specify how many lines down from the top of the page the top margin should be. If you enter a line number that would extend the margin beyond the bottom of the page, the printer will ignore your command.

The top margin is not active unless the Perforated Page Mode is enabled.

Setting Top Margin

With `Ⓕc&l<line number>E` the printer sets the top margin to the line number specified.

Positioning the Daisywheel Horizontally on the Page

The following commands, called Cursor Addressing commands, allow you to move the daisywheel to a specific position horizontally. In addition to simple positioning, these commands can function as margin releases, as they can cause the daisywheel to move to a position outside the set margins.

You may specify the desired daisywheel position in one of two ways: by stating the column number, or by stating a horizontal position measured in units of 1/720 inch. The horizontal position is measured from the left physical stop. (For your reference, the 2602A will round these 1/720" units off to the nearest 1/120".)

Daisywheel Positioning: Horizontal

With $\epsilon_c \& a \cdot \text{column number} \cdot C$ the printer will move the daisywheel horizontally to the column specified.

With $\epsilon_c \& a + \langle \text{number} \rangle C$ the printer moves the daisywheel the specified number of columns to the right.

With $\epsilon_c \& a - \langle \text{number} \rangle C$ the printer moves the daisywheel the specified number of columns to the left.

With $\epsilon_c \& a \cdot \text{increment} \cdot H$ the printer will move the daisywheel to the position specified. The increment is a number specifying position in 1/720" increments.

With $\epsilon_c \& a + \langle \text{increment} \rangle H$ the printer moves the daisywheel to the right the specified distance, measured in units of 1/720 inch.

With $\epsilon_c \& a - \langle \text{increment} \rangle H$ the printer moves the daisywheel to the left specified distance, measured in units of 1/720 inch.

Positioning the Daisywheel Vertically on the Page

You may specify the desired vertical line position of the daisywheel in one of two ways: by stating the line number, or by starting a vertical position measured in units of $1/720$ inch. The vertical position is measured from top-of-form. (For your reference, the 2602A will round these $1/720$ " units to the nearest $1/48$ ".)

If you are specifying position with line numbers, you may enter a positive number (including the plus sign) in place of the brackets $\langle \rangle$ to indicate that the daisywheel should move down from the current line, and enter a negative number (including the minus sign) to indicate that it should move up. Enter an absolute number to indicate a specific line on the page to which the daisywheel should move.

For example, if you entered -5 , the daisywheel would move 5 lines up from its current position. If you entered $+5$, it would move 5 lines down. And if you entered 5, it would move to line 5, measured from the top of the page.

Daisywheel Positioning: Vertical

With $\text{^c\&a}\langle \text{line number} \rangle \text{R}$	the printer moves the daisywheel to the line specified.
With $\text{^c\&a} + \langle \text{number} \rangle \text{R}$	the printer moves the daisywheel downward the number of lines specified.
With $\text{^c\&a} - \langle \text{number} \rangle \text{R}$	the printer moves the daisywheel upward the number of lines specified.
With $\text{^c\&a}\langle \text{increment} \rangle \text{V}$	the printer moves the daisywheel to the position specified. The Increment is a number specifying position in increments of $1/720$ inch.
With $\text{^c\&a} + \langle \text{increment} \rangle \text{V}$	the printer moves the daisywheel the specified distance downward. The distance is measured in increments of $1/720$ inch.
With $\text{^c\&a} - \langle \text{increment} \rangle \text{V}$	the printer moves the daisywheel the specified distance upward. The Distance is measured in units of $1/720$ inch.

Perforated Page Mode

In the Perforated Page mode, the printer does not print on perforations. When you turn the Perforated Page mode on, the printer prints to the limits you have specified with top margin, page length, or text length escape sequences. When you don't turn the Perforated Page mode on, the printer ignores text length and top margin settings and may print over the perforations.

The Perforated Page mode is turned off in default operation.

Perforated Page Mode

With `ESC&I 0L` the Perforated Page Mode is turned off (default).

With `ESC&I 1L` the Perforated Page Mode is turned on.

Setting the Text Length

The escape sequence for Text Length allows you to specify how many lines of text may be printed on a page, thereby setting the bottom margin. Send the escape sequence shown in the box below to set text length. You may specify any text length from 1 to 128 lines by entering the appropriate number in place of the brackets `<>`.

If Perforated Page mode is turned off, the text length setting is meaningless; your pages won't have a bottom margin though you've made all the proper settings. Perforated Page mode must be enabled if you want to use the Text Length or Top Margin settings.

Setting the Text Length

With `ESC&I<number of lines>F` the printer sets the length of the area text may occupy on the page. Specify a Number from 1 to 128, inclusive.

TEXT FORMATTING

The text formatting features described here allow you to select print pitch, set line spacing and spacing between letters, and use nonstandard printwheel characters.

Selecting Print Pitch

The printer can print in four different print pitches: 10 characters per inch (cpi), 5 cpi, and 15 cpi. The default print pitch is determined by the daisywheel in use.

To select print pitch, send the appropriate escape sequence from the list in the box below.

Selecting Print Pitch	
With $\text{E}_c\&k$ 0S	the printer prints 10 characters per inch.
With $\text{E}_c\&k$ 1S	the printer prints 5 characters per inch.
With $\text{E}_c\&k$ 4S	the printer prints 12 characters per inch.
With $\text{E}_c\&k$ 2S	the printer prints 15 characters per inch.

Selecting Other Print Pitches

To specify print pitches other than the four discussed in the preceding paragraphs, send the escape sequence called Horizontal Motion Index, shown in the box following. You may enter any spacing interval from 0 to 126 inclusive. The Horizontal Motion Index sets the centerline of each character in increments of 1/120th of an inch from the surrounding characters.

If you entered the spacing interval 12, for example, you would set the print pitch to 10.

Horizontal Motion Index

With $\text{Esc}\&\text{k}\langle\text{spacing interval}\rangle\text{H}$ the printer sets the spacing from one character to the next in $1/120$ th inch increments. Enter a value from 0 to 126 as the Spacing Interval.

NOTE: The Horizontal Motion Index and Print Pitch Selection escape sequences override each other. The printer will print at the print pitch or character spacing most recently specified.

Selecting Space Between Lines

There are two ways you can control how your printer spaces between lines. You can select one of several settings for lines per inch, or you can specify spacing in increments of $1/48$ th of an inch. Send the escape sequences shown in the box below to set line spacing in either way.

When you're setting lines per inch, enter the appropriate number—1,2,3,4,6,8,12,16,24, or 48 lines per inch—in place of the brackets $\langle \rangle$.

When setting $1/48$ th of an inch increments, enter the appropriate number between 0 and 126 inclusive in place of the brackets.

Selecting Space Between Lines

With $\text{Esc}\&\text{l}\langle\text{lines per inch}\rangle\text{D}$ the printer prints text at 1, 2, 3, 4, 6, 8, 12, 16, 24, or 48 lines per inch. (Default: 6 lines per inch)

With $\text{Esc}\&\text{l}\langle\text{spacing interval}\rangle\text{C}$ the printer spaces lines of text as specified, in $1/48$ th inch increments. (Default: $8/48$ inch line spacing)

NOTE: The two escape sequences for setting line spacing override each other. The printer will print at the line spacing most recently specified.

