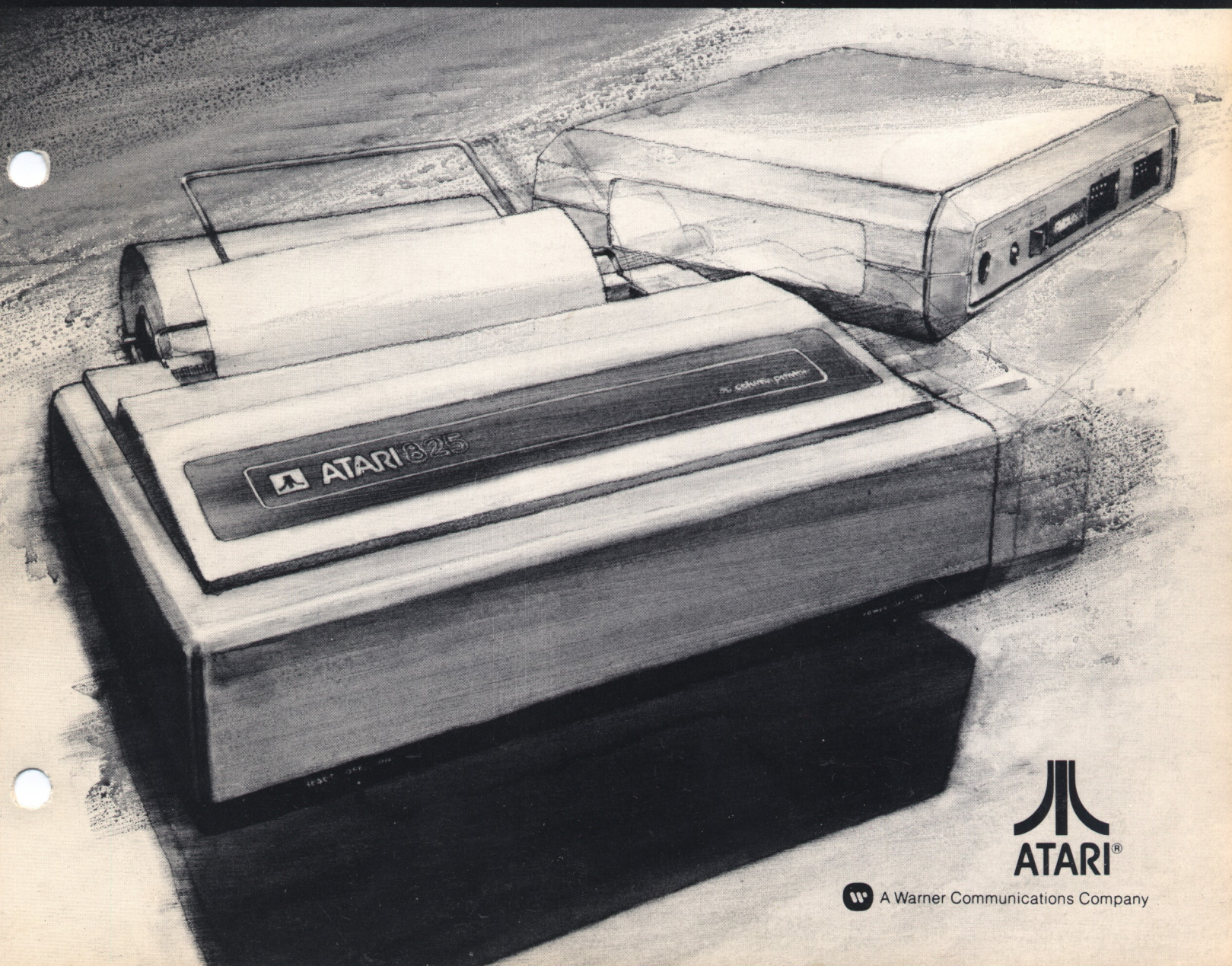
ATARI®

825™

80-COLUMN PRINTER OPERATOR'S MANUAL



ATARI®

A Warner Communications Company

80-COLUMN PRINTER OPERATOR'S MANUAL

TP 114-C 12-80

WARNING

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient the receiving antenna
- relocate the computer with respect to the receiver
- move the computer away from the receiver
- plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

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Every effort has been made to ensure that this manual accurately documents this product of the ATARI Personal Computer Systems. However, due to the ongoing improvement and update of the computer software and hardware, ATARI, INC. cannot guarantee the accuracy of printed material after the date of publication, nor can ATARI, INC. accept responsibility for errors or omissions.

Printed in USA

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TABLES

1

INTRODUCTION

Your **ATARI® 825™80-Column Printer** is a dot matrix impact printer that can print lines up to 8 inches long in three different character sets. The printer operates under complete control of your **ATARI 400™** or **ATARI 800™Personal Computer System** or other compatible host device. The computer must be programmed to instruct the printer what to do. The printer recognizes 19 different control codes generated by the computer. These codes and the printer functions they initiate are summarized in Table 2 and discussed in the section, "Computer-Generated Codes for Printer Control".

PRINTER INTERFACE

In addition to your **ATARI Personal Computer System,** the **ATARI 850™ Interface Module** is required for operation of the **ATARI 825 Printer.** The **Interface Module** converts the Input/Output (I/O) protocol serial data from the computer into 7-bit parallel data for operation of the **ATARI 825 Printer.** The Printer interface connection pin assignments are given in Table A-2 in the Appendix.

The **Interface Module** also provides four RS232C serial ports for connection of an **ATARI 830™Modem** and other RS232C-compatible peripheral devices.

PRINTER FEATURES

CHARACTER SETS. Your **ATARI 825 Printer** will print any of the following characters sets:

- Monospaced (uniformly spaced) characters at 10 characters per inch (10 cpi).
- Monospaced condensed characters at 16.7 cpi.
- Proportionally spaced characters (average of 14 cpi).

Each of these character sets consists of 96 standard ASCII characters, illustrated in Figure 1. The default character set is 10 cpi; i.e., the printer is set to print 10-cpi monospaced characters when it is powered on. The condensed and proportionally spaced character sets must be programmed by means of control codes (see Table 2).

Condensed and proportionally spaced characters can be mixed on the same print line. The 10-cpi monospaced characters cannot be mixed with characters in the other two character sets.

When a character set selection code has been transmitted to the printer, the printer prints characters in that set until it receives a different character set selection code or is powered off.

CHARACTER MATRICES. The monospaced characters are formed in a dot matrix 7 dots wide by 8 dots high. The spacing between characters is uniform: 3 spaces between 10-cpi monospaced characters, and 2 spaces between 16.7-cpi condensed monospaced characters. Including the dot spaces between characters, the 10-cpi monospaced characters are considered to be 10 dot spaces wide and the condensed monospaced characters, 9 dot spaces wide.

The proportionally spaced characters are formed in a dot matrix N dots wide by 9 dots high, where N is a variable number of dots from 6 to 18. The dot widths of the 96 ASCII characters in the proportionally spaced character set are given in Table 4. The numeric characters in this character set do not vary in width. They are always 12 dots wide and are monospaced at 12.5-cpi to ensure uniform numeric tabulations.

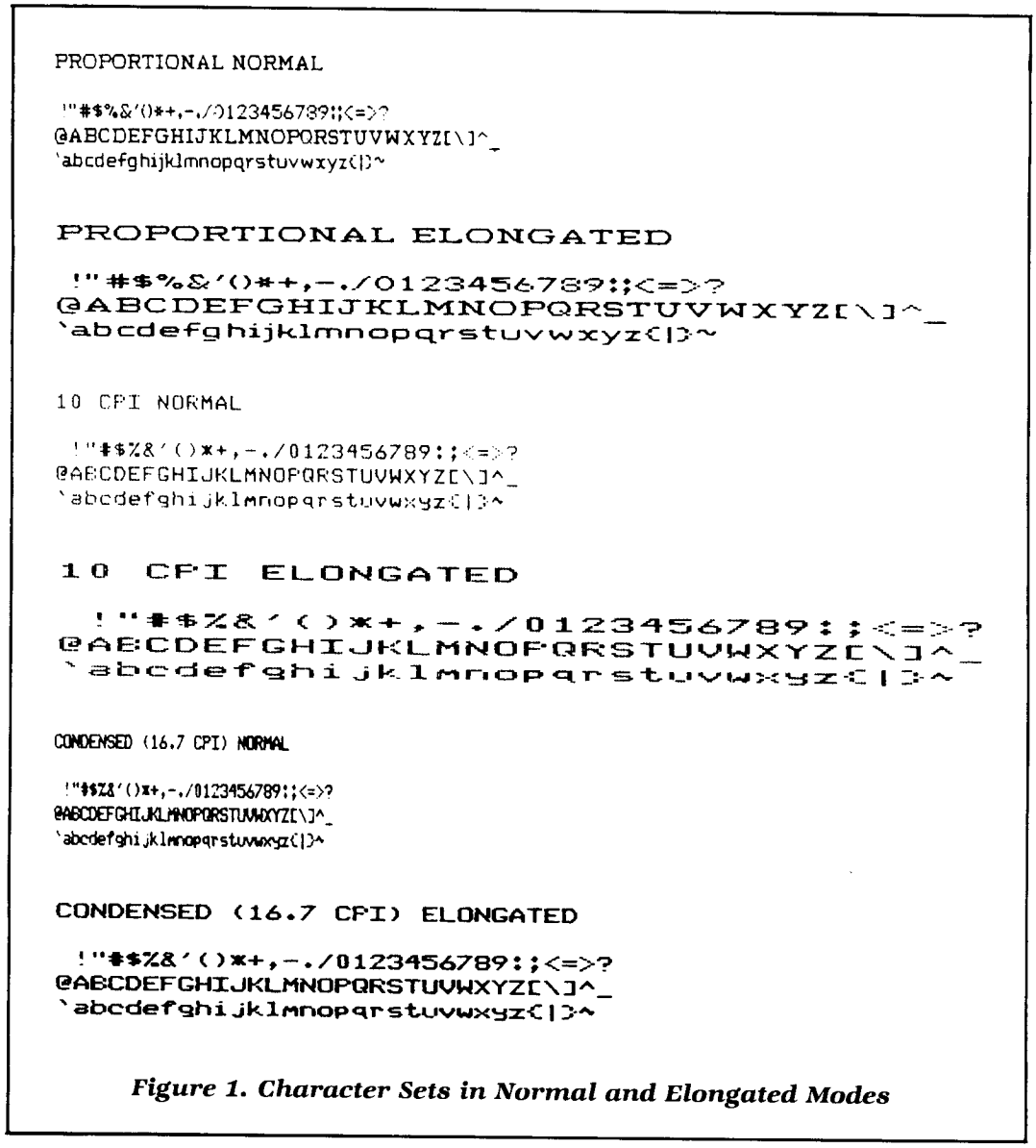


Figure 1. Character Sets in Normal and Elongated Modes

ELONGATED CHARACTERS. Elongated characters can be programmed by control code (see Table 2). All characters can be elongated, as illustrated in Figure 1. The elongated characters have twice the dot width of normal size characters. Elongated 10-cpi characters are 20 dots wide, elongated condensed characters are 18 dots wide, and elongated proportionally spaced characters are from 12 to 36 dots wide. Elongated and normal size characters can be mixed on the same print line. Elongated printing terminates when the "stop elongated printing" control code is programmed (see Table 2) or the print line is ended. Any additional characters are printed normal size on the next print line.

MAXIMUM NUMBER OF CHARACTERS PER PRINT LINE. The printer can print up to 80 10-cpi or 132 16.7-cpi monospaced characters on an 8-inch print line. When the characters are elongated, it can print half as many characters per line.

The maximum number of proportionally spaced characters per 8-inch line varies with the dot widths of the characters; therefore, this specification is given in dot columns. The maximum number of dot columns per 8-inch line is 1200. After 1185 dot columns, a "buffer full" condition exists. However, the printer logic accepts one more character, of any dot width, on the print line before it generates a carriage return internally to end the print line and print out the contents of the Print Buffer (see "Principles of Operation").

RIGHT MARGIN JUSTIFICATION. By decreasing or increasing the number of dot spaces between characters and/or words in the print line, you can justify lines at the right margin. The printer responds to six dot spacing control codes that set from 1 to 6 dot spaces between words or characters (see Table 5). The section "Right Margin Justification" provides programming information and a sample program that justifies lines of proportionally spaced characters.

AUTOMATIC CHARACTER UNDERLINING. When the control code for this function is initiated, the printer activates a ninth pin in the print head to form the underline. Both print characters and spaces are underlined. The printer continues underlining until the "stop underlining" control code is transmitted (see Table 2) or the printer is powered off.

BACKSPACING. Backspacing is initiated by a control code consisting of the **ASCII BS** (backspace) code followed by a character specifying the number of dot spaces to be backspaced. The control codes are listed in Table 3. This feature is especially useful for printing overstrike characters such as ϕ or $\neq$.

LINE FEED. The printer generates an automatic line feed each time the print line is terminated and the carriage is returned to the left margin. In addition, the printer responds to four different line feed codes. These codes command the printer to advance one full line (1/6 inch), reverse one full line, reverse a half line, and advance a half line (see Table 2).

The printer has a special **Line Feed Buffer** that can store up to 255 line feed codes. This allows you to program consecutive line feed codes for paper handling and page formatting purposes (see "Paper Handling"). You can also mix line feed codes with character data in your program, since the printer handles line feed codes and print characters on a "first-in-first-out" basis. That is, character data programmed before a line feed code will be printed before the code is executed; character data programmed after a line feed code will be printed after the line feed code is executed. A carriage return does not occur with a line feed.

PAPER SWITCH. The **PAPER** switch is a great convenience. It allows you to feed paper while the printer is **ON** in **LOCAL** (off-line) mode. The switch can be used to feed paper one line at a time or continuously, and to advance or reverse paper (see "Control Switches").

THREE-WAY PAPER HANDLING. Your **ATARI 825 Printer** can handle three types of paper: roll paper 8½ inches wide, fanfold paper 9½ inches wide, and cut sheets and forms up to 8½ inches wide. With proper adjustment of the **Head Release Lever**, you can expect uniform printing of multi-part forms as well as single sheets.

COMPATIBLE ATARI SYSTEMS

TABLE 1—ATARI SOFTWARE/HARDWARE SYSTEMS FOR USE WITH ATARI 825 PRINTER AND ATARI 850 INTERFACE MODULE

Software	Device
ATARI BASIC cartridge ATARI ASSEMBLER EDITOR cartridge ATARI TeleLink™cartridges*	ATARI 400 or ATARI 800 Personal Computer System
ATARI 810 Master Diskette (single density) ATARI 810™Master Diskette II with RS232C serial port handler (single-density)**	ATARI 810™Disk Drive
ATARI 815™Master Diskette with RS232C serial port handler (double-density)**	ATARI 815™Dual Disk Drive (double-density)
Cassette tapes	ATARI 410™Program Recorder

Notes: * Disk Drive systems cannot be used with the **ATARI TeleLink 1** cartridge.

** These software systems will be available late 1980. See **3. Operation** for information on loading the RS232C handler into computer RAM memory in conjunction with **DOS.**

Other ATARI printers can be used, but **ONLY ONE PRINTER CAN BE OPERATED AT A TIME.**

2

SETTING UP

INSTALLATION

CAUTION

THE RIBBON IS THREADED WHEN THE **ATARI 825 PRINTER** IS DELIVERED TO THE CUSTOMER. WHEN INSTALLING THE PRINTER, BE CAREFUL TO KEEP IT LEVEL. TIPPING THE PRINTER COULD SPILL THE RIBBON OUT OF THE PRINTER RIBBON TRAY.