Printing Nonstandard Characters

You can instruct your printer to print nonstandard characters—that is, characters on spokes of the ASCII daisywheel that cannot be addressed with an ASCII code.

To print a nonstandard character, use the following chart to determine which parameter you should enter in place of the brackets <> in the escape sequence, and send the escape sequence as shown in the box below.

Parameter	Character (on most USASCII wheels)
0	¢
1	¬
2	£
3	¤



Printing Nonstandard Characters

With `&n` nonstandard character `A` the printer prints the nonstandard character specified. (See chart above for the valid parameters.)



5

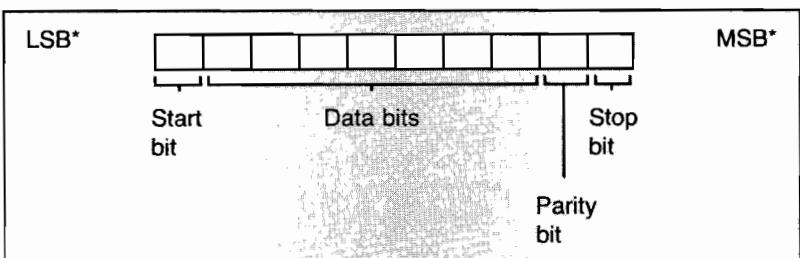
INTERFACING AND DATA COMMUNICATIONS

This section contains information on the two printer interfaces, RS-232C and HP-IB. The information, which will concern the technician more often than the operator, ranges from general definitions to details of handshaking and command protocol.

Your printer is equipped with whichever interface option you ordered. If you have questions about what interface you would need to link your printer to another HP device, refer to the **System Interfacing Guide** in the Preface.

RS-232C SERIAL INTERFACE

The standard RS-232C interface of the 2602A printer makes possible serial data communications between the printer and a controller. Serial data communications differs from other forms of data communications in that data is transmitted one bit at a time, rather than a whole byte at once. In serial data transmissions recognized by the printer, data is transferred in the following general format:



* MSB = Most Significant Bit

LSB = Least Significant Bit

The start bit and stop bits frame each byte of data. The printer can accept data with one or two stop bits, but data transmitted by the printer will have the number of stop bits specified in the printer's configuration.

This subsection outlines how to configure the printer for your particular RS-232C application.

RS-232C Datacomm Configuration

The datacomm settings controlled on the printer's configuration switch, include baud rate, transmitted parity, parity checking, and handshakes. Most of these settings are explained in **Section 3, Configuration**. Handshakes and connector pin-outs are explained here.

Handshakes

Handshakes are signals exchanged by the printer and its host to prevent data buffer overrun (i.e., data being transmitted faster than the input buffer can accept it). The handshake needed for a specific application depends upon the requirements of the host system.

The handshakes available are Enq/Ack, Xon/Xoff, and hardware handshake. Enq/Ack is always enabled. You may also select either of the other two handshakes with the configuration switch setting labelled DC1/DC3 and PRINTER READY.

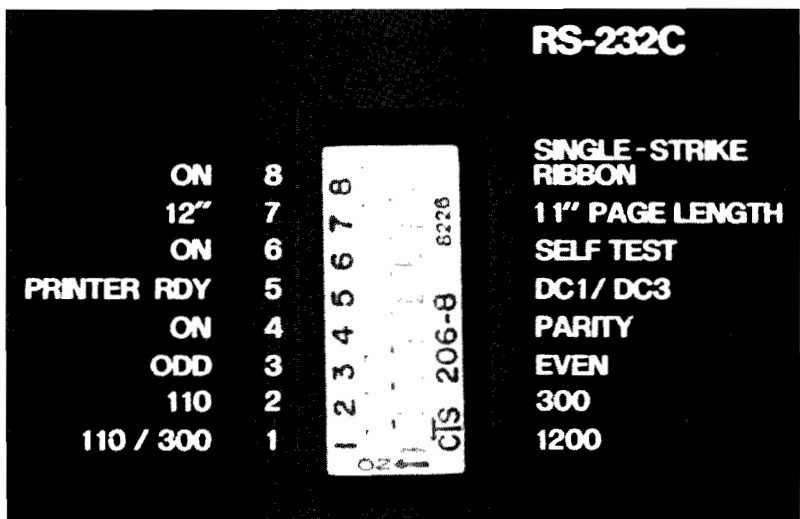


Figure 5-1 RS-232C Configuration Switches

Enq/Ack

Enq/Ack is primarily an HP protocol. The handshake is initiated by the host device. The host transmits an Enq (the Enquire control code, Enq , decimal 5) and holds off data transmission until it receives an Ack control code (Acknowledge, Ack , decimal value 6) from the printer.

When the printer has room in its buffer for at least 96 bytes, it sends the host an Ack. The host may send data to the printer as soon as it receives the printer's Ack.

Xon/Xoff

The Xon/Xoff handshake sets up the printer to count the characters in its buffer. The printer signals the host when it can and cannot accept more data.

The printer has a buffer of approximately 1500 characters and will accept data until there is room for just 64 more bytes in the buffer. When the buffer has filled to that point, the printer will send the host an Xoff character to stop data transmission. The Xoff character used by the printer is a DC3.

After sending the Xoff character, the printer will continue to print, pulling data from its buffer. When the buffer has 64 or fewer characters left to print, the printer sends the host an Xon character to restart data transmission. The Xon character used by the printer is a DC1.

The Xon/Xoff handshake can be used with the HP 2622, 2623, 2624, and 2626 terminals (with cable 13242G), and with the HP 120 and HP 125 computers. It is also frequently used in non-HP systems.

Hardware Handshake

Unlike the other handshakes used by the printer, the hardware handshake uses an electrical signal to handshake with its host (all other handshakes use characters sent in the data stream). With the hardware handshake, the printer keeps track of the number of characters in its buffer and signals the host when it can accept data, and when the signal is not asserted, the host must hold off data transmission.

As with the Xon/Xoff handshake, the printer using the hardware handshake will accept data until the buffer has room for just 64 more bytes. When the buffer has filled to this point, the printer will turn off its hardware signal to the host. This signal is carried on the Data Terminal Ready line (EIA CD or CCITT 108.2), pin 20 of the RS-232C connector.

After turning off the handshake signal, the printer will continue to print, pulling data from its buffer. When the buffer has 64 or fewer characters left to print, the printer turns its hardware signal back on, allowing the host to transmit more data.

When in use, the signal on the DTR line will always be asserted unless the buffer has room for 64 or fewer bytes of data or in the PAUSED state. If you are using the hardware handshake, you should be aware that dropping the DTR line may disconnect a modem. If you are using a modem, we recommend that you use a different handshake protocol.

Modem Disconnect

You may programmatically cause the printer to terminate communications through a modem by sending the escape sequence shown below. When the printer receives this escape sequence in the data stream, it stops asserting the Data Terminal Ready (DTR) line (signal CD) for approximately 20 seconds, or until the modem stops asserting Data Set Ready (DSR).

Modem Disconnect
<code>ESCf</code>

NOTE: If you are using a modem, we recommend that you use a handshake other than the Hardware Handshake. The Hardware Handshake signal is carried on the DTR line, and dropping the DTR signal can disconnect the modem.