CAUTION

SWITCH **ALL** POWER SWITCHES OFF BEFORE INSTALLING THE PRINTER IN YOUR SYSTEM. CHECK THAT THE PRINTER'S ON-LINE/LOCAL SWITCH IS SET TO LOCAL TO PREVENT PRINTING OF RANDOM CHARACTERS WHEN THE PRINTER IS POWERED ON.

Note: Install the ATARI 825 Printer at least 2 feet away from your television.

Refer to Figures 2 and 3.

1. Using an **ATARI I/O Data Cord** (see **Order Numbers**), connect the **ATARI 400** or **ATARI 800 Personal Computer System** to an I/O CONNECTOR on the **ATARI 850 Interface Module.**
2. An **ATARI Input/Output** (I/O) device, such as the **ATARI 810 Disk Drive, ATARI 815 Dual Disk Drive,** or the **ATARI 410 Program Recorder,** can be connected to the other I/O CONNECTOR on the Interface Module. If more than one **ATARI I/O** peripheral device is connected, the I/O connectors are "daisy chained" together (i.e., connected to each other) and may be connected in any sequence. The Program Recorder, however, must be at the end of the chain, since it has only one I/O connector.

Note: You may connect another printer in configuration with your **ATARI 825 Printer.** However, the computer Operating System (OS) can only control one printer at a time, so be sure you only turn on one printer at a time. You may switch printers at any time, even with the computer power on.

3. Connect a CA014748 AC adaptor to a 110-115 VAC power outlet and to the **POWER IN** jack on the **Interface Module.** An AC adaptor may also be required for the Disk Drive, if used.
4. Connect the three-prong power cord attached to the **ATARI 825 Printer** to the 110-115 VAC power source.
5. Connect the Edge-on connector of the **ATARI CX86 Printer Cable** to the printed circuit edge connector on the back of the Printer (see Figure 3). Be sure that the side of the cable connector marked **THIS SIDE UP** is up when making the connection. The connector mates easily. Do not force it.

CAUTION

FORCING THE CONNECTION COULD DAMAGE THE CABLE CONNECTOR.

6. Connect the other end of the Printer Cable to the **PARALLEL BIT (8 BIT) PRINTER INTERFACE** connector on the Interface Module.

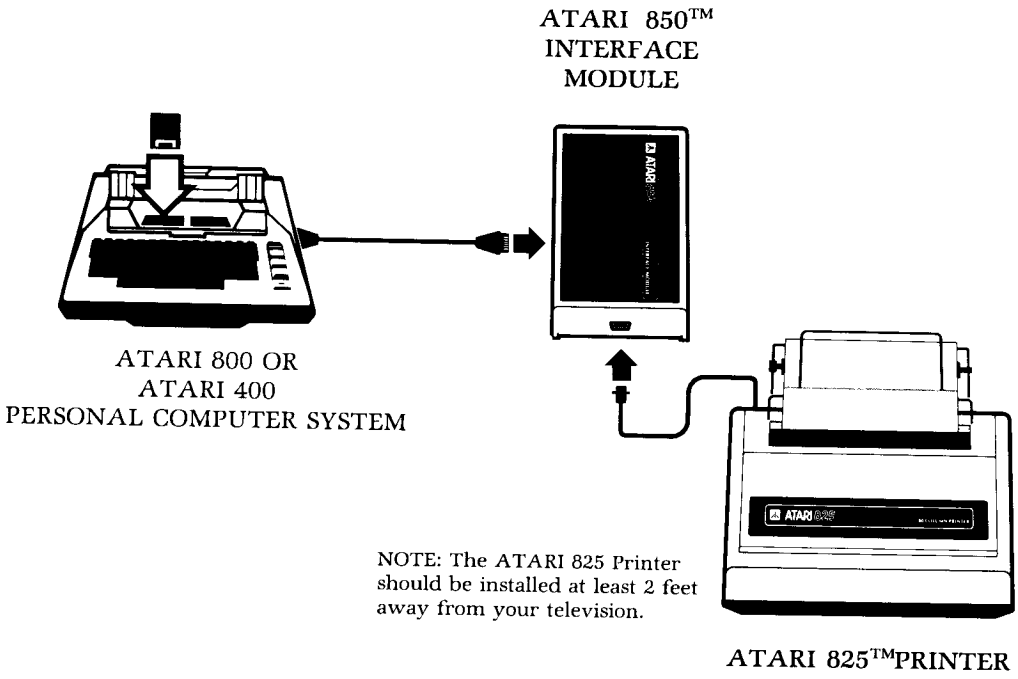


Figure 2. Installation of the ATARI 825 Printer

LOADING PAPER

CHOOSING PAPER. Three types of paper can be used in the ATARI 825 Printer:

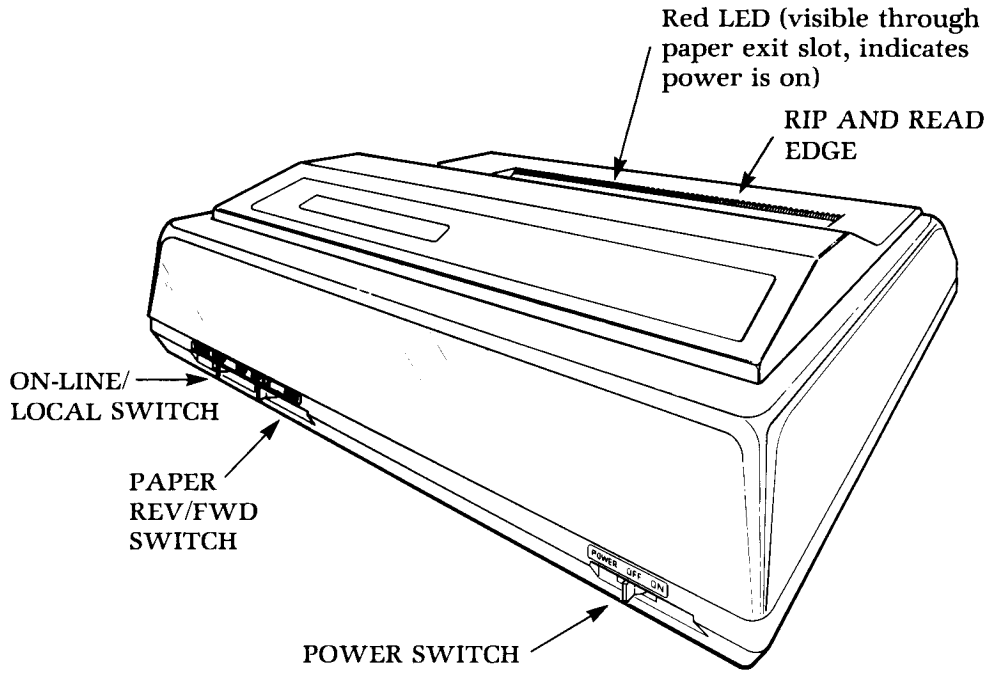
- Roll paper 3½ to 8½ inches wide; 5 inches in diameter; 1 inch core; 2 ply.
- Fanfold paper 9½ inches wide, 3 ply.
- Cut sheets to 8½ inches wide.

Consider the following facts when selecting paper:

- Fanfold paper gives precise line registration because it is pinned to the paper roller. Most preprinted forms for computer applications are printed on fanfold paper.
- Fanfold paper is perforated every 11 inches (66 lines) for separation into sheets. Some types of paper can be edge-trimmed to provide 8½ x 11 inch pages.
- Roll paper can be cut off anywhere. It can be torn off evenly by using the "rip and read" cutting edge provided on the paper exit slot in the printer cover.
- Cut sheets and forms can be printed up to 1.6 inches from the bottom edge.

LOADING ROLL PAPER:

1. Switch printer power **OFF** and set the **ON-LINE/LOCAL** switch to **LOCAL.**
2. Remove the printer cover. Lift it up from the back of the printer.
3. Set the **HEAD RELEASE LEVER** (see Figure 4) to the **LOAD** position to back the print head away from the platen.
4. Remove the **CORE HUB** from the plain end of the **PAPER MANDREL**, as shown in Figure 5, and insert the mandrel through the roll.
5. Cap both ends of the roll with the **CORE HUBS** to secure the roll on the mandrel.



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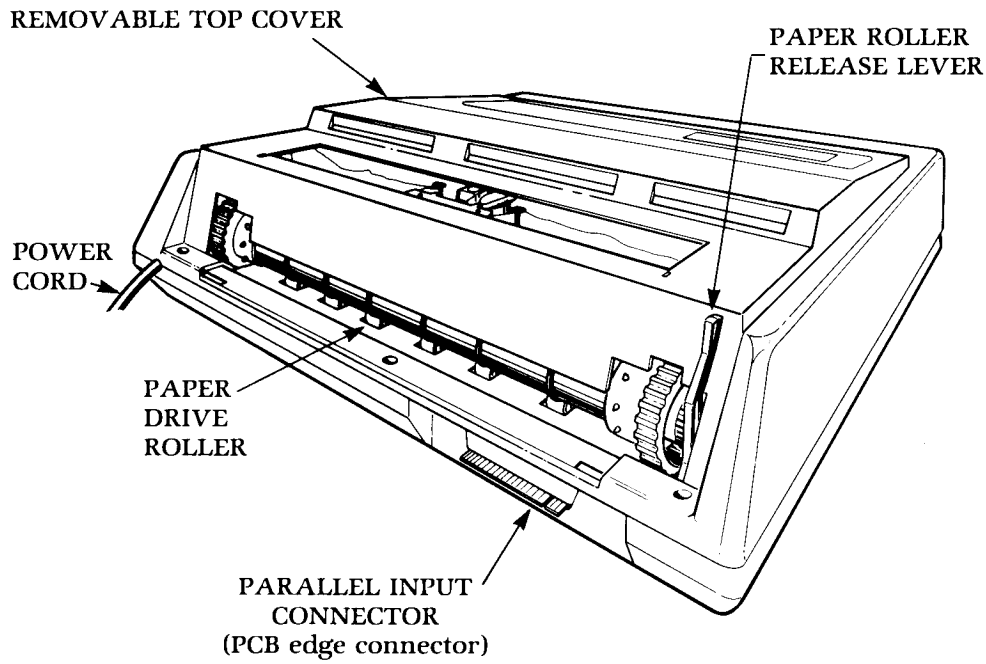


REAR

Figure 3. Operator Controls, Switches, and Connectors

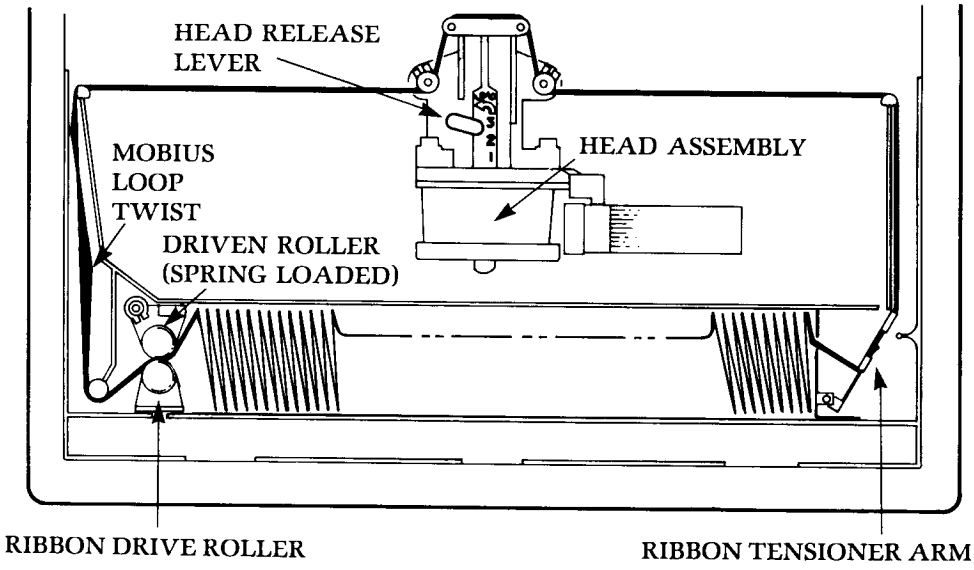


Figure 4. HEAD RELEASE LEVER and Ribbon Threading Diagram

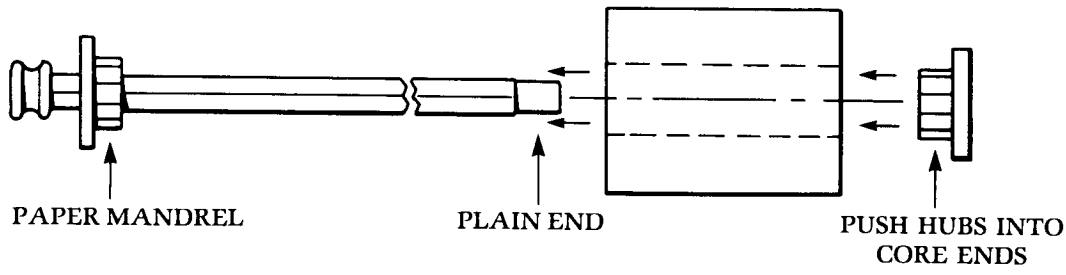


Figure 5. Installing Paper Roll on the Paper Mandrel.