Datcomm Errors

The printer recognizes and may be affected by four kinds of datcomm errors: parity errors, framing errors, data buffer overrun, and Data Set Ready not asserted. The power indicator light on the front panel flashes when any of these errors occurs.

Parity errors occur when parity checking is enabled by the configuration switches controlling parity, and the parity bit of the incoming data doesn't match the parity expected by the printer. If the printer encounters a parity error, it will print a question mark (?).

Framing errors occur when the printer fails to encounter a stop bit where it expects to find one. Framing errors often result when a baud rate setting for the printer does not match the baud rate used by the host. Framing errors cause the printer to print incorrect characters.

Data buffer overrun occurs most often when an incorrect handshake is in use.

Data Set Ready not asserted errors occur when the Data Set Ready (DSR) line from the host, sensed on pin 6 of the connector, is not asserted. The DSR line must always be asserted by the host in order for the printer to accept data. If the printer is turned on and is not connected to a terminal or system, Data Set Ready is not asserted, and the printer will signal an error condition.

If a datacomm error has occurred, it will be reported in the printer status byte (refer to **Section 7, Appendices** for information on status requests and printer responses).

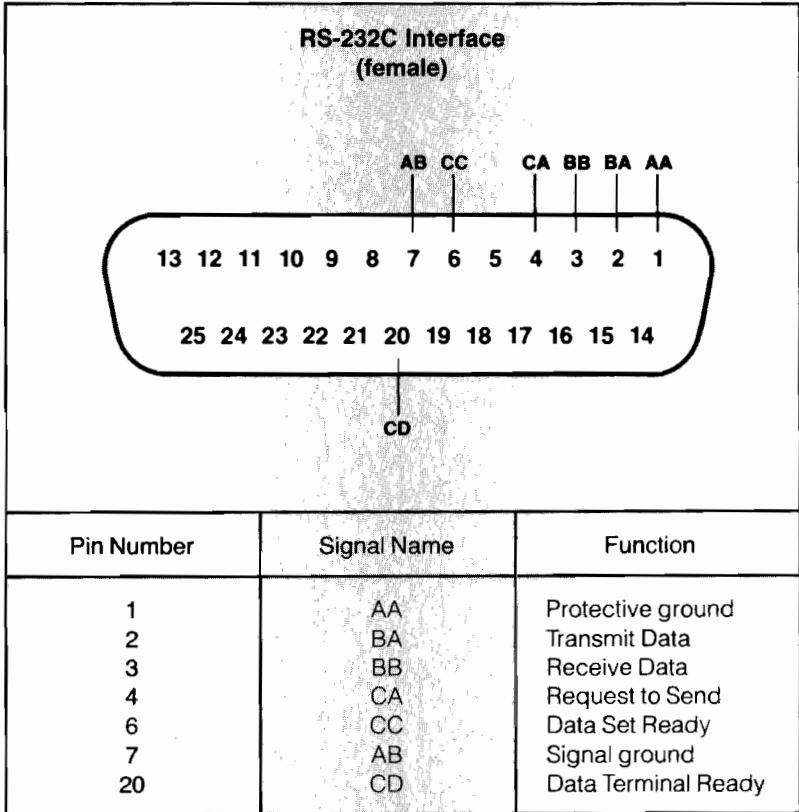
To correct an error condition and prepare the printer to print again, first check the baud rate and parity settings on the configuration switches underneath the printer access cover. For more information about setting the configuration switches, refer to **Section 3, Configuration**. Also make sure that the interface cable is firmly connected to both the printer and the host.

If you suspect a data buffer overrun, which would happen if data were being sent from the host too quickly for the printer to handle, enable a handshake or select a slower baud rate, again on the configuration switches. Refer to **Section 3, Configuration**, for more information.

Then press the **RESET** button to clear the error condition.

RS-232C Connector

The illustration below shows the pin-out for the 25-pin connector used by the printer.



HP-IB INTERFACE

The Hewlett-Packard Interface Bus (HP-IB) is among the most common interfaces between two HP devices. The HP-IB is a 16-line bus, consisting of:

- three handshake lines
- five control lines
- eight data I/O lines

With these lines, the HP-IB ties a group of devices together into a system. The devices on the HP-IB may include terminals, desktop computers, personal computers, plotters, calculators, instruments, and printers.

A device on the HP-IB may function as a Listener, a Talker, or a Controller. The Controller, as its name implies, regulates the interaction of the devices on the HP-IB system. A Listener receives data that is sent over the bus. A Talker transmits data to other devices on the bus.

Your printer is usually a Listener, but will sometimes also function as a Talker, as explained later in this section.

Addressing

The HP-IB address is a number which identifies each device on the bus. Using the HP-IB address, the Controller can talk to the various devices on the bus and individually address them to Talk or Listen.

Addresses 0 through 6 may be set with the switches on the front panel, as discussed in **Section 3, Configuration**. If you select an address of 7 on the front panel, the address of the printer will be determined by the setting of an internal switch, located on the HP-IB printed circuit assembly. The range of this internal switch is from 0 to 29. When the printer leaves the factory, the switch is set to an address of 7.

Service Request (SRQ)

When the Service Request is enabled, the printer sends its message to the controller by asserting the SRQ control line whenever it is taken off-line—that is, when the PAUSE button is pushed. The controller polls the devices on the bus to find out which one requested service.

The printer asserts the SRQ signal until the controller performs a serial poll, or until the off-line condition is corrected, which happens when the RESET button is pushed.

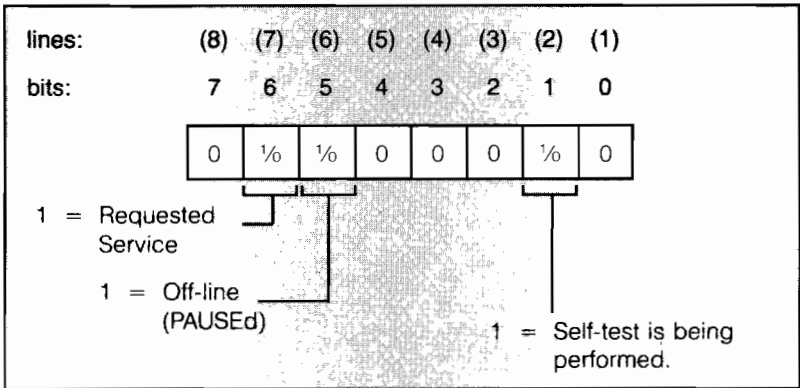
NOTE: If Listen Always mode is enabled, the printer will not assert SRQ.

Polling

The controller may run periodic checks of the devices on the bus to find out which, if any, requires service; or a device may request service, prompting the controller to check the devices on the bus. Two kinds of polling may be performed over the bus: serial and parallel.

Serial Poll

The controller performs a serial poll either in search of information or in response to an SRQ. In a serial poll, the controller requests the status of one specific device on the bus by addressing only that device. The printer returns an eight-bit status byte, shown below. Data In/Out (DIO) line numbers are given in parentheses.



If the printer requested service with an SRQ, bit 6 will be set to 1. (DIO line 7 will be asserted.)

Commands used in serial polling are: SPE (Serial Poll Enable, decimal 24), SPD (Serial Poll Disable, decimal 25).