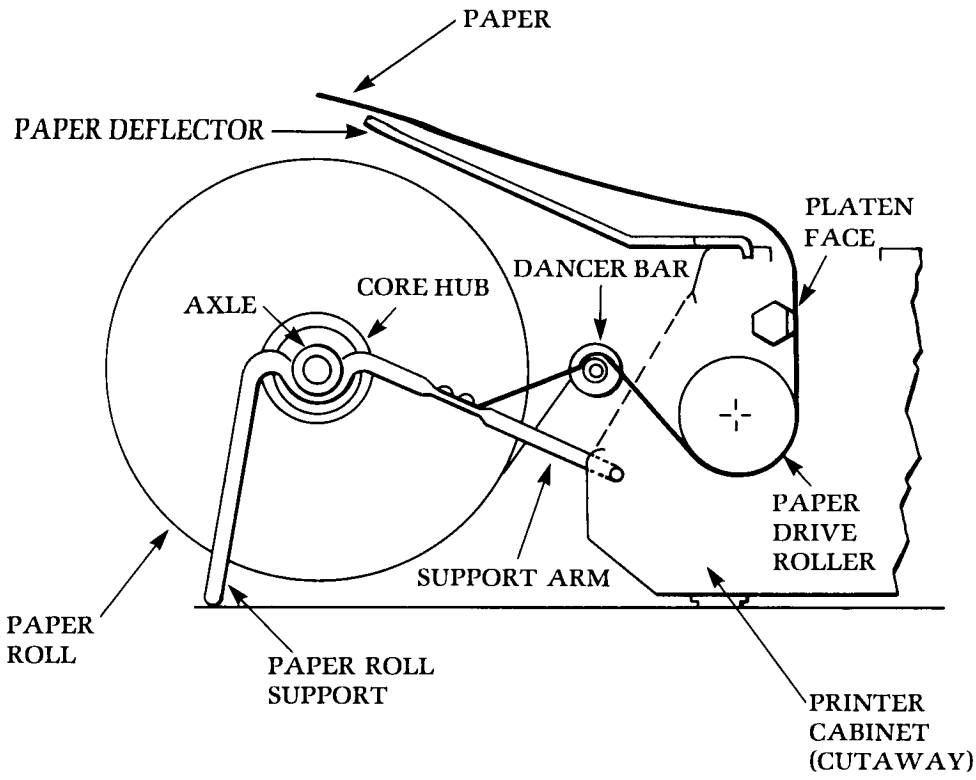


Figure 6. Roll Paper Support Installation

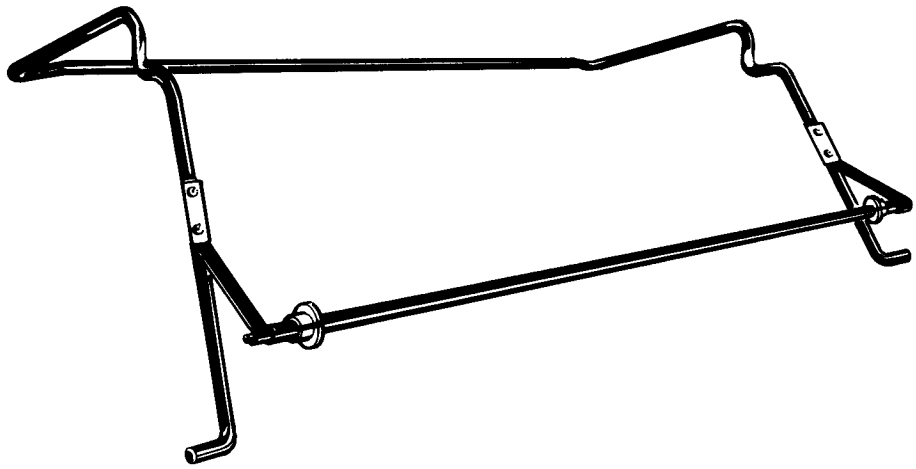


Figure 6A. Dancer Bar Installation

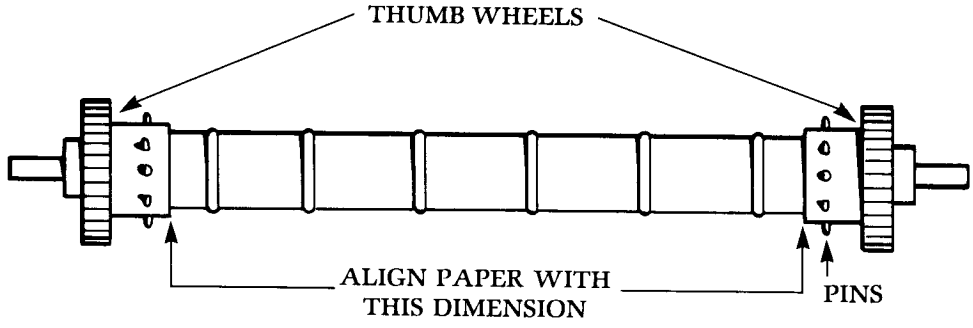


Figure 7. Paper Drive Roller

6. Attach the **DANCER BAR** to the **ROLL PAPER SUPPORT** (see Figure 6A).
7. Insert the arms of the **PAPER SUPPORT** into the two holes provided on the back of the printer (Figure 6).
8. Place the roll of paper on the **PAPER SUPPORT** so that the paper comes off the bottom of the roll and over the **DANCER BAR** (Figure 6).
9. Move the **PAPER ROLLER RELEASE LEVER** backward to disengage the paper drive roller (Figure 3).
10. Slip the edge of the paper under the **PAPER DRIVE ROLLER** and align the paper (Figure 7).
11. Push the paper up until it comes up above the level of the print head.
12. Realign the paper, using the top edge of the platen as an alignment guide.
13. Move the **PAPER ROLLER RELEASE LEVER** forward to secure the paper.
14. Using the **THUMBWHEELS** (power **OFF**) or the **PAPER SWITCH** (power **ON**), move the paper up as far as desired.

Note: The thumbwheels move easily only when power is off. Do not force them.

15. Check the ribbon threading against the threading diagram (Figure 4). Take up slack by turning the **RIBBON DRIVE ROLLER** clockwise.
16. Move the **HEAD RELEASE LEVER** to print position 3, 2, or 1, as applicable.
17. Replace the printer cover.
18. For an even top edge, tear the paper off along the "rip and read" edge (serrated cutting edge) on the paper exit slot (see Figure 3).
19. Install the **PAPER DEFLECTOR** (Figure 6) in the two holes provided in the top cover of the printer.

LOADING FANFOLD PAPER:

1. Switch printer power **OFF** and set the **ON-LINE/LOCAL** switch to **LOCAL.**
2. Remove the printer cover. Lift it up from the back of the printer.
3. Set the **HEAD RELEASE LEVER** (see Figure 4) to the **LOAD** position to back the print head away from the platen.
4. Move the **PAPER RELEASE LEVER** back to disengage the paper drive roller.
5. Tear off a sheet of fanfold paper, along the paper perforation, to provide a perfect feeding edge.

6. Slip the edge of the paper under the **PAPER DRIVE ROLLER** and engage the **PINS** in the pin holes in the paper. Hold the paper in place with your index fingers.
7. With power **OFF**, use the **THUMBWHEELS** to roll the paper up above the level of the print head.

Note: Do not move the paper release lever forward. Leave it in the back position. The pins, not the roller, drive the paper.

8. Be sure the paper moves easily and is pinned evenly. Then advance the paper as far as desired using the **THUMBWHEELS** (with power **OFF**) or the **PAPER SWITCH** (with power **ON**).
9. Check the ribbon threading (see ribbon threading diagram, Figure 4). Take up slack in the ribbon by moving the **RIBBON DRIVE ROLLER** clockwise.
10. Move the **HEAD RELEASE LEVER** to print position 3, 2, or 1, as applicable. Use position 1 for single thickness; 2 for two-part forms; 3 for three-part forms.
11. Replace the printer cover.

LOADING CUT PAPER AND FORMS:

1. Switch printer power **OFF** and set the **ON-LINE/LOCAL** switch to **LOCAL.**
2. Remove the printer cover. Lift it up from the back of the printer.
3. Set the **HEAD RELEASE LEVER** (see Figure 4) to the **LOAD** position to back the print head away from the platen.
4. Move the **PAPER RELEASE LEVER** backward into the release position.
5. Slip the edge of the paper under the **PAPER DRIVE ROLLER** and align the paper as shown in Figure 7.
6. Push the paper up until the top edge is above the level of the print head. You can use the top edge of the platen as a guide for aligning the paper.
7. Move the **PAPER ROLLER RELEASE LEVER** forward to secure the paper.
8. Using the **THUMBWHEELS** (with power **OFF**) or the **PAPER SWITCH** (with power **ON**), move the paper up as far as desired.
9. Check the ribbon threading against the threading diagram (Figure 4). Take up slack in the ribbon by turning the **RIBBON DRIVE ROLLER** clockwise.
10. Move the **HEAD RELEASE LEVER** to print position 1, 2 or 3, depending on the thickness of the paper. Use position 1 for single thickness, 2 for two-part forms, 3 for three-part forms.

NOTES

3

OPERATION

START-UP PROCEDURES

In the following step-by-step procedure, use the powering on sequence (A or B) that applies to your system configuration and application. If you are using the RS232C serial ports on the Interface Module, power on the Interface Module **BEFORE** you power on the computer in order to load the RS232C handler for the serial ports into computer RAM memory. The **handler** is the information the computer needs to access or address the RS232C serial ports. If you are **not** using the serial ports, power on the Interface Module **AFTER** you power on the computer so that the RS232C handler will **not** be loaded into computer RAM memory. The computer will not load the handler for any device powered on after the computer is powered on.

You should avoid loading the RS232C handler when you are not using the serial ports on the Interface Module, because the loading takes 1672 bytes of RAM memory. You might need this space for storage of your program. If the serial ports are not used, the computer does not need the RS232C handler. The computer does not need to load a handler to address the PARALLEL PRINTER INTERFACE PORT. It already has the handler for the printer (any ATARI printer) built into its Operating System (OS) in ROM memory.

On the other hand, if the serial ports **are** being used, you **MUST** load the RS232C handler. Otherwise, the computer will not recognize the devices connected to the serial ports, and you will get an **ERROR 130** (nonexistent device) message when you try to **OPEN** (address) one of these devices.

The ATARI 810 Master Diskette II* and the **ATARI 815 Master Diskette*** both have the RS232C handler, allowing you to use the ATARI 850 RS232C serial ports and ATARI Disk Drives at the same time. See the appropriate **DOS** Reference Manual for instructions on using DOS. The RS232C handler will only be loaded into computer RAM memory if the disk drive and the Interface Module are powered on **BEFORE** the computer.

If you are using the RS232C serial ports but you are not using a disk drive system, you can load the RS232C handler from the **OS** built into the Interface Module ROM. Power on the Interface Module, then power on the computer. You will hear some clicks and beeps as the computer loads the RS232C handler.

Note: If you use the TeleLink 1 cartridge in your computer, you cannot use a disk drive.

PROCEDURE

1. Before powering on any equipment in your system configuration, check the following:
   - Cables properly connected? (See installation instructions.)
   - Printer ribbon properly threaded? (See Ribbon Threading Diagram, Figure 4.)
   - ATARI 825 Printer **PAPER ROLLER RELEASE LEVER** and **HEAD RELEASE LEVER** in correct positions for type of paper and paper thickness?

*These Master Diskettes will be available late 1980.

- ATARI 825 Printer **ON-LINE/LOCAL** switch set to LOCAL?

CAUTION

ALWAYS SET THE ON-LINE/LOCAL SWITCH TO LOCAL TO PREVENT PRINTING OF RANDOM CHARACTERS WHEN THE PRINTER IS POWERED ON.

- Correct amount of RAM installed in ATARI computer for the program? (See program instructions, and see ATARI computer operator's manual for RAM loading instructions.)
- Correct cartridge installed in ATARI computer? (See cartridge instructions.)

2. Switch Disk Drive or Program Recorder power **ON**, as appropriate.

Note: If disk drive is connected but is not being used, be sure it is powered **OFF.**

3. If Disk Drive is being used, insert appropriate diskette in Disk Drive. If Program Recorder is being used, insert cassette and cue up tape. (See diskette loading instructions or **ATARI 410 Operator's Manual**, as applicable.)
4. Now Follow A if RS232C serial ports are used. Follow B if serial ports are not used.

A. IF RS232C SERIAL PORTS (PORTS 1 TO 4) ON INTERFACE MODULE ARE USED...

5. Switch power **ON** on peripheral devices connected to RS232C serial ports.
6. Switch Interface Module power **ON**. Note that **LED** power indicator lights.
7. Switch computer power **ON.** Note that computer loads **DOS** and/or RS232C handler. (See booting instruction in the Disk Operating System Manual or **ATARI 850 Interface Module Manual**.)
8. Switch printer power **ON** and note that **LED** power indicator lights. (On the **ATARI 825 Printer**, the **LED** is visible through the paper exit slot in the printer cover.)

CAUTION

DO NOT POWER ON MORE THAN ONE PRINTER AT A TIME.

9. If **ATARI 825 Printer** was powered on in Step 8, switch **ON-LINE/LOCAL** switch to **ON-LINE** when ready to print.

B. IF RS232C SERIAL PORTS ON INTERFACE MODULE ARE NOT USED...

5. Switch computer power **ON**. Note that diskette boots if diskette was loaded in Step 3.
6. Switch Interface Module power **ON**. Note that **LED** power indicator lights.
7. Switch printer power **ON** and note that **LED** power indicator lights. (On **ATARI 825 Printer**, the **LED** is visible through the paper exit slot in the printer cover.)

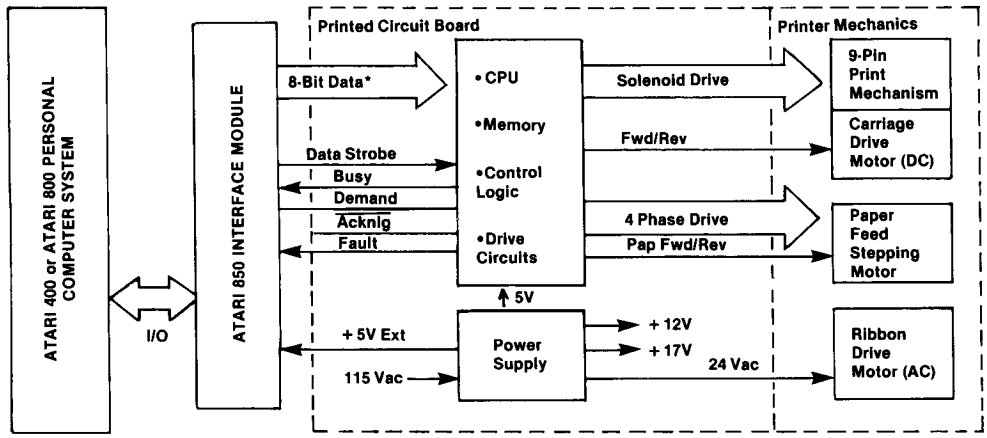
CAUTION

DO NOT POWER ON MORE THAN ONE PRINTER AT A TIME.

8. If **ATARI 825 Printer** was powered on in Step 7, switch **ON-LINE/LOCAL** switch to **ON-LINE** when ready to print.

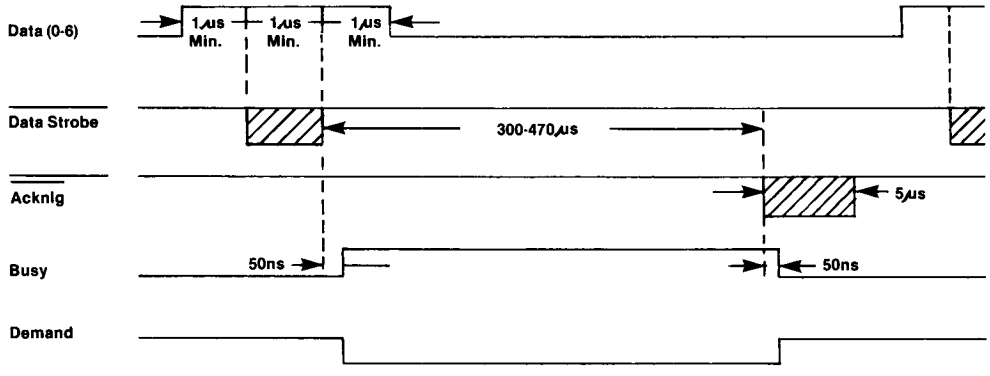
PRINCIPLES OF OPERATION

One printed circuit board contains all the logic, control, drive, and power supply circuits for the printer (see Figure 8). The printing mechanism is mounted on a carriage assembly that is driven by a DC motor. The unidirectional carriage moves from left to right at a speed of 5 inches per second and returns to the left margin at a slightly higher speed. The paper feed (line feed) rollers are driven by a stepping motor that can be controlled locally by means of the paper switch as well as remotely by computer-generated control codes. The ribbon drive AC motor moves the ribbon past the print head except when the carriage actuates the sensor at the absolute left carriage position. The power supply provides +5V regulated power for the logic, +5V external power for computer sensing, +12V regulated power for the motor drive, +17V unregulated power for the printer solenoid and motor drive, and +24VAC for the ribbon motor.



* Bits 0-6, Bit 7 Inactive

Figure 8. Printer Block Diagram



***NOTE:** When the printer begins printing, this time is lengthened to include the printing time.

Figure 9. Interface Timing

By way of the Interface Module, the printer receives 7-bit ASCII-coded data and a **DATA STROBE** signal (see Figure 9). Within 50 nsec of the trailing edge of the strobe, the printer logic generates a **BUSY** signal, which informs the computer that the printer's central processing unit (CPU) is busy processing the data and will not accept any more data. When the CPU has completed the data processing, the printer logic generates an **ACKNLG** signal, which terminates the BUSY signal. The computer can send new data to the printer when BUSY terminates. The printer logic also generates a **DEMAND** signal, which indicates that the CPU is ready to process more data.