Lines used in serial polling are: ATN (Attention), DIO (Data In/Out) lines 1 through 8.

Parallel Poll

Parallel polling provides a fast way for the controller to periodically check to see if any devices need service or to determine which device sent an SRQ. The controller can perform a parallel poll only on devices that have addresses 0 to 7. Each of the eight devices is assigned a DIO line for polling, and the lines correspond to the addresses in the following manner:

Address:	0	1	2	3	4	5	6	7
	↓	↓	↓	↓	↓	↓	↓	↓
Poll Line:	8	7	6	5	4	3	2	1

The controller performs a parallel poll by asserting the EOI (End Or Identify) and ATN (Attention) lines. Each device responds by asserting its assigned DIO line if it requires service.

Lines used in parallel polling are: EOI (End Or Identify) and ATN (Attention), as well as DIO lines 1 through 8.



6

ACCESSORIES

HP 26020A MULTIPART FORMS TRACTOR FOR THE 2602A.

The HP 26020A multipart forms tractor is designed to operate with the 2602A printer. It is lightweight, durable, easy to install by the operator, and simple to use. It allows the use of single or multipart continuous forms of up to five parts. Since five part forms can be of varying thickness, they should be tested prior to use for proper feeding and print registration.



Figure 1 HP 26020A Forms Tractor installed on an HP 2602A

Due to the mechanical nature of a forms tractor, and the tendency of the pin feed holes in continuous forms to allow some slippage and even wear, some degradation of print registration may occur when using the 26020A forms tractor. Accordingly, the 26020A is not recommended for use in applications where bidirectional paper movement (reverse line feeds) is required, especially those in which numerous subscripts and superscripts need to be printed. If continuous forms are to be used with the tractor in such an application, print registration should first be checked for acceptability.

Installation

- Ensure printer is turned off by rocking the power switch to the left.
- Remove the paper deflector from the printer by lifting it up out of the rear top cover.
- Swing the sound panel on the printer forward to its open position.

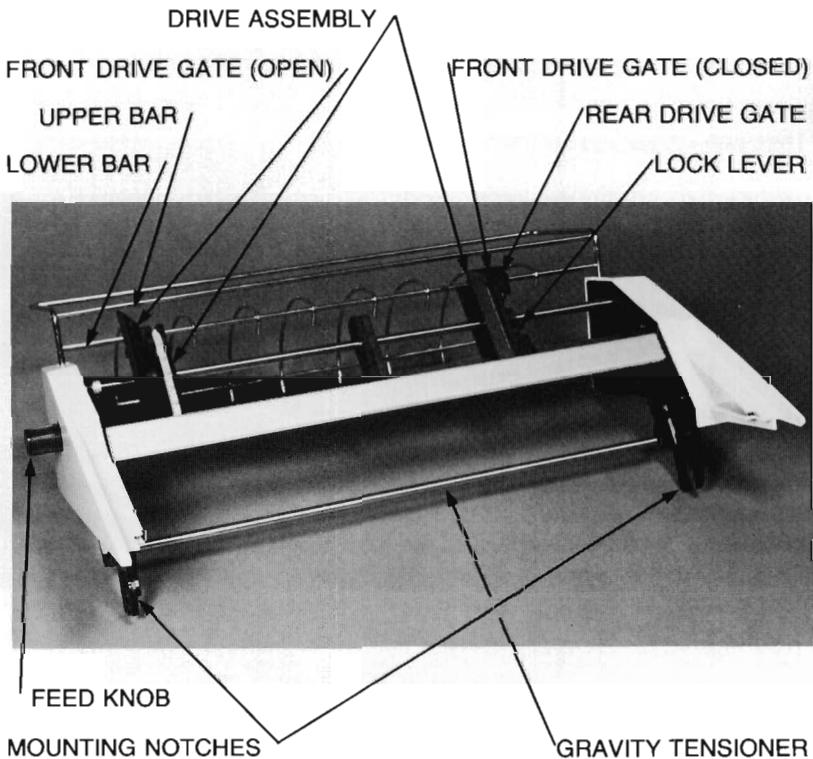


Figure 2 26020A Forms Tractor

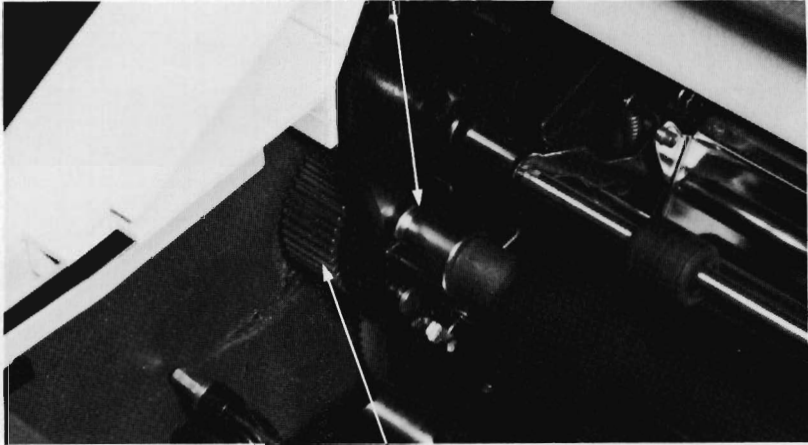
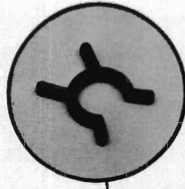
- On some printers you will find a plastic clip installed in a groove in the platen shaft just to the right of the platen drive gear at the left end of the platen (see Figure 4). If the clip is present, remove it; the left-hand end of the tractor must mount in that groove on the platen shaft.
- On the printer, pull the paper release lever and paper bail lever forward.
- Remove printer muffler (see Figure 3) by pushing it to one side and lifting it up and out of its mounting pins.



Figure 3 Removing Printer Muffler

- Study the photo in Figure 2 briefly to become familiar with the various parts of the tractor.
- With the front of the tractor facing you, pick it up with both hands and position it over the platen shaft on the printer.
- Lower the tractor onto the platen shaft (Figures 4 & 5). As you lower the tractor, guide it so that the paper bail lever and paper release lever on the printer extend into the corresponding slots in the bottom of the tractor side covers.