After processing a full line of data, or after receiving a command from the computer to end the print line, the CPU directs the printer to print the data column by column. Solenoids driving circular pins in the print head are energized to print the dot matrix characters and underlines.

The printer can print 96 standard ASCII characters in three different character sets: (1) monospaced (uniformly spaced) characters at 10 characters per inch (10 cpi); (2) condensed monospaced characters at 16.7 cpi; and (3) proportionally spaced characters at approximately 14 cpi. In the proportionally spaced character set, numerals are always 12 dot spaces wide and are monospaced at 12.5 cpi. The default character set is 10-cpi monospaced characters; the other character sets must be programmed by control codes.

The **Print Buffer** can store a full (8-inch) line of data, consisting of 80 10-cpi monospaced characters or 132 16.7-cpi condensed characters. When the buffer is full, the printer logic generates a carriage return (CR), which ends the line, initiates printing, and returns the carriage to the left margin. Any additional characters are printed on the next line.

When proportionally spaced characters are printed, buffer capacity is calculated in dot columns. A full print line equals 1200 dot columns. A "buffer full" condition exists after the printer logic has counted 1185 dot columns; however, the logic accepts one more character, of any column width, before it generates a CR to end the print line and initiate printing. Any additional characters are printed on the next print line.

A special **Line Feed Buffer**, with capacity for 255 line feed codes, is provided. This allows the user to program consecutive line feed codes. The printer recognizes four line feed codes, which command the printer to advance one line (1/6 inch), reverse one line, advance a half line, and reverse a half line.

When the printer receives any of these line feed codes, it immediately prints any characters stored in the Print Buffer before it executes the line feed code. Thus, data programmed before a line feed code will be printed first, and data programmed after a line feed code will be printed after the line feed is executed.

The printer generates an automatic line feed each time the print line is terminated and the carriage is returned to the left margin. The Auto-Linefeed function can be disabled by removing resistor R11 from the printed circuit board (see "Disabling Auto-Linefeed"). However, when this function is disabled, the user must generate an LF code for each carriage return; otherwise, the printer will overprint lines of data.

NOTE: Disabling the Auto-Linefeed function is not recommended when the ATARI 400 or ATARI 800 Personal Computer System is used to control the printer, as the operator then has no way to generate a line feed except by programming one.

CONTROL SWITCHES

POWER ON/OFF SWITCH. When the **POWER** switch is turned **ON**, the **LED** power indicator should light. The LED is visible through the paper exit slot in the printer cover. Before switching power ON, set the **ON-LINE/LOCAL** switch to **LOCAL**. This will prevent random characters from being printed when the printer is powered on.

ON-LINE/LOCAL SWITCH. When this switch is set to the **ON-LINE** position, the printer can receive data and control codes from the computer. When it is set to **LOCAL**, the printer is in local or off-line mode and cannot communicate with the computer.

PAPER REV/FWD SWITCH. This switch is only used when the printer is in local (off-line) mode. This switch is spring-loaded and returns to the off position when released. Setting and releasing the switch causes the paper to advance or reverse one line. Holding the switch in position causes the paper to advance or reverse continuously.

PAPER HANDLING

LP. RETURN**. LP.** is an abbreviated form of **LPRINT** (see "Printing"). **LP.** followed by RETURN causes the paper to advance one full line (1/6 inch). No quotation marks are required after **LP.**

CONSECUTIVE LINE FEED CODES. You can program consecutive **LF** codes (use CTRL J) to advance paper the number of lines required. One **LF** code advances paper 1/6 inch, 6 **LF** codes will advance paper 1 inch, and 12 **LF** codes will advance paper 2 inches, etcetera. See Table 2 for other line feed codes that will reverse paper a full line, reverse paper a half line, and advance paper a half line.

PAPER SWITCH. This switch operates in local mode only (the **ON-LINE/LOCAL** switch must be set to **LOCAL**). The PAPER switch enables you to advance or reverse the paper one line at a time or continuously.

PRINTING

Only a few commands in BASIC programming language are included in this section: **LPRINT (LP.), LIST "P:", OPEN**, and **CLOSE**. For other ATARI BASIC commands and functions, see the **ATARI BASIC REFERENCE MANUAL.**

LPRINT COMMAND. This command causes the computer to print data using the printer rather than the screen. It requires no OPEN or CLOSE statement, and can be used in either Direct or Deferred mode. In Direct Mode no line numbers are used and the **LPRINT** statement is executed as soon as you press the RETURN key. In Deferred Mode, a line number is specified and the **LPRINT** instruction is not executed until the **RUN** command is given.

For example, this is an **LPRINT** statement in the Direct Mode:

```
LPRINT "HELLO OUT THERE"
```

After you key RETURN the printer will print:

```
HELLO OUT THERE
```

This is an **LPRINT** statement in the Deferred Mode:

```
10 LPRINT "HELLO OUT THERE" RETURN
RUN
```

The printer prints:

```
HELLO OUT THERE
```

LIST "P:". This command allows you to list your BASIC program to the printer rather than the screen.

For example, type:

10 PRINT "SHE SELLS SEA SHELLS" RETURN
20 PRINT "DOWN BY THE SEASHORE." RETURN

Then type: LIST "P:"
The printer will list your program as follows:

```
10 PRINT "SHE SELLS SEA SHELLS"
20 PRINT "DOWN BY THE SEASHORE."
```

OPEN COMMAND. Refer to the **ATARI BASIC REFERENCE MANUAL** for the use of this command. The **RUN** command closes files automatically; therefore, the BASIC program must **OPEN** any files it would use. The form of the **OPEN** command is:

(linenumber) **OPEN #n,aexp1,aexp2,"P:"**

The **linenumber** is optional (required in Deferred Mode, omitted in Direct Mode); **#** is a mandatory character; **n** = file number 1 to 7; **aexp1** is always 8 for the printer (8 = output only); **aexp2** is always 0 for the **ATARI 825 Printer**; and **"P:"** refers to the Printer.

Use the OPEN statement to print consecutive print statements connected by semicolons. For example,

```
10 OPEN #1,8,0,"P:"
20 PRINT #1; "YOUR ATARI 825 PRINTER CAN PRINT LINES";
30 PRINT #1; "UP TO 8 INCHES LONG."
```

When you type RUN, the printer prints:

```
YOUR ATARI 825 PRINTER CAN PRINT LINES UP TO 8 INCHES LONG.
```

CLOSE COMMAND. CLOSE closes files previously **OPEN**ed. **RUN** closes files automatically in Deferred Mode. **END** may be used in Direct Mode to close files. **BREAK** does not close files automatically. (See the **ATARI BASIC REFERENCE MANUAL.)**

The form of the **CLOSE** command is:

(linenumber) CLOSE #n

The **linenumber** is required only in the Deferred Mode; **#** is a mandatory character; and **n** is the same file number used in the **OPEN** command.

KEYING CONTROL CODES

The computer generates and transmits ASCII control codes and escape codes that tell the printer what to do. The codes recognized by the printer are listed in Table 2 and discussed in "Computer-Generated Codes for Printer Control".

ASCII control codes like **LF** are generated on the **ATARI** computer keyboard by pressing the CTRL key and holding it in while pressing the next character key. This keying sequence is represented by: CTRL J. Escape codes like **ESC LF** are generated by pressing and releasing the ESC key (as many times as indicated in Table 2) and then keying CTRL followed by the character. This escape code keying sequence is represented by: ESC ESC CTRL J.

NOTE: Always release the ESC key. Always hold the CTRL key in while keying the next character.

When control codes and escape code sequences are keyed on the **ATARI** computer keyboard, **ATARI** graphics characters are displayed on the TV screen. These graphics characters are not printed by the printer, but the printer responds to the control codes generated.

For example:
Type: LPRINT "

Now key CTRL O and continue typing: CTRL O CAUSES THE PRINTER TO UNDERLINE CHARACTERS."

This statement will be displayed on the screen as follows:

LPRINT " ■ CTRL O CAUSES THE PRINTER TO UNDERLINE CHARACTERS."

The ATARI graphics character ■ appears when you key CTRL O. However, after you key RETURN the printer prints:

CTRL O CAUSES THE PRINTER TO UNDERLINE CHARACTERS.

To clear the underline function, key:

LPRINT "CTRL N" RETURN

Now key this:
LPRINT " ESC ESC CTRL N PRINTS ELONGATED CHARACTERS."

This statement will appear on the screen as follows:

LPRINT " ■ PRINTS ELONGATED CHARACTERS."

When you key RETURN the printer will print:

PRINTS ELONGATED CHARACTERS.

NOTE: If your BASIC program includes graphics characters that generate printer control codes, the printer will act on the codes when your program is listed to the printer.

USING THE CHR$ (nn) STRING FUNCTION

Every **ASCII** character (including each control code) has a decimal equivalent. The 128 **ASCII** characters and their decimal equivalents are given in Table A-1 in the Appendix. In BASIC, every **ASCII** character can be expresssed as a decimal and transmitted using a **CHR$(nn)** string function, where **nn** is the decimal number of the character. For example, upon receiving **CHR$(10)**, the printer would initiate a forward line feed, since decimal 10 is the **ASCII LF** code.

The **CHR$(nn)** string functions are included in **LPRINT** statements, but they **must not** be typed inside the quotation marks. If CHR$(nn) functions are typed within the quotation marks they become part of the character string to be printed and are not acted on.

For example:
Type:
LPRINT "CHR$(72);CHR$(105)" RETURN

The printer will print:

CHR$(72);CHR$(105)

TABLE 2 — PRINTER CONTROL CODES

ASCII Mnemonic	ATARI Keying Sequence	Graphics Character	Decimal Code	Hex. Code	Printer Function
BS	CTRL H		08	08	Backspace. Must be followed by character defining number of dot spaces.
LF	CTRL J		10	0A	Forward line feed
CR	CTRL M		13	0D	Carriage return
SI	CTRL O		15	0F	Start underlining
SO	CTRL N		14	0E	Stop underlining
ESC SOH	ESC ESC CTRL A		27 01	1B 01	1 dot space
ESC STX	ESC ESC CTRL B		27 02	1B 02	2 dot spaces
ESC ETX	ESC ESC CTRL C		27 03	1B 03	3 dot spaces
ESC EOT	ESC ESC CTRL D		27 04	1B 04	4 dot spaces
ESC ENQ	ESC ESC CTRL E		27 05	1B 05	5 dot spaces
ESC ACK	ESC ESC CTRL F		27 06	1B 06	6 dot spaces
					For Right Margin Justification
ESC LF	ESC ESC CTRL J		27 10	1B 0A	Full reverse line feed
ESC SO	ESC ESC CTRL N		27 14	1B 0E	Start elongated printing
ESC SI	ESC ESC CTRL O		27 15	1B 0F	Stop elongated printing
ESC DC1	ESC ESC CTRL Q		27 17	1B 11	Select proportionally spaced character set
ESC DC3	ESC ESC CTRL S		27 19	1B 13	Select 10-cpi monospaced character set
ESC DC4	ESC ESC CTRL T		27 20	1B 14	Select 16.7-cpi condensed character set
ESC FS	ESC ESC ESC CTRL ^		27 28	1B 1C	Feed half-line forward
ESC RS	ESC ESC ESC CTRL <		27 30	1B 1E	Feed half-line reverse

Now retype the statement as follows:

LPRINT CHR$(72);CHR$(105) RETURN

The printer will print:

```
Hi
```

72 is the decimal code for H, and 105 is the decimal code for i.

Now type:

LPRINT "YOU TAKE";CHR$(10);"THE LOW ROAD";CHR$(27); CHR$(10);"AND I'LL TAKE";CHR$(27);CHR$(10);"THE HIGH ROAD." RETURN

The printer will recognize CHR$(10) as an LF code (forward line feed) and CHR$(27); CHR$(10) as an ESC LF code (reverse line feed) and will print:

```
                                        THE HIGH ROAD.
YOU TAKE                  AND I'LL TAKE
        THE LOW ROAD
```

COMPUTER-GENERATED CODES FOR PRINTER CONTROL

Note: When the printer is powered off, all programmed functions are terminated and the printer is returned to its default state. The easiest way to terminate an undesirable printer mode is to power off the printer.

FULL FORWARD LINE FEED CODE (LF). The **LF** code can be used to control paper feed and line spacing. Each **LF** code received by the printer advances the paper 1/6 inch. To advance the paper 3 inches would require 18 LF codes, and to advance the paper 6 inches would require 36 **LF** codes, etc. When programming consecutive **LF** codes, remember that an automatic linefeed occurs when the print line is terminated and the carriage returns to the left margin.

Character data received before an **LF** code is printed before the **LF** is executed. Character data received after an **LF** code is printed one line below and to the right of the previous data. For example:

LPRINT "YOU TAKE CTRL J THE LOW ROAD" RETURN

The printer prints:

```
YOU TAKE
        THE LOW ROAD
```

CARRIAGE RETURN CODE (CR). When a **CR** code (CTRL M or decimal 13) is received, the printer returns the carriage to the left margin, generates an automatic linefeed, and prints any character data following the **CR** on the new line. For example,

LPRINT "NOW IS THE TIME CTRL M FOR ALL GOOD MEN TO COME TO THE AID OF THEIR PARTY." RETURN

The printer prints:

```
NOW IS THE TIME
FOR ALL GOOD MEN TO COME TO THE AID OF THEIR PARTY.
```

Note: If CTRL M is followed by RETURN, a double automatic line feed will occur.

DOT SPACING CODES (ESC SOH, etc.). The dot spacing codes can be programmed to adjust the spacing between characters and words in the print line in order to justify lines of data at the right margin (see "Right Margin Justification").

FULL REVERSE LINE FEED CODE (ESC LF). This code causes the printer to execute a full reverse line feed of 1/6 inch. Character data received before an **ESC LF** code will be printed before the **ESC LF** code is executed. Character data received after an **ESC LF** code will be printed on the line above and to the right of the previous data. For example:

LPRINT "YOU TAKE [ESC] [ESC] [CTRL J] THE HIGH ROAD" [RETURN]

The printer will print:

```
          THE HIGH ROAD
YOU TAKE
```

Reverse linefeed terminates when the print line is terminated and the carriage returns to the left margin. When the carriage returns, an automatic line feed occurs. However, the auto-linefeed places the carriage on the original print line (in the example, the line YOU TAKE is on). Thus, the printer will overprint the line when it prints new data. You can avoid this by programming an **LF** code at the end of your statement, as follows:

LPRINT "YOU TAKE [ESC] [ESC] [CTRL J] THE HIGH ROAD [CTRL J]" [RETURN]
LPRINT "AND I'LL BE IN SCOTLAND BEFORE YOU." [RETURN]

The printer will print:

```
          THE HIGH ROAD
YOU TAKE
AND I'LL BE IN SCOTLAND BEFORE YOU.
```

ELONGATED PRINTING CODES (ESC SO and **ESC SI).** An **ESC SO** code causes the printer to print elongated (double width) characters. An **ESC SI** code terminates elongated printing. For example:

LPRINT "[ESC] [ESC] [CTRL N] A PENNY SAVED [ESC] [ESC] [CTRL O] IS A PENNY EARNED." [RETURN]

The printer will print:

```
A PENNY SAVED IS A PENNY EARNED.
```

All characters can be elongated. Elongated printing terminates automatically when the print line is ended.