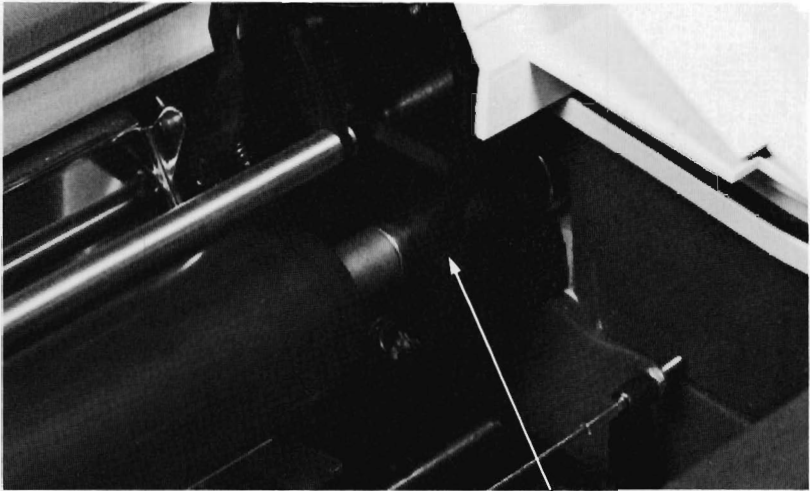
REMOVE PLASTIC CLIP
BEFORE INSTALLING
TRACTOR



PLATEN DRIVE GEAR
MESHERS WITH TRACTOR
DRIVE GEAR

Figure 4 Installing the 26020A Tractor

- Push down on both ends of the tractor to seat the mounting notches onto the platen shaft (Figures 4 & 5). When the tractor is properly seated, the idler gear at the left end of the tractor will be meshed with the drive gear on the platen shaft (Figure 4).
- Ensure gravity tensioner is installed.
- Install paper rack by inserting into notches in side covers.
- Turn printer on by rocking power switch to the right.
- The tractor is now ready for loading paper.



TRACTOR
MOUNTING NOTCH
ON PLATEN SHAFT

Figure 5 Installing the 26020A Tractor

LOADING PAPER INTO TRACTOR



- Swing open the sound panel on the printer.
- On the tractor, loosen the drive assembly lock levers and move the left and right drive assemblies laterally to the desired position to accommodate your paper width. The drive assemblies should be positioned so that the paper path will not be obstructed by the printer's paper bail arms. Leave the lock levers loosened for further adjustment.
- Open the front gates of both drive assemblies.
- If using single part forms, fold the first page of paper under the second to create a double thickness leading page. This double thickness will make paper loading easier.
- Position the paper up through the rear of the paper rack between the upper and lower bars.
- Position the paper at the lip of both rear gates and turn the tractor feed knob counter-clockwise to engage the tractor pins with the holes in the paper (ensure that the paper is properly aligned horizontally in the drive assemblies).

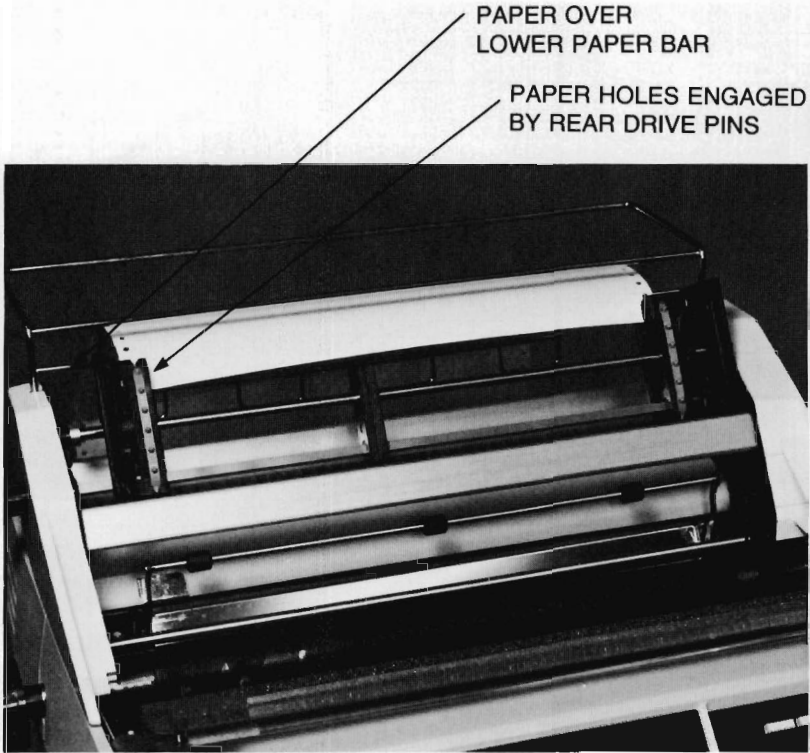
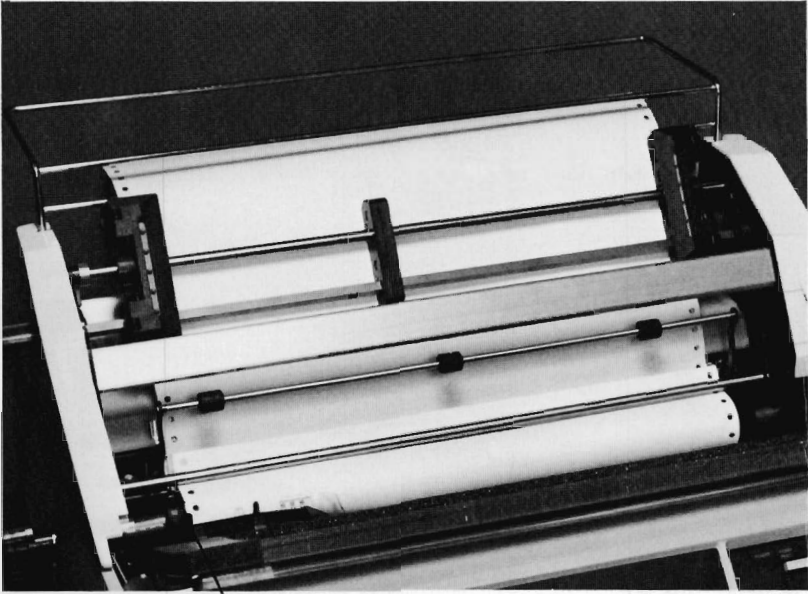


Figure 6 Paper Engaged in Rear Drive Gates

- Rotate the platen to feed the paper into the printer while guiding the leading edge of the paper down behind the platen, around it, and up under tensioner and behind paper bail. (Figure 7)

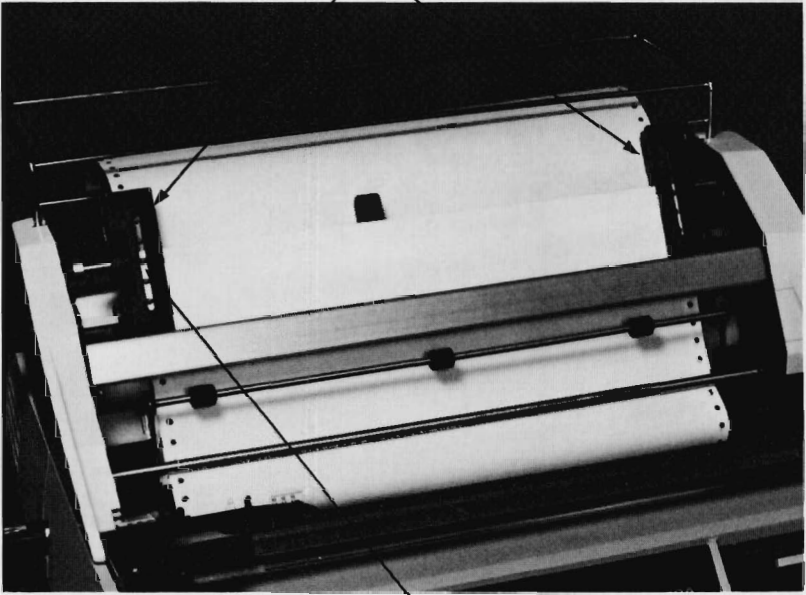


LEADING EDGE OF
PAPER BEHIND PLATEN

Figure 7 Paper Loaded Around Platen and Under Gravity Tensioner

- Pull the leading edge of the paper up to remove slack in the paper, and engage the holes in the paper over the front pins on the drive assemblies (being sure the paper is straight). Close the front gates to hold the paper in place on the drive assemblies. (Figure 8)
- Adjust the left-hand drive assembly exactly to the desired left-hand position of the paper, and tighten the lock lever on that drive assembly.
- Position the right-hand drive assembly to remove slack. Do not lock at this time.
- From the control panel depress the Form Feed button and perform at least one form feed.
- Carefully lock right-hand lock lever on the tractor drive assembly.

ADJUST LATERAL POSITION
AND TIGHTEN LOCK LEVERS



PAPER ENGAGED ON
DRIVE ASSEMBLIES

Figure 8 Paper Loaded Properly in Front Drive Gates

OPERATING CONSIDERATIONS

- Keep paper path clear and do not allow paper to pass over sharp corner/edges.
- Keep paper supply in line with tractor heads and parallel to platen.
- Keep paper supply centered with edge of lower paper rack.
- Ensure distance between top of paper stack and paper rack does not exceed 15" (380mm). (Important when using multi-part forms)



APPENDICES

This section contains information on printer status, reset, and self-test, along with reference information on print wheel character codes, control codes recognized by the 2602A, a full list of escape sequences used by the printer, and the industry compatible escape sequences supported.

For detailed information on printer features, please refer to the descriptions contained in earlier sections of this manual.

PRINTER RESET

The 2602A printer can be reset in either of the two ways shown below.

Soft Reset

The "soft" reset clears I/O errors, moves the print head to the left margin, and moves the paper upward so that the print head is positioned at the first line of the next page. It does not take the printer off-line or change any of the printer's operating modes or feature settings. A soft reset is usually one of the first steps used to restore printer operation, if an unknown I/O error has occurred.

You can cause a soft reset by pressing the printer's **RESET** button or by sending the escape sequence shown in the box below.

Soft Reset

Fcg

Hard Reset

A "hard" reset returns the printer to the state it was in immediately after power-on: all printer features are reset to their default settings. Before performing the reset, the printer moves the paper upward so that the print head is positioned at the first line of the next page. Any data in the I/O buffer will be purged.

You can cause a hard reset by sending the escape sequence shown below.

Hard Reset

ESC E

PRINTER SELF-TEST

The printer self-test provides a means for ensuring that the printer is operating correctly. The self-test performs a ROM check and a RAM check, then prints a ripple print pattern to test the mechanical aspects of operation. There are two methods for performing the self-test on the 2602A. These are described below.

Configuration Switch

Switch 6 of the front panel configuration switches controls the full-length self-test, which is usually used by technicians for troubleshooting. To start the switch-controlled self-test,

- Turn the printer off.
- Set Switch 6 to its ON position.
- Turn the printer on.

The test begins as the printer prints a "salutation" line, indicating that it is performing a self-test. The printer then performs a ROM check and indicates whether or not the check was successful ("romok"), followed by a RAM check and a similar message ("ramok"). After the ROM and RAM checks, the printer prints 98 lines of ripple print.

If the printer encounters a problem in its ROM or RAM checks, it will print "ROM BAD" or "RAM BAD".

When the test is completed, the printer starts the test over again. (Note that you can terminate the test at any time by setting switch 6 to OFF. If you do so, the test will end after printing 5 lines of ripple print.)

Escape Sequence

The printer may be sent into a shorter-length self-test by sending it the escape sequence shown in the box below. When it receives the escape sequence, the printer, prints a line of salutation, checks the ROM and RAM and prints a status message for each ("romok" and "ramok"), then prints five lines of ripple print. At the end of this abbreviated self-test, the printer performs a form feed and leaves the printer in its power-on state: on-line and ready.

Self-Test

^cZ

PRINTER STATUS

The printer transmits data to the host in response to any of three commands, which we have loosely grouped under the heading of Status. In two of the three cases, the printer will transmit only its model number and a carriage return and line feed.

The third case is a true status request, which causes the printer to report current information on its operating conditions.

Model Number Status Requests

The Model Number Status Request is a means for the host system to accurately identify the printer by model number. When it receives a Model Number Request, the printer will respond with "2602A ^r^f ". The two valid requests are shown below. The RS-232C interface requires that a ^p be sent to the printer to trigger transmission of its response.

Model Number Status Request

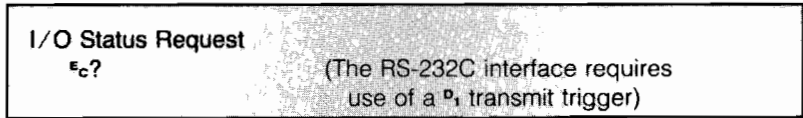
^c^rK

(The RS-232C interface requires use of a ^p transmit trigger)

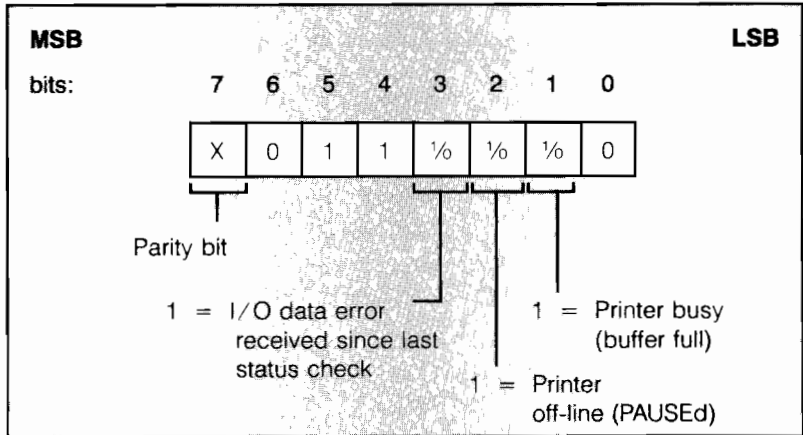
^c^s1^

I/O STATUS REQUEST

The status request shown below is not placed in the buffer with other data, as the requests above are, but instead is acted upon immediately as soon as the printer receives it. When used with an RS-232C interface, the status request must be followed by a P_r to cause the printer to transmit its response.



When it receives the request for I/O status, the printer returns one data byte. This status byte may be interpreted as shown in the diagram below.



CHARACTER CODE INFORMATION

The chart following shows the characters of various print wheels used by the 2602A printer, arranged by character code.