CHARACTER SET SELECTION CODES (ESC DC1,etc). The default character set is 10-cpi monospace; i.e., the printer prints characters in this set when it is powered on. The proportionally spaced character set and the condensed character set must be programmed. Once the printer is programmed to print a particular character set, it will print characters in that set until it is programmed to print a different character set or is powered off.

Condensed characters and proportionally spaced characters can be mixed on the same print line. The 10-cpi monospaced characters cannot be mixed with characters from the other two character sets. Here is an example of character mixing using the **CHR$** function to enter the control codes (refer to Table 2).

Type:

LP.CHR$(27);CHR$(17);"PROPORTIONAL";CHR$(27);CHR$(20);
" CONDENSED"; CHR$(27); CHR$(17);" PROPORTIONAL" RETURN

(Be sure you leave a space between " and **CONDENSED**, and between " and **PROPORTIONAL.**)

The printer will print:

PROPORTIONAL CONDENSED PROPORTIONAL

HALF-LINE SPACING CODES (ESC FS and **ESC RS).** Character data received after **ESC FS** is printed a half line (1/12 inch) lower than the base line. Character data received after **ESC RS** is printed a half line higher than the base line. The half-line spacing codes are very useful for printing subscripts and superscripts. Here is an example of half-line spacing using the CHR$ function to enter the control codes (see Table 2):

LPRINT "THE FORMULA FOR WATER IS H";CHR$(27);CHR$(28);"2";
CHR$(27);CHR$(30);"0." RETURN

The printer prints:

THE FORMULA FOR WATER IS H_2O.

Half-line spacing terminates when the print line is ended and the carriage is returned to the left margin. When the carriage is returned, an automatic line feed is generated. However, if your print statement ends with a superscript, the auto-linefeed will place the carriage only half a line below the base line, and the next line will run into the base line.

For example:
LPRINT "THE FORMULA FOR WATER IS H";CHR$(27);CHR$(30);"2" RETURN
LPRINT "OH NO IT ISN'T!" RETURN

The printer will print:

THE FORMULA FOR WATER IS H^2
OH NO IT ISN'T!

To adjust the spacing between lines, you can program an **ESC FS** (or **LF** if you want even more space between lines) at the end of your print statement.

For example:

LPRINT "THE FORMULA FOR WATER IS H";
CHR$(27);CHR$(30);"2";CHR$(27);CHR$(28) RETURN
LPRINT "OH NO IT ISN'T!" RETURN

The printer prints:

THE FORMULA FOR WATER IS H^2
OH NO IT ISN'T!

UNDERLINING CODES (SI and **SO).** An **SI** code initiates underlining of characters. The printer will underline all characters after receiving the **SI** code. It will continue underlining characters until it receives an **SO** code or is powered off. For example:

LPRINT "CTRL O AN SI CODE STARTS UNDERLINING; CTRL N AN SO
CODE STOPS UNDERLINING." RETURN

The printer prints:

AN SI CODE STARTS UNDERLINING;AN SO CODE STOPS UNDERLINING.

BACKSPACING CHARACTER CODE (BS nn). The **BS nn** sequence consists of the **ASCII BS** (back space) code and a character that specifies the number of dot spaces **(nn)** to be backspaced. The **BS** code **MUST** be followed by **nn**. The **BS** code can be programmed as CTRL H or specified as decimal 08 in a **CHR$** function. The **nn** can be entered as **CHR$(nn)**, as a control code, or as a print character.

If nn is entered as a control code or print character, the printer translates the code or character into its decimal number equivalent. For example, CTRL J is decimal 10, and the character 2 is decimal 50. Table A-1 in the Appendix gives the decimal equivalents of the 128 **ASCII** characters (including control codes). When the printer receives a control code or print character preceded by a **BS**, it does not act on the code or print the character. It translates the character into its decimal equivalent and reads it as **nn** number of dot spaces to be backspaced.

The printer does not actually backspace in the sense that the carriage moves backward. The carriage can only move from left to right. When the printer receives a **BS nn** code, it returns the carriage to the left margin (no line feed occurs) and then moves the carriage out to the last print column counted minus **nn** dot spaces. Then it prints the next character.

The number of dot spaces, **nn**, to specify in order to "backspace" to the print position desired depends upon the character set you are using, as shown in Table 3.

TABLE 3 — BACKSPACING CONTROL CODES

Character Set	No. Dot Spaces per Character	ASCII Code	ATARI Keying Sequence	Dec. Code	Hex. Code	Binary Code
10-cpi Monospaced	10	BS 10	CTRL H CTRL J or CHR$(08);CHR$(10)	08 10	08 A	0001000 0001010
16.7-cpi Monospaced	9	BS 9	CTRL H CTRL I or CHR$(08);CHR$(09)	08 09	08 09	0001000 0001001
Proportional	6 to 18	BS N*	CHR$(08);CHR$(N)*	08 N*	08 N*	0001000 XXXXXXX*

*N = number of horizontal dot spaces per character (6-18) as determined from Table 4

In the 10-cpi monospaced character set, each character is considered to be 10 dot spaces wide (7 dot spaces per character plus 3 dot spaces between characters). Therefore, **BS 10** equals one character backspace, **BS 20** equals two character backspaces, etc. In the 10-cpi monospaced character mode, try this: Print the statement X ≠ Y MEANS X IS NOT EQUAL TO Y:

LPRINT "X = CTRL H CTRL J/ Y MEANS X IS NOT EQUAL TO Y."

Don't leave any spaces between = and /. Leave one space between / and **Y**.

The statement will appear on the screen as:

LPRINT "X = ≠/ Y MEANS X IS NOT EQUAL TO Y."

The graphics character produced by CTRL H and the graphics character produced by CTRL J will combine to form ≠. After the printer prints **X** = it will return the carriage to the left margin, then move the carriage to = and print / to form ≠. Press RETURN.

The printer prints:

X ≠ Y MEANS X IS NOT EQUAL TO Y.

Now try this: Print **HELLØ** using the 10-cpi monospaced character set.
First type: LPRINT "HELLO
After the **O**, move the cursor 5 spaces to the right (count the space after **O** as one space) and type:
";CHR$(08);CHR$(50);"/"
Don't leave any spaces except the 5 spaces after the **O** in **HELLO**.
The screen will display:
LPRINT "HELLO ";CHR$(08);CHR$(50);"/"
When you press RETURN, the printer will print **HELLO**, return to the left margin, move to the **O**, and print /, like this:

HELLØ

In the 16.7-cpi condensed character set, each character is considered to be 9 dot spaces wide (7 dot spaces per character plus 2 dot spaces between characters). Therefore, one character backspace is designated by **BS 9** and two character backspaces by **BS 18**. Both CTRL H CTRL I and **CHR$(08)**; **CHR$(09)** generate **BS 9**. The decimal equivalent of CTRL I is **9**.

Try printing the statement "X ≠ Y MEANS X IS NOT EQUAL TO Y"in condensed characters. After LPRINT, be sure to key the selection code for the condensed character set:

LPRINT "ESC ESC CTRL T X = CTRL H CTRL I / Y MEANS X IS NOT EQUAL TO Y" RETURN

The printer will print:

X ≠ Y MEANS X IS NOT EQUAL TO Y

In the proportionally spaced character set, each character is **N** dot spaces wide, where **N** is a number from 6 to 18. Table 4 gives the dot widths of each of the 96 **ASCII** print characters in this character set. The number of dot spaces, **N**, is entered as a decimal using **CHR$(N)**. You can enter **BS** by CTRL H or **CHR$(08)**.

Try printing X ≠ Y MEANS X IS NOT EQUAL TO Y in proportionally spaced characters. Don't forget to program the selection code for this character set after **LPRINT"**. Use **CHR$(12)** to designate 12 dot spaces, which is the width of the /. Twelve dot spaces is the equivalent of one character space for the /.

LPRINT "ESC ESC CTRL O X ="CHR$(08);CHR$(12);"/ Y MEANS X IS NOT EQUAL TO Y" RETURN

The printer prints:

X ≠ Y MEANS X IS NOT EQUAL TO Y

Note: A BS code cannot be sent after the 80th 10-cpi monospaced character, 132nd condensed character, or 1185th dot space, since a "buffer full" condition will result and the line will be printed before the command can be finished.

TABLE 4—DOT WIDTHS OF ASCII PRINT CHARACTERS IN PROPORTIONALLY SPACED CHARACTER SET

ASCII Print Character	Decimal Number	Hexidecimal Number	Number of Dot Spaces	ASCII Print Character	Decimal Number	Hexidecimal Number	Number of Dot Spaces	ASCII Print Character	Decimal Number	Hexidecimal Number	Number of Dot Spaces	ASCII Print Character	Decimal Number	Hexidecimal Number	Number of Dot Spaces
SP	32	20	7	9	57	39	12	R	82	52	15	k	107	6B	12
!	33	21	7	:	58	3A	7	S	83	53	12	l	108	6C	8
"	34	22	10	;	59	3B	7	T	84	54	14	m	109	6D	16
#	35	23	15	<	60	3C	12	U	85	55	16	n	110	6E	12
$	36	24	12	=	61	3D	12	V	86	56	16	o	111	6F	12
%	37	25	16	>	63	3E	12	W	87	57	18	p	112	70	12
&	38	26	14	?	63	3F	12	X	88	58	16	q	113	71	12
'	39	27	7	@	64	40	14	Y	89	59	16	r	114	72	10
(	40	28	7	A	65	41	16	Z	90	5A	10	s	115	73	12
)	41	29	7	B	66	42	15	[	91	5B	12	t	116	74	10
*	42	2A	12	C	67	43	14	\	92	5C	12	u	117	75	12
+	43	2B	12	D	68	44	16	]	93	5D	12	v	118	76	12
,	44	2C	7	E	69	45	14	^	94	5E	12	w	119	77	16
-	45	2D	12	F	70	46	14	_	95	5F	12	x	120	78	12
.	46	2E	7	G	71	47	16	`	96	60	7	y	121	79	12
/	47	2F	12	H	72	48	16	a	97	61	12	z	122	7A	10
0	48	30	12	I	73	49	10	b	98	62	12	{	123	7B	10
1	49	31	12	J	74	4A	14	c	99	63	10	|	124	7C	7
2	50	32	12	K	75	4B	16	d	100	64	12	}	125	7D	10
3	51	33	12	L	76	4C	14	e	101	65	12	~	126	7E	12
4	52	34	12	M	77	4D	18	f	102	66	10				
5	53	35	12	N	78	4E	16	g	103	67	12				
6	54	36	12	O	79	4F	16	h	104	68	12				
7	55	37	12	P	80	50	14	i	105	69	8				
8	56	38	12	Q	81	51	14	j	106	6A	6				

RIGHT MARGIN JUSTIFICATION

The dot spacing codes listed in Table 5 allow you to program from 1 to 6 dot spaces between words and characters in order to extend or condense lines of data. To extend a line, add dot spaces between words and/or characters. To compress a line, replace existing dot spaces with fewer dot spaces.

PROGRAMMING CONSIDERATIONS:

- Maximum line length is 1185 dot columns. A "buffer full" condition exists after that, and the line prints out automatically.
- Dot column density is 150 dots per inch.
- Dot column width is 0.00666 inch.
- Proportionally spaced characters vary in width from 6 to 18 dots (see Table 4).
- All condensed characters are considered to be 9 dot spaces wide, and all 10-cpi monospaced characters are considered to be 10 dot spaces wide.
- Elongated characters have twice the dot width of normal size characters: from 12 to 36 dot columns are required for the elongated proportionally spaced characters; 18 dot columns for elongated condensed characters; and 20 dot columns for 10-cpi monospaced characters.

TABLE 5 — DOT SPACING CONTROL CODES

ASCII Mnemonic	Decimal Code	Hexidecimal Code	Number of Dot Spaces
ESC SOH	27 01	1B 01	one
ESC STX	7 02	1B 02	two
ESC ETX	27 03	1B 03	three
ESC EOT	27 04	1B 04	four
ESC ENQ	27 05	1B 05	five
ESC ACK	27 06	1B 06	six

SAMPLE PROGRAM. The following sample program was written to justify lines of proportionally spaced characters. Power on your **ATARI 825 Printer** and set it **ON-LINE** before running the program. You do not have to preprogram your printer to print proportionally spaced characters, as the character selection code is written into the program. This program justifies one line at a time.

```
1 REM PROGRAM NAME IS "D:JUSTIFY"
2 ?
3 REM F=# OF CHARACTERS  X=# OF WIDTHS
4 ?
10 DIM A(122),C$(1),E(122),J(310),G$(1),M$(300),A$(2):GRAPHICS 0
15 A$(1)=CHR$(27):A$(2)=CHR$(17):LPRINT A$:REM CHANGE CHARACTER SET TO PROPORTIONAL.
20 FOR E=32 TO 122:A(E)=0:NEXT E:? :? :? :?
30 ? "STAND BY WHILE COMPUTER ENTERS"
31 ? "WIDTH TABLE FOR CHARACTERS"
32 ? "DECIMAL 32 TO 122"
40 FOR E=32 TO 122
45 READ B:REM CONVERT CHARACTERS TO DOT WIDTHS.
46 DATA 7,7,10,15,12,16,14,7,7,7,12,12,7,12,7,12,12,12,12,12,12,12,12,12
47 DATA 12,12,7,7,12,12,12,12,14,16,15,14,16,14,14,16,16,10,14,16,14,18,16,16
48 DATA 14,14,15,12,14,16,16,18,16,16,10,12,12,12,12,12,7,12,12,10,12,12,10,12
49 DATA 12,8,6,12,8,16,12,12,12,12,10,12,10,12,12,16,12,12,10,10,7,10,12,0
50 A(E)=B:NEXT E
60 REM THE WIDTH TABLE IS NOW STORED IN THE ARRAY.
62 FOR E=1 TO 2000:NEXT E:REM DELAY LOOP; PROVIDES TIME TO READ SCREEN.
63 GRAPHICS 0:? :? :? "TYPE IN A LINE."
64 ? "FOR EACH CHARACTER TYPED,"
65 ? "I'LL ACCUMULATE THE LINE WIDTH."
66 ? "WHEN TOTAL IS 684, I'LL END THE INPUT."!? :?
70 X=0:F=1:OPEN #1,4,0,"K:":REM OPEN KEYBOARD FOR INPUT.
80 FOR F=1 TO 200:GET #1,C:? CHR$(C);
95 IF C=126 THEN F=F-1:C=J(F):X=X-A(C):F=F-1:NEXT F:REM LOOKING FOR BACKSPACE.
98 IF C=155 THEN F=F-1:POP :GOTO 180:REM LOOKING FOR RETURN.
100 J(F)=C:X=X+A(C):REM STORING CHARACTERS IN ARRAY 'J'.
110 IF X>=684 THEN POP :GOTO 129:REM TOTAL WIDTH ALLOWED.
120 NEXT F
129 ? :?
130 ? "THERE'S ROOM FOR 5 MORE CHARACTERS."
131 ? "COMPLETE OR HYPHENATE THE WORD,"
132 ? "OR BACKSPACE TO DELETE CHARACTERS."
133 ? "DON'T TYPE A SPACE AT THE END OF YOUR INPUT."
135 ? "PRESS RETURN TO END THE LINE."
136 ? "THE PRINTER WILL PRINT YOUR LINE."!? :?
140 FOR F=F+1 TO F+4:GET #1,C:? CHR$(C);:REM ALLOWS 5 MORE CHARACTERS.
150 IF C=126 THEN F=F-1:C=J(F):X=X-A(C):F=F-1:NEXT F:REM LOOKING FOR BACKSPACE.
160 IF C=155 THEN POP :GOTO 175:REM LOOKING FOR RETURN.
170 J(F)=C:X=X+A(C):NEXT F:REM STORING CHARACTERS IN ARRAY 'J'.
175 F=F-1
180 REM NOW TIME TO CALCULATE LINE WIDTH.
190 CLOSE #1:REM CLOSE KEYBOARD.
200 H=774-X:M=1:N=1:REM CALCULATING ADDITIONAL DOT WIDTH REQUIRED TO JUSTIFY LINE.
205 IF H>F THEN 228
209 REM LINES 210-223 INSERT 1 DOT WIDTH BETWEEN CHARACTERS UNTIL LINE IS JUSTIFIED TO 774 DOT
 WIDTHS.
210 FOR L=1 TO F
215 M$(M,M)=CHR$(J(L))
220 IF H>0 THEN M=M+1:M$(M,M)=CHR$(27):M=M+1:M$(M,M)=CHR$(1):H=H-1
223 M=M+1:NEXT L
225 GOTO 250
226 REM LINES 228-233 INSERT 1 DOT WIDTH BETWEEN CHARACTERS AND CONVERT 7 DOT WIDTH SPACE TO
 10 DOT WIDTH SPACE
227 REM UNTIL LINE IS JUSTIFIED TO 774 DOT WIDTHS.
228 FOR L=1 TO F
229 M$(M,M)=CHR$(J(L))
231 IF H>0 THEN M=M+1:M$(M,M)=CHR$(27):M=M+1:M$(M,M)=CHR$(1):H=H-1
232 IF H>3 AND CHR$(J(L))=" " THEN M=M+1:M$(M,M)=CHR$(27):M=M+1:M$(M,M)=CHR$(3):H=H-3
233 M=M+1:NEXT L
250 LPRINT M$(1,M-1)
255 FOR E=1 TO 500:NEXT E
260 GRAPHICS 0:? :? :? "TYPE IN ANOTHER LINE."
261 ? "FOR EACH CHARACTER TYPED,"
262 ? "I'LL ACCUMULATE THE LINE WIDTH."
263 ? "WHEN TOTAL IS 684, I'LL END THE INPUT."!? :? :?
270 GOTO 70
```