USASCII Character Set

BITS	CONTROL CHARACTERS		DISPLAYABLE CHARACTERS					
	0	0	0	0	1	1	1	1
7	0	0	0	0	1	1	1	1
6	0	0	1	1	0	0	1	1
4321	5	0	1	0	1	0	1	0
0000	N	P		0	@	P	`	p
0001	E	D	!	1	A	Q	a	q
0010	X	D	"	2	B	R	b	r
0011	X	D	#	3	C	S	c	s
0100	F	D	\$	4	D	T	d	t
0101	E	N	%	5	E	U	e	u
0110	R	Y	&	6	F	U	f	u
0111	D	B	'	7	G	W	g	w
1000	E	N	(	8	H	X	h	x
1001	H	H	)	9	I	Y	i	y
1010	L	B	*	:	J	Z	j	z
1011	Y	E	+	;	K	[	k	{
1100	F	E	,	<	L	\	l	:
1101	R	E	-	=	M	]	m	}
1110	O	E	.	>	N	^	n	~
1111	E	U	/	?	O	_	o	■

ISO Substitution Character Sets

Bits	USASCII	Swedish/ Finnish	Norwegian/ Danish	French	German	United Kingdom	Spanish
010 0011	#	#	#	£	£	£	#
100 0000	@	É	@	à	§	@	@
101 1011	[	Ä	Æ	·	Ä	[	í
101 1100	\	Ö	Ø	ç	Ö	\	ñ
101 1101	]	Å	Å	§	Ü	]	ó
101 1110	^	Ü	^	^	^	^	·
110 0000	`	é	`	`	`	`	`
111 1011	{	ä	æ	é	ä	{	{
111 1100	:	ö	ø	ù	ö	:	ñ
111 1101	}	å	å	è	ü	}	}
111 1110	~	ü	~	-	ß	~	~

The ISO standard character sets are similar to USASCII, except that certain characters are substituted according to the above table.

CONTROL CODES

The chart following contains the control codes recognized by the 2602A printer. The control codes are arranged according to their decimal values.

FUNCTION	SYMBOL	KEYS	DECIMAL EQUIVALENT	DESCRIPTION
Enquire	ϵ_a	CNTL E	5	Received by the printer from host computer or controller. Printer will respond with an ϵ_k when ready to accept data.
Acknowledge	ϵ_k	CNTL F	6	Transmitted by printer in response to an Enquire (ϵ_a) when the printer is ready to receive data.
Backspace	ϵ_b	CNTL H	8	Moves the print head one character position to the left.
Linefeed	ϵ_f	CNTL J	10	Advances the paper one line.
Form Feed	ϵ_f	CNTL L	12	Advances the paper to the top line on the next page.
Carriage Return	ϵ_r	CNTL M	13	Sets the position of the print head at the left margin. Does not advance the paper.
Device Control 1	ϵ_1	CNTL Q	17	Trigger for output of status request. Used as an Xon character for Xon/Xoff handshake.
Device Control 3	ϵ_3	CNTL S	19	Used as an Xoff character for Xon/Xoff handshake.
Escape	ϵ_c	CNTL [	27	Indicates that the characters immediately following are part of an escape sequence command.
Space	SP		32	Causes print head to move to the next character position.

ESCAPE SEQUENCES

The table following shows the escape sequences recognized by the 2602A printer. The escape sequences are arranged first, according to the number of characters in the sequence, and secondly, in the order of the character values.

TWO-CHARACTER ESCAPE SEQUENCES

E_{c9}	Clears margins to their default settings.
E_{cE}	Resets printer to power-on state (hard reset).
$\text{E}_{c?}$	Returns printer status.
E_{cf}	Disconnects modem, if in use.
E_{cg}	Clears error conditions (soft reset).
E_{cO}	Transfers printer to off-line (PAUSEd) state.
E_{cZ}	Initiates printer self-test



MULTI-CHARACTER ESCAPE SEQUENCES

$\text{E}_{c\&a}$ sequences	Cursor Addressing
$\text{E}_{c\&a}\langle\text{column}\rangle\text{C}$	Moves the print head to the column indicated by the integer. (The first character position = column 0, the second character position = 1, etc.) Column numbers are defined in terms of the current print mode.
$\text{E}_{c\&a}\langle\text{integer}\rangle\text{C}$	Moves the print head $\langle\text{integer}\rangle$ columns to the right.
$\text{E}_{c\&a}\langle\text{integer}\rangle\text{C}$	Moves the print head $\langle\text{integer}\rangle$ columns to the left.
$\text{E}_{c\&a}\langle\text{distance}\rangle\text{H}$	Moves the print head the specified distance, measured from the left physical stop. The Distance is the number of decipoints (i.e., units of 1/720) that you want the print head to move.

(continued next page)

ESCAPE SEQUENCES (continued)

$\text{E}_c\&a + \langle \text{distance} \rangle \text{H}$	.....	Moves the print head the specified number of decipoints to the right.
$\text{E}_c\&a - \langle \text{distance} \rangle \text{H}$	.....	Moves the print head the specified number of decipoints to the left.
$\text{E}_c\&a \langle \text{column} \rangle \text{L}$	.....	Sets the left margin at the column indicated. Columns are defined in terms of the current print mode and remembered as a physical position.
$\text{E}_c\&a \langle \text{column} \rangle \text{M}$	.....	Sets the right margin at the column indicated. Columns are defined in terms of the current print mode and remembered as a physical position.

 $\text{E}_c\&a$ sequences**Cursor Addressing**

$\text{E}_c\&a \langle \text{line number} \rangle \text{R}$	.....	Moves print head to the line number specified.
$\text{E}_c\&a + \langle \text{lines} \rangle \text{R}$	.....	Moves print head downward the number of lines specified.
$\text{E}_c\&a - \langle \text{lines} \rangle \text{R}$	.....	Moves the print head upward the number of lines specified.
$\text{E}_c\&a \langle \text{distance} \rangle \text{V}$	.....	Moves the print head to the position which is the specified dimension from the top of the page. The distance is specified in units of 1 / 720 inch.
$\text{E}_c\&a + \langle \text{distance} \rangle \text{V}$	.....	Moves the print head the specified distance downward from its current position.
$\text{E}_c\&a - \langle \text{distance} \rangle \text{V}$	.....	Moves the print head the specified distance upward from its current position.

(continued next page)

ESCAPE SEQUENCES (continued)

Esc&k sequences	Latching Functions
Esc&k·parameter·G	<p>Defines specific meaning of line terminator. Parameters are as follows:</p> <ul style="list-style-type: none"> 0 = C_R maps to C_R; L_F maps to L_F; F_F maps to F_F 1 = C_R maps to C_RL_F 2 = L_F maps to C_RL_F; F_F maps to C_RF_F 3 = C_R maps to C_RL_F; L_F maps to C_RL_F; F_F maps to C_RF_F
Esc&k·spacing interval·H ...	<p>Horizontal Motion Index. Defines spacing as specified between centerlines of characters. The Spacing Interval is defined in units of 1/120 inch and must be in the range of 0 to 126, inclusive.</p>
Esc&k·print pitch·S	<p>Selects print pitch. Print pitch parameters are:</p> <ul style="list-style-type: none"> 0 = print pitch is 10 characters per inch 1 = print pitch is 5 characters per inch 2 = print pitch is 15 characters per inch 4 = print pitch is 12 characters per inch
Esc&k·parameter·W	<p>Enables or disables bidirectional printing. Parameters are:</p> <ul style="list-style-type: none"> 0 = Left-to-right printing only 1 = Smart bidirectional printing (default) 2 = Right-to-left printing only (canceled by carriage return)

(continued next page)

ESCAPE SEQUENCES (continued)

Esc&l sequences (l = lowercase L)	Page Formatting
Esc&l·spacing interval·C	Vertical Motion Index. Defines the spacing between lines of print. The Spacing Interval is specified in units of 1/48 inch and must be in the range of 0 to 126, inclusive.
Esc&l·lines per inch·D	Defines the line spacing in terms of number of lines printer per vertical inch. The line spacings supported by the printer are 1, 2, 3, 4, 6, 8, 12, 16, 24, and 48 lines per inch.
Esc&l·line number·E	Sets top margin at line number specified. Line numbers are counted from top-of-form, starting with line 1.
Esc&l·number of lines·F	Sets the text length to the number of lines specified.
Esc&l0L	Disables Perforated Page mode.
Esc&l1L	Enables Perforated Page mode.
Esc&l·number of lines·P	Sets the page length to the number of lines specified.