4

OWNER MAINTENANCE

CHANGING THE RIBBON

The ribbon is a continuous loop packed in a Zip-Pack*. A pair of throwaway plastic gloves is packed in each box of ribbons for your convenience. To reorder ribbons, see "Order Numbers".

1. Switch printer **POWER OFF, DISCONNECT THE AC POWER CORD,** and set the **ON-LINE LOCAL** switch to **LOCAL.**
2. Remove the printer cover. Lift it up from the back of the printer.
3. Move the **HEAD RELEASE LEVER** to the **LOAD** position to back the print head away from the platen.
4. With the plastic lever provided, push the spring-loaded **DRIVEN ROLLER** away from the **DRIVE ROLLER** and remove the old ribbon from between the rollers (see Figure 10).
5. Unthread the old ribbon and throw it away.
6. Open the package containing the Zip-Pack be peeling off the plastic film.
7. Place the Zip-Pack in the printer ribbon tray close to the drive rollers (see Figure 10).
8. Pull sufficient ribbon out of the Zip-Pack and thread the ribbon according to the diagram, Figure 10. Twist the ribbon on the **left** side to form a mobius loop, as shown in the figure. **DO NOT TWIST THE RIBBON ON THE RIGHT SIDE.** On the right side, hold the spring-loaded **RIBBON TENSIONER ARM** open and thread the ribbon past the arm.
9. Hold the ribbon in place by pressing down on the plastic **STRIP** through the hole in the **SHELL.** Now pull the **WRAPPER TAB** to remove the wrapper from around the ribbon (see Figure 11).
10. Discard the wrapper, shell, and plastic strip.
11. Take up slack in the ribbon by turning the **DRIVE ROLLER** clockwise.
12. Reconnect the AC power cord, but keep power switched **OFF.**
13. Load paper (see "Loading Paper" instructions).
14. Move the **HEAD RELEASE LEVER** to print position 1, 2, or 3, as appropriate.
15. Replace the printer cover.

CAUTION

AFTER THREADING THE RIBBON, BE CAREFUL NOT TO TIP THE PRINTER. THE RIBBON COULD SPILL OUT OF THE PRINTER RIBBON TRAY.

* Zip-Pack is the trademark of Centronics Data Computer Corporation.

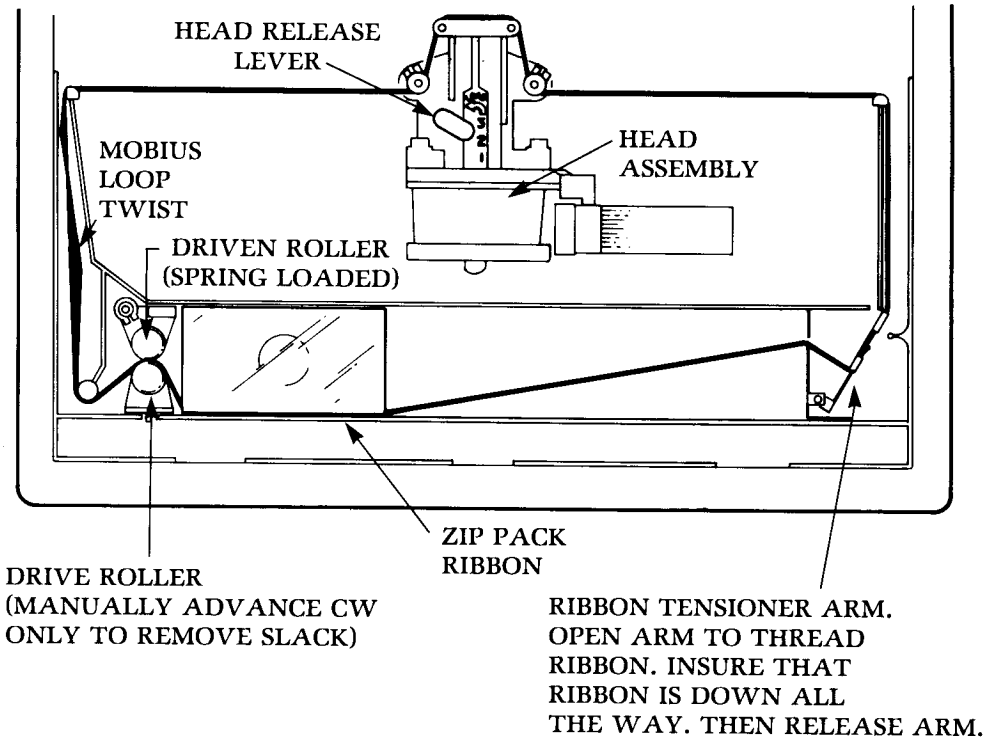


Figure 10. Ribbon Threading

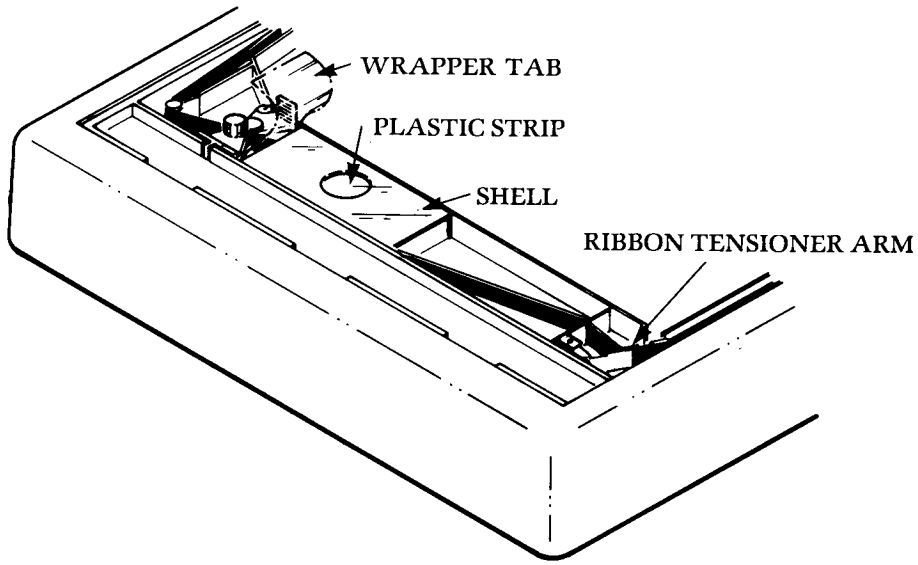


Figure 11. Zip-Pack Installation

CLEANING, INSPECTION, AND LUBRICATION

CAUTION

BEFORE CLEANING OR LUBRICATING THE PRINTER, SWITCH THE POWER OFF AND DISCONNECT THE AC POWER CORD.

Cleaning and lubrication may be required less frequently or more frequently than indicated in Table 6. The frequency will depend upon the operating environment, the amount of use the printer gets, and the type of paper or forms used.

TABLE 6 — PERIODIC CLEANING, INSPECTION, AND LUBRICATION GUIDE

Item	Frequency	Procedure
Clean outside of printer.	As required	Use mild detergent and a clean, soft, lint-free cloth.
Inspect interior of printer.	Each ribbon change.	Inspect interior. Remove any foreign objects.
Dust print head and carriage assembly.	Each ribbon change	Remove ribbon. Carefully brush dust and foreign particles from print head, ribbon path, and carriage assembly. Use a soft-bristle brush.
Clean ink from the print head.	Each ribbon change	With a clean, soft, lint-free cloth, gently remove dried ink from the front of the print head.
Perform general cleaning.	Every 6 months	Inspect the printer and clean as instructed above. In addition, clean the platen with a mild detergent and water, using a soft, lint-free cloth. Using a vacuum cleaner with a soft brush attachment, *carefully* vacuum the interior of the printer.
Lubricate carriage guide shafts.	Every 6 months	Move print head to left side of printer. With a clean, lint-free cloth, apply a few drops of light machine oil (Shell Tellus No. 27 light DTE or Anderol 365 SAE 10-30) to the carriage guide shafts. Then move the print head to the right side of the printer and clean the shafts again.
Clean paper drive roller and oil the end plate bushings.	Every 6 months	Using a lint-free cloth, clean the roller and end plate bushings. Then apply a drop of light lubricating oil to both end plate bushings. Using the thumbwheels, roll the paper roller to allow oil to seep into the bushings.

REPLACING THE FUSE

Refer to Figure 12. The fuse is located in the right corner of the PC board, under the high voltage shield.

1. Switch **POWER OFF** and **DISCONNECT THE AC POWER CORD.**
2. Remove the printer cover.
3. Move the **HEAD RELEASE LEVER** to the **LOAD** position.
4. Remove the ribbon from around the print head and carriage assembly.
5. Take up slack in the ribbon by turning the **DRIVE ROLLER** clockwise (see Figure 10, the ribbon threading diagram).
6. Remove the 5 Phillips-head screws securing the body cover.
7. Gradually raise the body cover until you have enough room to reach under the front of it.
8. Disconnect the **RIBBON DRIVE MOTOR CABLE** from the PC board.
9. Carefully set the body cover down.

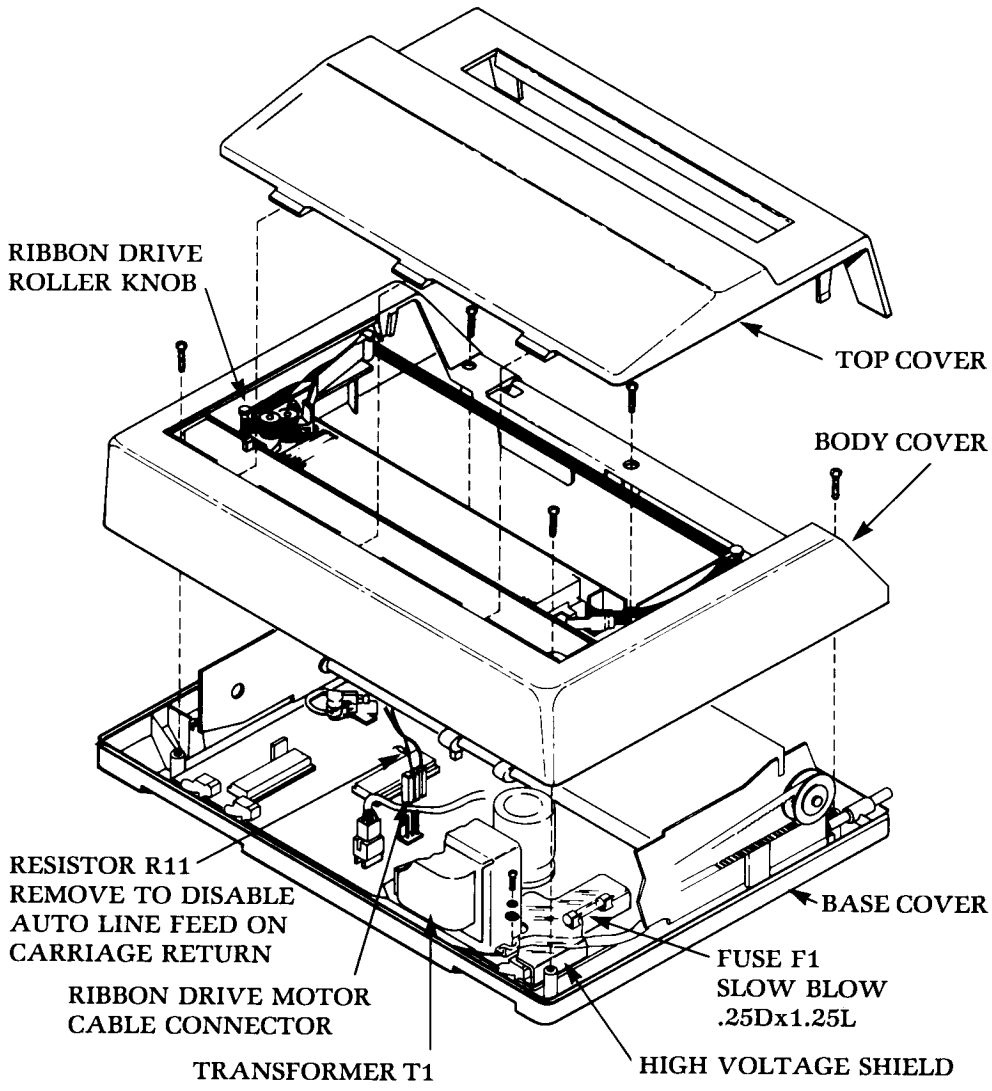


Figure 12. Removal of Cover Assemblies

CAUTION

WHEN REMOVING THE BODY COVER, KEEP IT LEVEL TO AVOID SPILLING OR UNTHREADING THE RIBBON.

10. Loosen the Phillips-head screw on the right side of the Transformer.
11. Remove the plastic high voltage shield covering the fuse.
12. Replace the fuse.
13. Reinstall the high voltage shield. Be sure the slotted portion of the shield is under the flat washer.
14. Tighten the Phillips-head screw securing the shield and Transformer.
15. Reconnect the **RIBBON DRIVE MOTOR CABLE** to the PC board.
16. Reassemble the body cover.
17. Rethread the ribbon (refer to the ribbon threading diagram, Figure 10).
18. Replace the printer cover.

DISABLING AUTO- LINEFEED

Note: Disabling of the Auto-Linefeed function is not recommended when the printer is controlled by the ATARI 400 or ATARI 800 Personal Computer System, since the user then has no way of generating a line feed except by programming.