Esc&n sequences	Character Definition
Esc&n·parameter·A	Causes printer to print a non-standard character that cannot be addressed with an ASCII code. Parameters are as follows: 0 = print spoke 0 (ø on US wheels) 1 = print spoke 95 (⌏ on US wheels) 2 = print spoke 96 (£ on US wheels) 3 = print spoke 97 (⌘ on US wheels)
Esc&n0B	Print spoke 95 (⌏ on US wheels)

Esc&s sequences	Set Straps
Esc&s0C	Enables end-of-line wraparound.
Esc&s1C	Disables end-of-line wraparound.

(continued next page)

ESCAPE SEQUENCES (continued)

Esc*r sequences

Raster Commands

Esc*rK Returns printer model number to host. RS-232C requires use of a P_i transmit trigger. The printer's response to this command is, " 2602A c_Rt_F".

Esc*s sequences

Esc*s1^ Returns printer model number to host. RS-232C interface requires use of a P_i transmit trigger. The printer's response is, " 2602A c_Rt_F".

INDUSTRY-COMPATIBLE ESCAPE SEQUENCES

In addition to the escape sequences listed on the previous pages and detailed in the earlier sections of this manual, the 2602A printer supports the industry-compatible escape sequences listed below.

$E_{c^U_s \langle n \rangle}$	*Set Horizontal Motion Index (HMI); $n = \text{HMI} + 1$. The intercharacter spacing is interpreted as increments of $(n - 1)/120$ inch.
$E_{c^V_s \langle n \rangle}$	*Set Vertical Motion Index (VMI); $n = \text{VMI} + 1$. The line spacing is interpreted as increments of $(n - 1)/48$ inch.
E_{c^S}	Returns definition of Horizontal Motion Index to default setting (determined by print wheel in use).
E_{c^5}	Forward print mode ON.
E_{c^6}	Backward print mode ON.
$E_{c^L_F}$	Perform negative line feed.
$E_{c^C_{RP}}$	Initiate remote reset.
$E_{c^*_{BI}}$	Perform immediate remote reset.
$E_{c^H_T \langle n \rangle}$	*Perform horizontal tab to specified position. The position is interpreted as the number specified minus one.
$E_{c^V_T \langle n \rangle}$	*Perform vertical tab to specified position. The line number is interpreted as the number specified minus one.

* n = ASCII character whose decimal equivalent is the value described.

INDEX

A

Accessories, 26020A Forms Tractor 6-1
Addressing, HP-IB 5-7

B

Baud Rate, RS-232C 3-5
Bidirectional Printing 4-6

C

Character Code Information 7-4, 7-5
Combining Escape Sequences 4-3
Configuration Switches 1-3, 3-2, 7-2
Configuration Switch, Self-Test, Escape Sequence 7-2, 7-3
Control Codes 7-6
Control Panel 1-2
Controlling Basic Printer Features 4-4
Copying Text From the Series 80 2-4

D

Daisywheel, Cleaning xxi
Daisywheel, Installation and Changing xvii, 1-7
Daisywheel Positioning, Horizontal 4-8
Daisywheel Positioning, Vertical 4-9
Datacomm Errors, RS-232C 5-4
Default Settings 4-1
Difficulties with the Printer 1-8

E

Enq/Ack, RS-232C 5-3
Escape Sequences Charts 7-7
Escape Sequence Commands 4-2
Escape Sequences, Industry-Compatible 7-12

F

Form Feed 4-4
FORM FEED Button 1-2
Forms Tractor, 26020A 6-1
Flashing Indicator Light 1-9

H

Handshake, RS-232C 3-4
Handshakes, RS-232C 5-2

Hardware Handshakes, RS-232C	5-3
Hard Reset	7-2
HP-IB Configuration Switches	3-7
HP 120 and HP 125 Computers	2-5
HP-IB Interface	5-7
HP-IB Interface Cable	1-6
HP Series 80 Personal Computer	2-4
HP 262X Terminals	2-1

I

Indicator Light, Flashing	1-9
Industry-Compatible Escape Sequences	7-12
Installation of 26020A Forms Tractor	6-2
Interface Cable, RS-232C and HP-IB	1-6
I/O Status Request	7-4

L

Line Feed	4-4
LINE FEED Button	1-2
Line Termination	4-5
Line Wraparound	4-5
Listen Always, HP-IB	3-9
Loading Paper	1-7
Loading Paper, 26020A Forms Tractor	6-4

M

Margins	4-6
Model Number Status Request	7-3
Modem Disconnect, RS-232C	5-4

O

Options	xxi
Operational Problems	1-8

P

Page Formatting	4-6
Paper Guide, Cleaning	xx
Paper Guide, Removal	xx
Paper Rollers, Cleaning	xix
Parâllel Poll, HP-IB	5-9
Parity, RS-232C	3-4
PAUSE Button	1-2
Perforated Page Mode	4-10

Platen, Cleaning	xix
Platen, Installation	x
Platen, Removal	xix
Polling, HP-IB	5-7
Power Cables	1-5
Power Indicator Light	1-3
Power-On Switch	1-4
Printing Nonstandard Characters	4-13
Print Pitch	4-11
Printer Reset	7-1
Printer Self-Test	7-2
Printer Status	7-3

R

Replacing Paper and Forms	1-7
RESET Button	1-3
Ribbon Cartridge, Installation and Changing	xiii, 1-8
RS-232C Configuration Switches	3-3
RS-232C Connector	5-6
RS-232C, Data Configuration	5-2
RS-232C, Handshakes	5-2
RS-232C Interface Cable	1-6
RS-232C, Serial Interface	5-1

S

Sales and Service Offices	SS-1
Self-Test, HP-IB	3-8
Self-Test, Printer	7-2
Self-Test, RS-232C	3-3
Serial Interface	5-1
Serial Poll, HP-IB	5-8
Series 80 Personal Computer	2-4
Service Request, HP-IB	3-9
Service Request (SRQ), HP-IB	5-7
Setting Address, HP-IB	3-8
Setting Configuration, HP-IB	3-7
Setting Configuration, RS-232C	3-3
Setting Default Page Size	3-8
Setting Default Page Size, RS-232C	3-3
Setting Text Length	4-10
Single-Strike or Multistrike Ribbon, HP-IB	3-7
Single-Strike or Multistrike Ribbon, RS-232C	3-3
Soft Reset	7-1

Space Between Lines 4-12

Specifications 1-4

Status 7-3

Supplies xxi

System Interface Guide xxiii

T

Text Formatting 4-11

X

Xon/Xoff, RS-232C 5-3