The auto-linefeed function can be disabled by removing resistor **R11** from the printed circuit board. Refer to Figure 12 and proceed as follows:

1. Switch **POWER OFF** and **DISCONNECT THE AC POWER CORD.**
2. Remove the printer cover.
3. Move the **HEAD RELEASE LEVER** to the **LOAD** position.
4. Remove the ribbon from around the print head and carriage assembly.
5. Take up slack in the ribbon by turning the **DRIVE ROLLER** clockwise (see ribbon threading diagram, Figure 10).
6. Remove the 5 Phillips-head screws securing the body cover.
7. Gradually raise the body cover until you have enough room to reach under the front of it.
8. Disconnect the **RIBBON DRIVE MOTOR CABLE** from the PC board.
9. Carefully set the body cover down.

CAUTION

WHEN REMOVING THE BODY COVER, KEEP IT LEVEL TO AVOID SPILLING OR UNTHREADING THE RIBBON.

10. Locate resistor **R11** on the PC board (see Figure 12). With side cutters, cut the lead **furthest** from the large IC chip.
11. Bend the resistor away from the PC board and cut the second lead.
12. Reconnect the **RIBBON DRIVE MOTOR CABLE** to the PC board.
13. Reassemble the body cover.
14. Rethread the ribbon (refer to Figure 10, the threading diagram).
15. Replace the printer cover.

NOTES

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TROUBLESHOOTING

The troubleshooting table lists some problems that the user should be able to correct. If the remedies listed in the table do not correct the problem, bring your **ATARI 825 Printer** to one of the authorized ATARI Service Centers for repair. Note that the **WARRANTY** is voided if the user's attempts to repair the printer result in the further damage.

CAUTION

ALWAYS SWITCH POWER OFF AND DISCONNECT THE POWER CORD BEFORE ATTEMPTING TO CORRECT A PROBLEM.

TABLE 7—TROUBLESHOOTING PROCEDURES

Trouble	Possible Causes	Remedy
Print line too light	1. Print head too far from paper.	1. Set **PRINT HEAD RELEASE LEVEL** to a lower number.
	2. Worn or defective ribbon.	2. Replace the ribbon.
Roll paper or cut paper does not align or advance properly.	PAPER RELEASE LEVER not engaged.	Move PAPER RELEASE LEVER forward.
Ribbon does not feed properly.	1. Ribbon threaded improperly.	1. Check ribbon threading and correct as required (see threading diagram).
	2. Ribbon drive rollers do not engage properly.	2. Open and then release **DRIVEN ROLLER.** Then rotate **DRIVE ROLLER** clockwise to be sure ribbon feeds properly (see threading diagram).
No power to the printer (LED not lit).	1. AC power cord disconnected.	1. Connect AC cord to power source.
	2. **POWER** switch OFF.	2. Switch **POWER ON.**
	3. Fuse blown.	3. Replace fuse (see "Replacing Fuse").
Printer has power but does not respond	1. Paper jammed	1. Clear paper jam. Then check ribbon before switching **POWER** back **ON**.
	2. **ON-LINE/LOCAL** switch set LOCAL.	2. Set switch to **ON LINE.**
	3. Printer not connected to Interface Module or Interface Module POWER OFF.	3. Connect Module or switch **POWER ON,** as required.

NOTES

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SPECIFICATIONS

Size	14-½" wide x 5" high x 11" deep (368 mm x 127 mm x 279 mm)
Weight	12 lbs. (5.4 kg)
Power Requirements	100 Watts
Input Voltage/Frequency	115 VAC -10%, 60 Hz -1Hz
Operating Conditions:	
Ambient Temperature	+40°F (5°C) to +100°F (40°C)
Relative Humidity (without condensation)	20% to 90%
Altitude	-400 to 10,000 feet
Storage Conditions:	
Temperature	-35°F (-37.2°C) to 140°F (60°C)
Relative Humidity (without condensation)	5% to 90%
Altitude	-400 to 40,000 feet (8 hrs above 10,000 ft)
Parallel Data Input Connector	40-pin printed circuit edge connector
Input Character Format	7 parallel data bits
Input Data Rate	2200 characters per second maximum
Code	Standard U.S. ASCII
Character Sets	96 ASCII standard for both monospaced and proportionally spaced character sets.
Character Structure	7 x 8 dot matrix, monospaced characters; N x 9 dot matrix, proportionally spaced characters.
Characters per Line (cpl)	80 max. 10-cpi monospaced characters; 132 max. 16.7-cpi condensed characters.
Print Line Width	8 inches maximum

Character Density (Characters per Inch, cpi)	Monospaced character set: 10 cpi (default mode). Monospaced condensed set: 16.7 cpi. Proportionally spaced set: 8.2 to 24.6 cpi, avg. of 14 cpi; numerals 0 - 9 12.5-cpi monospaced.
Printing Speed:	
Characters per Second (cps)	50 cps, 10-cpi monospaced characters; 83 cps, 16.7-cpi monospaced condensed; Avg. 70 cps, proportionally spaced.
Lines per Minute (lpm)	22 lpm at 80 characters per line; 60 lpm at 20 characters per line (elongated characters) left justified.
Carriage Forward Speed	5 inches per second.
Carriage Return Speed	In excess of 5 inches per second.
Print Buffer Capacity	80 10-cpi monospaced characters; 132 16.7-cpi condensed characters; 1185 dot positions, proportionally spaced characters.
Line Feed Buffer Capacity	255 pending line feeds
Line Feed Repeat Rate	12 line feeds per second
Vertical Spacing	6 lines per inch (each full line 1/6")
Horizontal Spacing	(see Character Density)
Paper	Cut Sheets to 8-½" wide Rolls: 3-½" to 8-½" wide, 5" diameter with 1" core, 2 ply Fanfold: 9" pin-to-pin; 9-½" overall; 3 ply.
Ribbon Zip-Pack	15 yards (13.7 meters); 9/16" ±1/64" wide (14.3mm ± 0.5mm); 0.0004" ±0.00025" thick (0.1mm ± 0.00064mm)

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ORDER NUMBERS

Zip-Pack* Ribbon	CA016087
ATARI Printer Cable	CX86
Roll Paper	C016233
Paper Mandrel	C016229
Paper Roll Support	C016230
Paper Deflector	C016231
ATARI BASIC Reference Manual	C015307
ATARI 825 80-Column Printer Operators Manual	C015506
ATARI Disk Operating System Manual	C015200
ATARI I/O Data Cord (3-ft.)	CA14122
ATARI I/O Data Cord (5-ft.)	CX81

* Zip-Pack is the trademark of Centronics Data Computer Corporation

NOTES

APPENDIX

TABLE A-1—PRINTER/SCREEN CHARACTER OUTPUT AND FUNCTIONS

NOTES: ATASCII MEANS ATARI ASCII

See the ATARI 400 or ATARI 800 Operator's Manual for graphics character keying instructions. See Table 2 in this manual for the keying sequences required to initiate printer functions from the ATARI computer keyboard.

Decimal Code	Hex. Code	ASCII Character	ATASCII Character Function/Display	ATARI 825 Printer Function/Printout
0	00	NUL		
1	01	SOH		ESC SOH: Insert one dot space
2	02	STX		ESC STX: Insert two dot spaces
3	03	ETX		ESC ETX: Insert three dot spaces
4	04	EOT		ESC EOT: Insert four dot spaces
5	05	ENQ		ESC ENQ: Insert five dot spaces
6	06	ACK		ESC ACK: Insert six dot spaces
7	07	BEL		
8	08	BS		Backspace (must be followed by number of dot spaces to backspace)
9	09	HT		
10	0A	LF		LF: Advance one line ESC LF: Reverse one line
11	0B	VT		
12	0C	FF		
13	0D	CR		Carriage return
14	0E	SO		SO: Stop underlining characters ESC SO: Start elongated printing
15	0F	SI		SI: Start underlining ESC SI: Stop elongated printing

Decimal Code	Hex. Code	ASCII Character	ATASCII Character Function/Display	ATARI 825 Printer Function/Printout
16	10	DLE		
17	11	D1		ESC DC1: Select proportionally spaced character set.
18	12	DC2		
19	13	DC3		ESC DC3: Select 10-cpi character set
20	14	DC4		ESC DC4: Select condensed characters
21	15	NAK		
22	16	SYN		
23	17	ETB		
24	18	CAN		
25	19	EM		
26	1A	SUB		
27	1B	ESC	(The ESCape character is initiated by keying ESC ESC)	Initiates Escape codes
28	1C	FS	Move up one line	ESC FS: Advance a half line
29	1D	GS	Move down one line	
30	1E	RS	Move left one space	ESC RS: Reverse a half line
31	1F	US	Move right one space	
32	20	SP	Space	Space
33	21	!	!	Print exclamation mark !
34	22	"	"	Print quotation marks "
35	23	#	#	Print number/lb. sign #
36	24	$	$	Print dollar sign $
37	25	%	%	Print percentage sign %
38	26	&	&	Print ampersand &
39	27	'	'	Print acute accent '
40	28	(	(	Print bracket (
41	29	)	)	Print bracket)

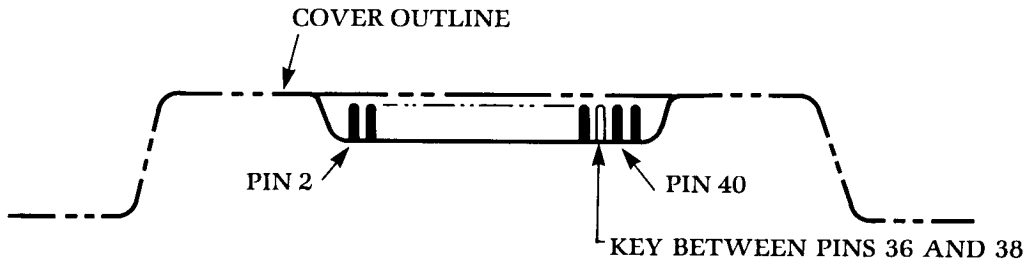
Decimal Code	Hex. Code	ASCII Character	ATASCII Character Function/Display	ATARI 825 Printer Function/Printout
42	2A	*	*	Print asterisk *
43	2B	+	+	Print plus sign +
44	2C	,	,	Print comma ,
45	2D	-	-	Print minus sign/hypen -
46	2E	.	.	Print dot/period .
47	2F	/	/	Print slash /
48	30	0	0	Print zero 0
49	31	1	1	Print 1
50	32	2	2	Print 2
51	33	3	3	Print 3
52	34	4	4	Print 4
53	35	5	5	Print 5
54	36	6	6	Print 6
55	37	7	7	Print 7
56	38	8	8	Print 8
57	39	9	9	Print 9
58	3A	:	:	Print colon :
59	3B	;	;	Print semicolon ;
60	3C	<	<	Print "less than" symbol <
61	3D	=	=	Print equal sign =
62	3E	>	>	Print "greater than" symbol >
63	3F	?	?	Print question mark ?
64	40	@	@	Print "at" sign @
65	41	A	A	Print A
66	42	B	B	Print B
67	43	C	C	Print C
68	44	D	D	Print D
69	45	E	E	Print E

Decimal Code	Hex. Code	ASCII Character	ATASCII Character Function/Display	ATARI 825 Printer Function/Printout
70	46	F	F	Print F
71	47	G	G	Print G
72	48	H	H	Print H
73	49	I	I	Print I
74	4A	J	J	Print J
75	4B	K	K	Print K
76	4C	L	L	Print L
77	4D	M	M	Print M
78	4E	N	N	Print N
79	4F	O	O	Print O
80	50	P	P	Print P
81	51	Q	Q	Print Q
82	52	R	R	Print R
83	53	S	S	Print S
84	54	T	T	Print T
85	55	U	U	Print U
86	56	V	V	Print V
87	57	W	W	Print W
88	58	X	X	Print X
89	59	Y	Y	Print Y
90	5A	Z	Z	Print Z
91	5B	[	[	Print Bracket [
92	5C	\	\	Print backward slash \
93	5D	]	]	Print bracket]
94	5E	^	^	Print insert symbol ^
95	5F	_____	_____	Print underline _____
96	60	`		Print accent grave `
97	61	a	a	Print a

Decimal Code	Hex. Code	ASCII Character	ATASCII Character Function/Display	ATARI 825 Printer Function/Printout
98	62	b	b	Print b
99	63	c	c	Print c
100	64	d	d	Print d
101	65	e	e	Print e
102	66	f	f	Print f
103	67	g	g	Print g
104	68	h	h	Print h
105	69	i	i	Print i
106	6A	j	j	Print j
107	6B	k	k	Print k
108	6C	l	l	Print l
109	6D	m	m	Print m
110	6E	n	n	Print n
111	6F	o	o	Print o
112	70	p	p	Print p
113	71	q	q	Print q
114	72	r	r	Print r
115	73	s	s	Print s
116	74	t	t	Print t
117	75	u	u	Print u
118	76	v	v	Print v
119	77	w	w	Print w
120	78	x	x	Print x
121	79	y	y	Print y
122	7A	z	z	Print z
123	7B	{		Print brace {
124	7C	|	|	Print vertical rule |
125	7D	}	Clear screen	Print brace }
126	7E	~	Backspace	print tilde/equiv. sign ~
127	7F	DEL	Tab	Print ▮ character

TABLE A-2—PRINTER INTERFACE PIN ASSIGNMENTS

Pin	Signal	Pin	Signal
1	DATA STROBE	2	GROUND
3	DATA BIT 1	4	GROUND
5	DATA BIT 2	6	GROUND
7	DATA BIT 3	8	GROUND
9	DATA BIT 4	10	GROUND
11	DATA BIT 5	12	GROUND
13	DATA BIT 6	14	GROUND
15	DATA BIT 7	16	GROUND
17	DATA BIT 8	18	GROUND
19	ACKNOWLEDGE	20	GROUND
21	BUSY	22	GROUND
23	ALWAYS LOGIC 0 (GROUND)	24	GROUND
25	ON-LINE	26	NOT USED
27	SIGNAL GROUND	28	ALWAYS LOGIC 1
29	NOT USED	30	GROUND
31	SIGNAL GROUND	32	Pin 32 connected to Pin 34 in Printer
33	CHASSIS GROUND	34	
35	+5V SIGNAL (POWER SUPPLY ON)	36	DEMAND
37	+17V	38	NOT USED
39	+17V	40	NOT USED



NOTE: Odd Pins 1 to 39 are on the opposite side of the PC board.

TOP VIEW OF PRINTER INTERFACE CONNECTOR

NOTICE

PROPORTIONALLY SPACED CHARACTER SET SELECTION CODE (ESC DC1):

Once you have programmed the **ATARI 825 Printer** to print a full 8-inch print line in the proportionally spaced character mode, be careful that you do not reprogram the character set selection code (ESC DC1). If the selection code is reprogrammed, as in Example A, the printer carriage may fail to execute a return to the left margin and may "hang up" at the right carriage stop. An example of programming that avoids looping back through the selection code is shown in Example B.

Remember that once the printer enters the proportionally spaced character mode, it will print characters in that mode until it is reprogrammed to print in a different character mode or it powered off. There is no need to repeat the character set selection code.

If the printer should hang up at the right carriage stop for any reason, switch the printer power off and then on again. The carriage will return to the left margin.

EXAMPLE A. COMPUTER IS PROGRAMMED TO LOOP THROUGH THE SELECTION CODE IN LINE 20:

```
10 OPEN #1,8,0,"P:"
20 PRINT #1;CHR$(27);CHR$(17);
30 PRINT #1;"HELLO";
40 GOTO 20 ──────────────────► AVOID DOING THIS
```

EXAMPLE B. COMPUTER IS PROGRAMMED TO LOOP THROUGH LINE 30 AND PRINT "HELLO":

```
10 OPEN #1,8,0,"P:"
20 PRINT #1;CHR$(27);CHR$(17);
30 PRINT #1;"HELLO";
40 GOTO 30 ──────────────────► O.K.
```

Note: CHR$(27);CHR$(17) = Proportionally Spaced Character Set Selection Code

MANUAL ADDENDUM

PUBLICATION NO. 37407857 REVISION A DATE 25 August 1980

FOR PUBLICATIONS: Atari 825, 80 Column Printer Manual

PURPOSE—The new Adjustable Pin-Feed Drive Roller accommodates variations in width dimensions between pin-feed holes of fan-fold paper.

DESCRIPTION—Refer to Figure 1 (detail in Figure 2, reverse side). The Adjustable Pin-Feed Drive Roller has adjustable rings and tension springs at each end. The tension springs ensure pin-to-pin distance, once set by the operator. The Drive Pin Rings move longitudinally while retaining proper pin alignment. Each Adjustment Ring has eight fixed positions, allowing fine adjustment of pin-to-pin distance.

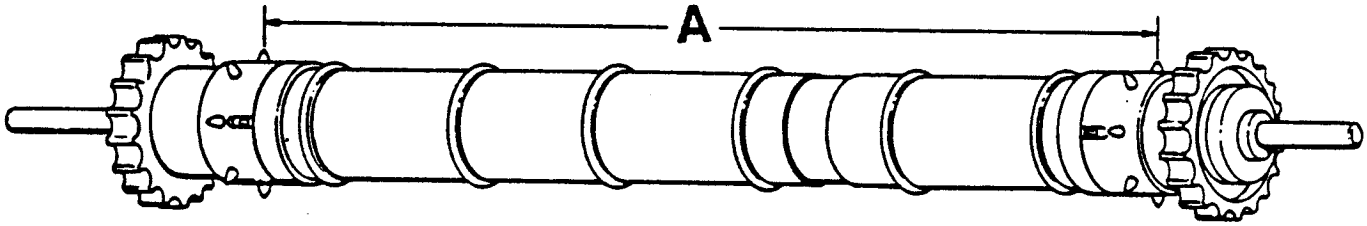


Figure 1 Adjustable Pin-Feed Drive Roller

DIMENSION 'A' (Home Position)*

- Short Version (P/N 63669489-5001) 228 mm ± 1 mm
- Long Version (P/N 63669489-5002) 238 mm ± 1 mm

* See Figure 2 for 'Home Position'

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(over)

DIRECTIONS—Refer to Figure 2. To adjust the pin-to-pin distance to accommodate the fan-fold paper, perform the following:

1. Place front panel switch in LOCAL position and turn power OFF.
2. Remove the power plug from wall outlet.
3. Remove top cover from printer.
4. Grasp Drive Pin Ring and Adjustment Ring at one end of roller and slide toward end of roller.
5. With spring compressed, rotate Adjustment Ring (with slots) to reposition the drive pins...
   - Move to a deeper slot to reduce pin distance.
   - Move to a shallower slot to increase pin distance.
   - Repeat at other end of roller if necessary.

NOTE

The shaded area in Figure 2 illustrates the "HOME" position (228.6 mm or 9" for short version; 238.6 mm or 9.4" for long version). The printer is shipped from the factory set in the "HOME" position.

CAUTION

Index pin MUST stay in Drive Pin Ring slot. Make certain that Cam Pin falls into Cam Slot.

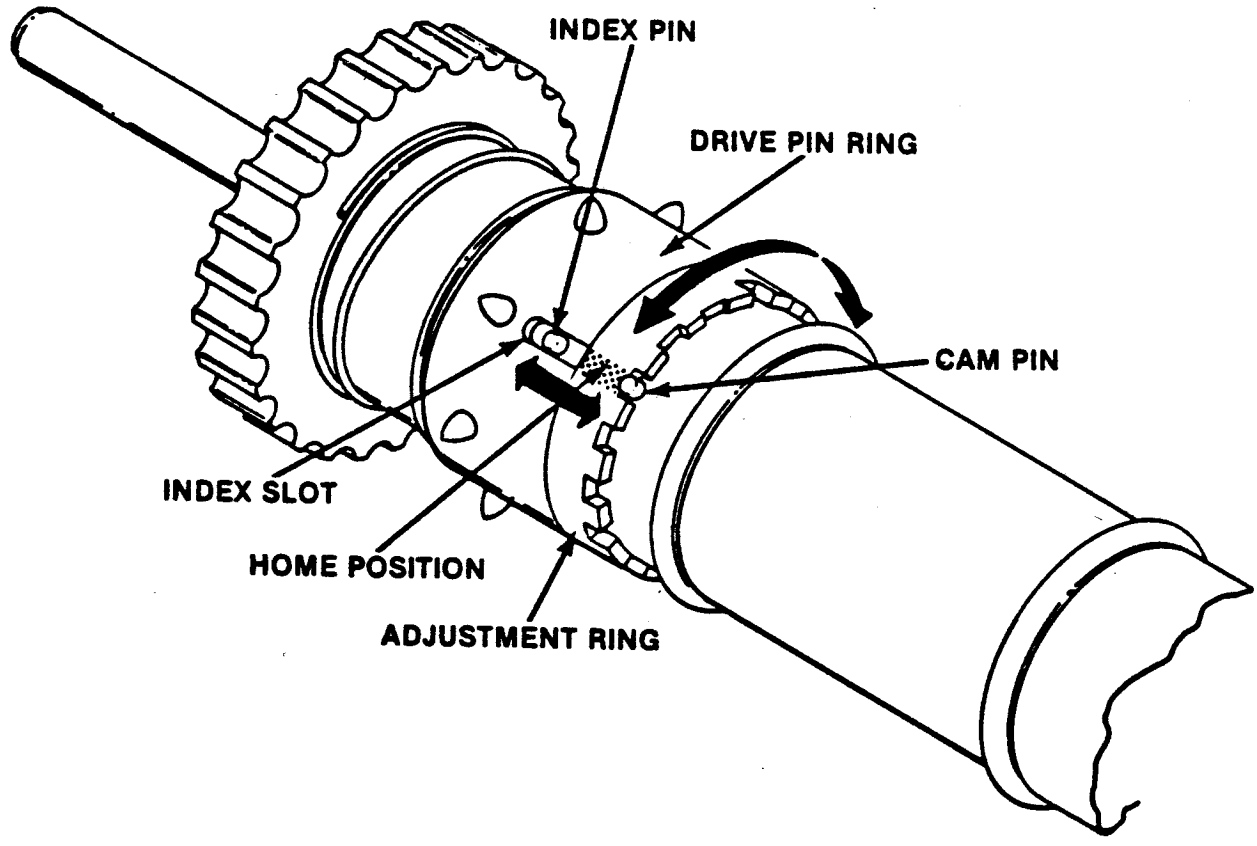


Figure 2 Adjustable Drive Roller Detail

ATARI® 825™ 80-COLUMN PRINTER

UNPACKING/REPACKING INSTRUCTIONS

NOTE: SAVE ALL PACKING MATERIALS AND SHIPPING CARTON FOR REPACKING.

Refer to the illustration: (SEE REVERSE SIDE)

UNPACKING

1. Remove the printer from the carton and set it on a work surface.
2. Remove the printer cable, Operators Manual, and warranty card from the carton.
3. Remove both end caps from the printer.
4. Remove the following items from the end caps:
   a. Paper roll support
   b. Dancer bar
   c. Paper mandrel
   d. Paper deflector.

   NOTE: Paper not supplied with printer.

5. Cut the tape securing the plastic bag and remove the printer from the bag.
6. Remove the printer top cover. Lift it up from the back of the printer.
7. Remove the left carriage restraining tube from around the carriage guide rod.

   NOTE: THE TUBES ARE SLIT AND CAN BE LIFTED UP AND OFF THE GUIDE RODS. SAVE THE RESTRAINING TUBES FOR REPACKING.

8. Slide the carriage to the left. Remove the right restraining tube from the guide rod.
9. Remove the tape securing the ribbon shipping cover to the printer.
10. Remove the ribbon shipping cover and save for repacking.

CAUTION

AFTER REMOVING THE RIBBON SHIPPING COVER, BE CAREFUL NOT TO TIP THE PRINTER. THE RIBBON COULD SPILL OUT OF THE PRINTER RIBBON TRAY.

11. Replace the printer top cover. Remove the WARNING sticker from the cover and save for repacking.
12. See the Operators Manual for printer installation and paper roll assembly instructions.

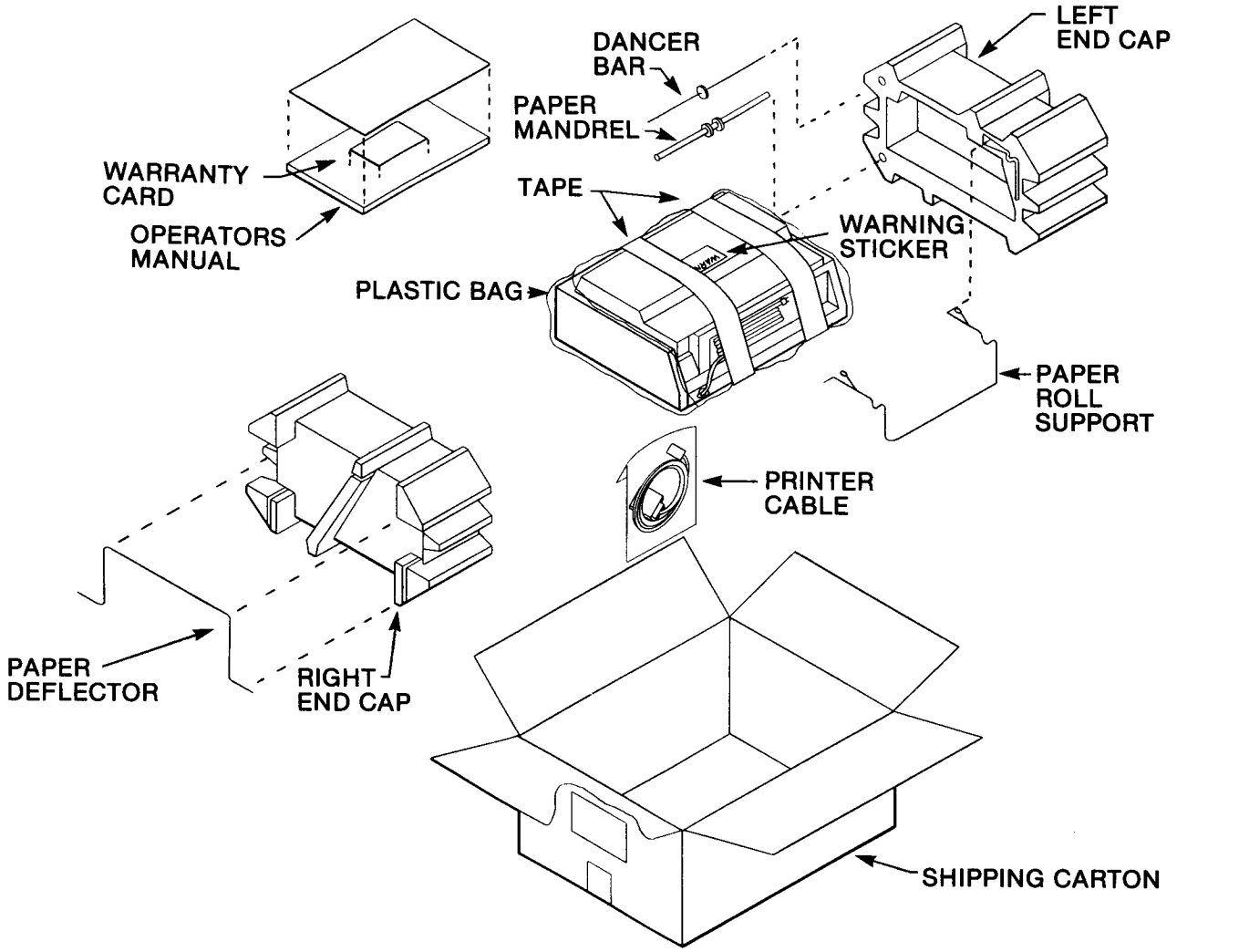
REPACKING

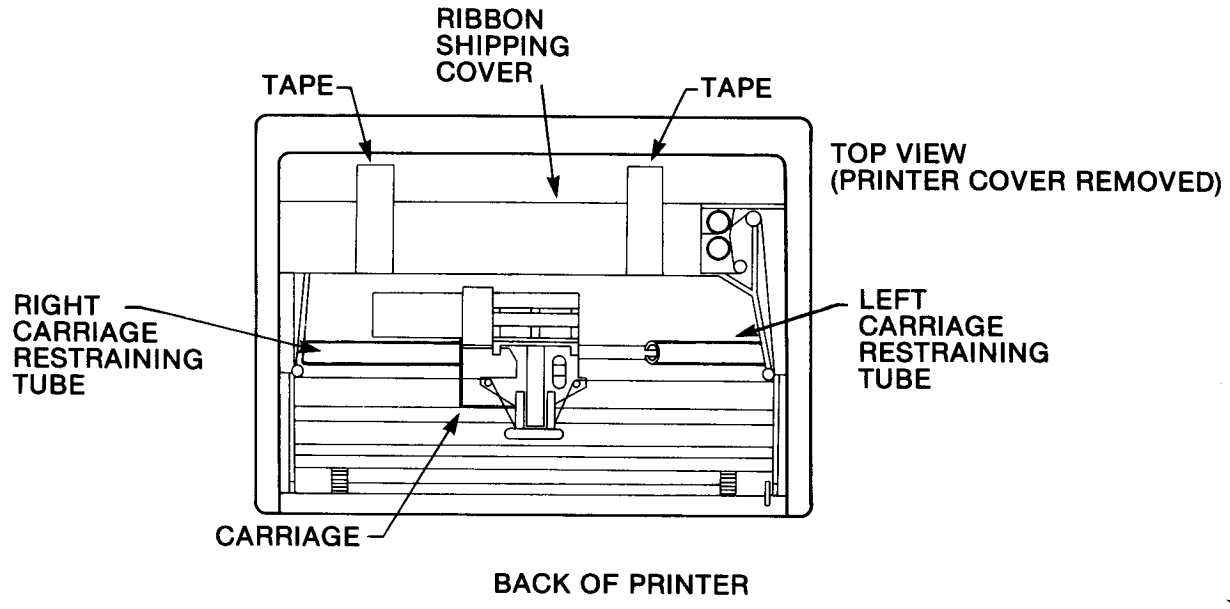
1. Remove the printer top cover.
2. Replace the ribbon shipping cover over the ribbon tray and tape it to the printer.
3. Slide the carriage to the left. Replace the right carriage restraining tube around the guide rod.
4. Slide the carriage to the center. Replace the left carriage restraining tube around the guide rod.
5. Replace the printer top cover. Attach the WARNING sticker to the cover.
6. Insert the printer in the plastic bag and tape the bag as illustrated.
7. Insert the paper roll support, dancer bar, paper mandrel, and paper deflector in the end caps as illustrated.
8. Recap the printer with the end caps.

   NOTE: The end caps are marked "LEFT" and "RIGHT" relative to the front of the printer.

9. Replace the printer in the shipping carton and tape the carton.

UNPACKING INSTRUCTIONS





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ATARI, INC., Consumer Division
P.O. Box 427, Sunnyvale, CA 94086

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